

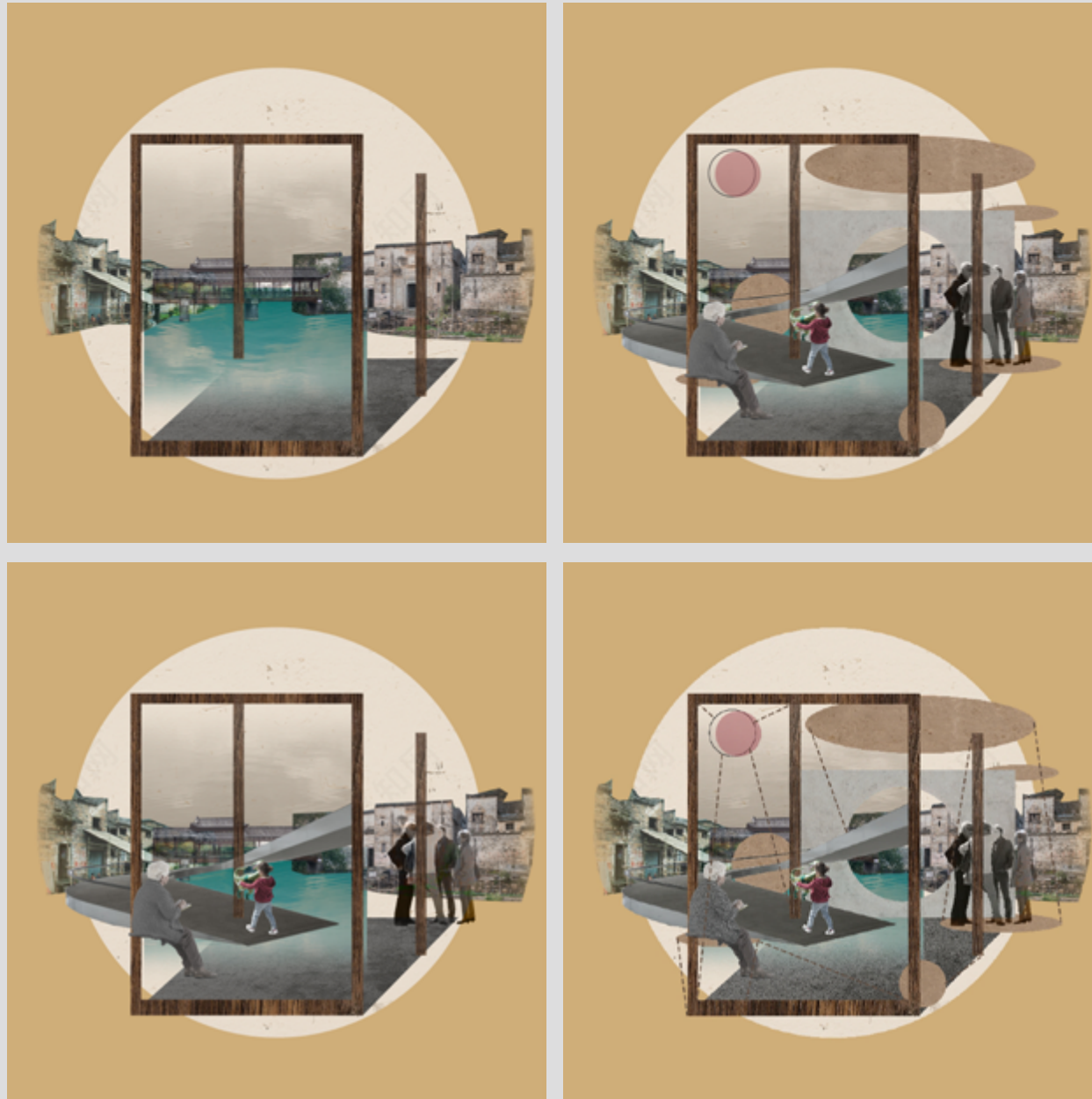


## Spontaneous Elderly Apartment

Designer: Li Zhuang

Professor: Claudia Hernandez

This thesis is an investigation of the introduction of a secondary space – defining system aimed to activate spontaneity and interaction in elderly apartment living with the intention of promoting mental health in rural areas.



Concept Speculation

## ABSTRACT

The phenomenon of population aging is unprecedented, and it has a major impact on all aspects of human life. According to the World Health Organization (WHO), this aging of the population can be seen as a "success story for public health policies and for socio-economic development, but it also challenges society to adapt, in order to maximize the health and functional capacity of older people as well as their social participation and security".<sup>1</sup> Comparing the data from the United Nations and Collective Responsibility, China's aging problem is relatively serious among countries in the world.

Focusing on rural China, many elderly people can only live alone in dilapidated and inconvenient houses because young people go out to work. Their physical and mental problems need more attention, Marie says "The aging process, either by senescence and/or senility, leads to sensory, motor, and cognitive losses which have repercussions on the autonomy, welfare, and safety of the elderly. Thus, environments should be well planned so that they may be adapted to these changes."<sup>2</sup>

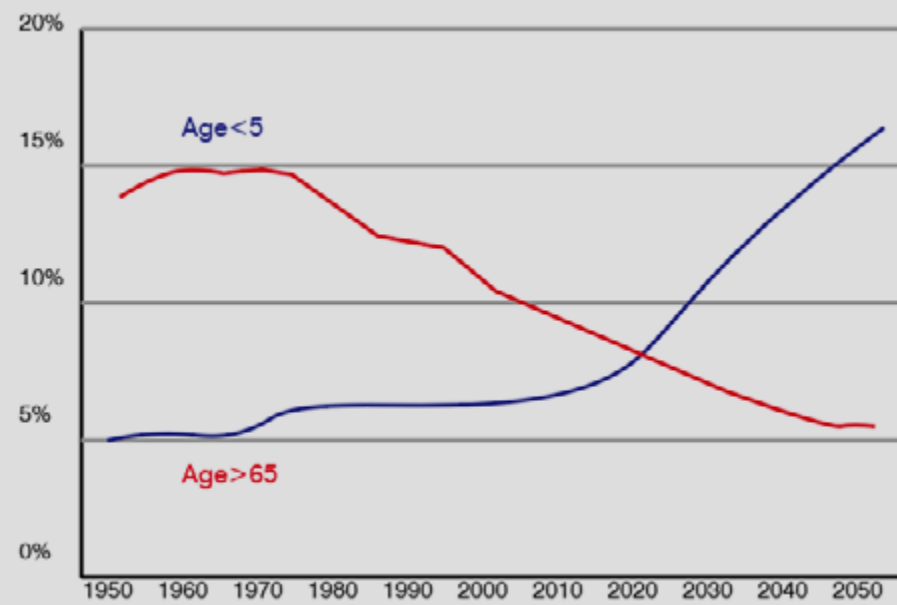
Taking into account the physical and psychological conditions of the elderly, the goal is to improve the quality of life of residents in the old building to improve the functionality and ornamental value to bring pleasure and comfort to residents. According to the research, the Storefront for Art and Architecture which was designed by Steven Holl uses the secondary system to recreate the wall system to bring a spontaneous visit circulation and various display possibilities. Architectural theorist Ednie-Brown, Pia says Storefront tries to articulate obsessions into positions, to construct arguments and create conversations that bring people into a larger collective."<sup>3</sup> This shows that the secondary system could encourage people to participate in the space through design, and be the solution to improve the spontaneity of rural elderly.

This design figures out how to integrate a secondary system through the space, promote the enthusiasm and spontaneity of the elderly in a community. This secondary system links the individual buildings together to enhance the notion of community and connect the residence space to improve the communication between the elderly. It guides and controls the factors in the environment, thereby creating a barrier-free and spontaneously active living space for the elderly while not destroying the original living form and state.

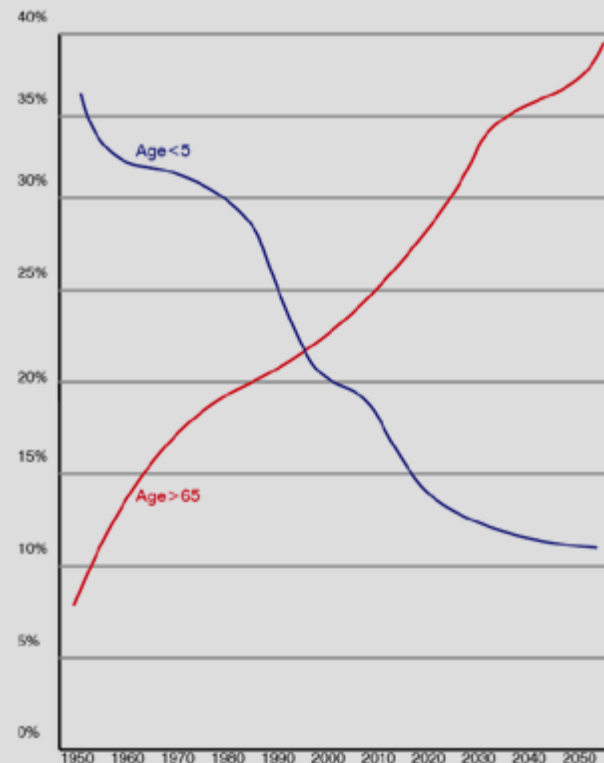
## Population Aging in Worldwide

The Implications of an Aging Population The world is experiencing a seismic demographic shift"and no country is immune to the consequences. While increasing life expectancy and declining birth rates are considered major achievements in modern science and healthcare, they will have a significant impact on future generations.

The distribution of a country's population towards older ages. This is usually reflected in an increase in the population's mean and median ages, a decline in the proportion of the population composed of children, and a rise in the proportion of the population composed of elderly



Sheet 1 Young Children and Older People as a Percentage of Global Population: 1950–2050



Sheet 2 Young Children and Older People as a Percentage of China Population: 1950–2050

## Population Aging in China

China's elderly population is increasing. By the end of 2018, China had nearly 250 million people aged 60 and above, accounting for 17.9% of the total population. Every year, 8–10 million Chinese people turn 60 years old. By the end of 2025, there will be around 300 million Chinese senior citizens, accounting for one-fifth of the total population. China's aging problem is relatively serious among countries in the world.



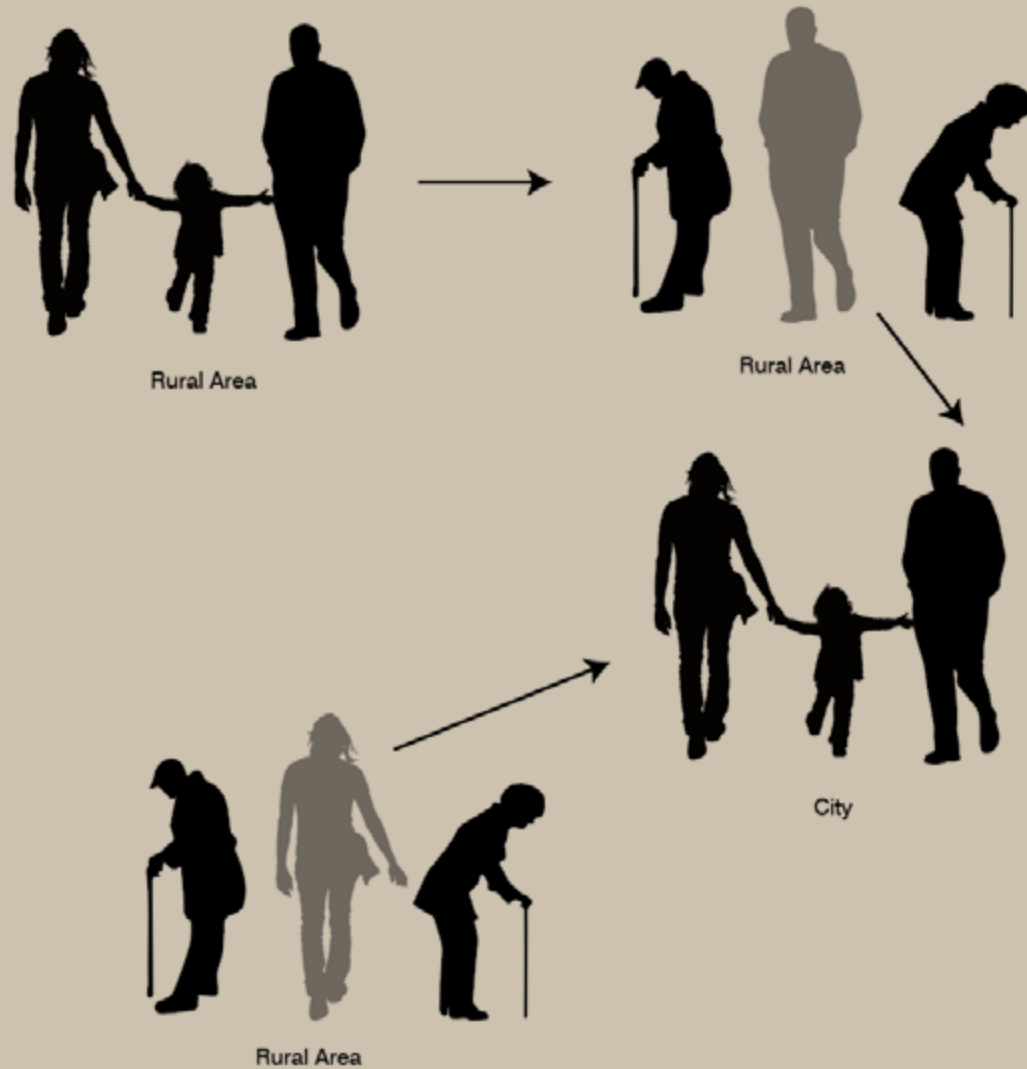


Diagram of Policy Background Leading to China's Aging

## Policy and Social Background

Because of the family planning policy, each family had only one child. And the large gap between the rich and the poor in China, young people in rural areas usually choose to work in big cities to make money. Because there is only one child in the family, there are no other brothers and sisters to take care of, and they can only leave the elderly alone in the village. The legacy of this policy is that there are many elderly people living alone in rural areas.

In the ten years from 2000 to 2010, the proportion of empty nesters in Chinese urban areas rose from 42% to 54%, and in rural areas from 37.9% to 45.6%. In 2013, the population of empty nest elderly in China exceeded 100 million. As the parents of the first generation of only-children gradually enter old age, the number of empty nesters in China will increase to more than 200 million in 2030, accounting for 90% of the total number of elderly people.

## Elderly in Rural Area

In the process of urbanization and industrialization, a large number of rural laborers have flooded into cities, making the rural left-behind elderly a particularly vulnerable group. In addition, the long-term implementation of family planning has gradually weakened the family's pension function, and it is difficult to guarantee the elderly life of the rural left-behind elderly.





## Living needs of the elderly

The aging of human individuals reflected in the field of sociology is the change of social function. In the early stage, due to the degradation of physiological functions, individuals lost the provinces of social production participants, lost their income, and often lost their corresponding status in the family and society. And putting away the changes in social life may accelerate the physical aging of individuals and make their status further decline.

Favorite Way of Pension in Rural Area 2014

	Proportion
Living alone (or living with a spouse), children are not nearby)	16.3%
Living alone (or living with a spouse) with children nearby)	39.3%
Live with children	42.3%
Nursing House	1.3%
Commercial senior apartment	0.1%
Daycare in the village	0.2%
Other	0.6%

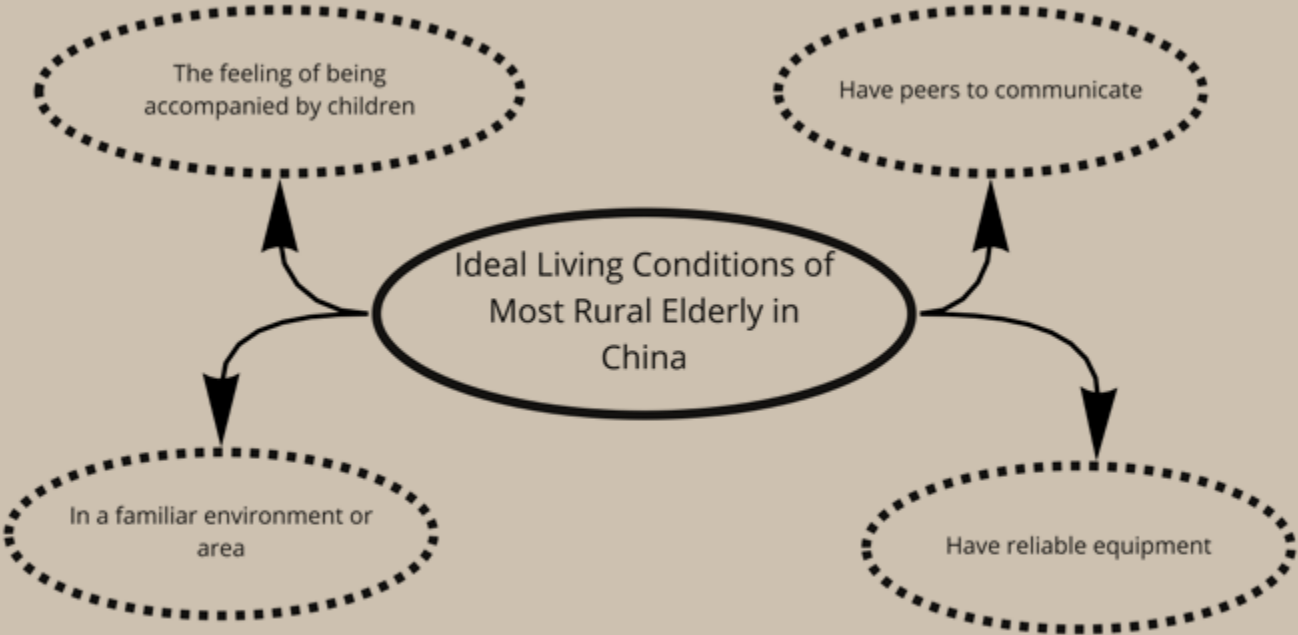
Source: SUFE Qiancun Database v.2014.11

Attitudes Towards Living In the City of Elderly in Rural Area 2014

Attitudes Towards Living In the City	Proportion
Like	32.3%
Dislike	67.7%

Favorite Type of Nursing House of Elderly in Rural Area 2014

Favorite Type of Nursing House	Proportion
Public Nursing House	65.6%
Private Nursing House	7.1%
Community Self-help Mutual Assistance nursing House	16.5%
Other	10.8%



Individual People → Society → Living → Interior Design



Promote Communication

Comfortable Living Condition

Barrier-free environment

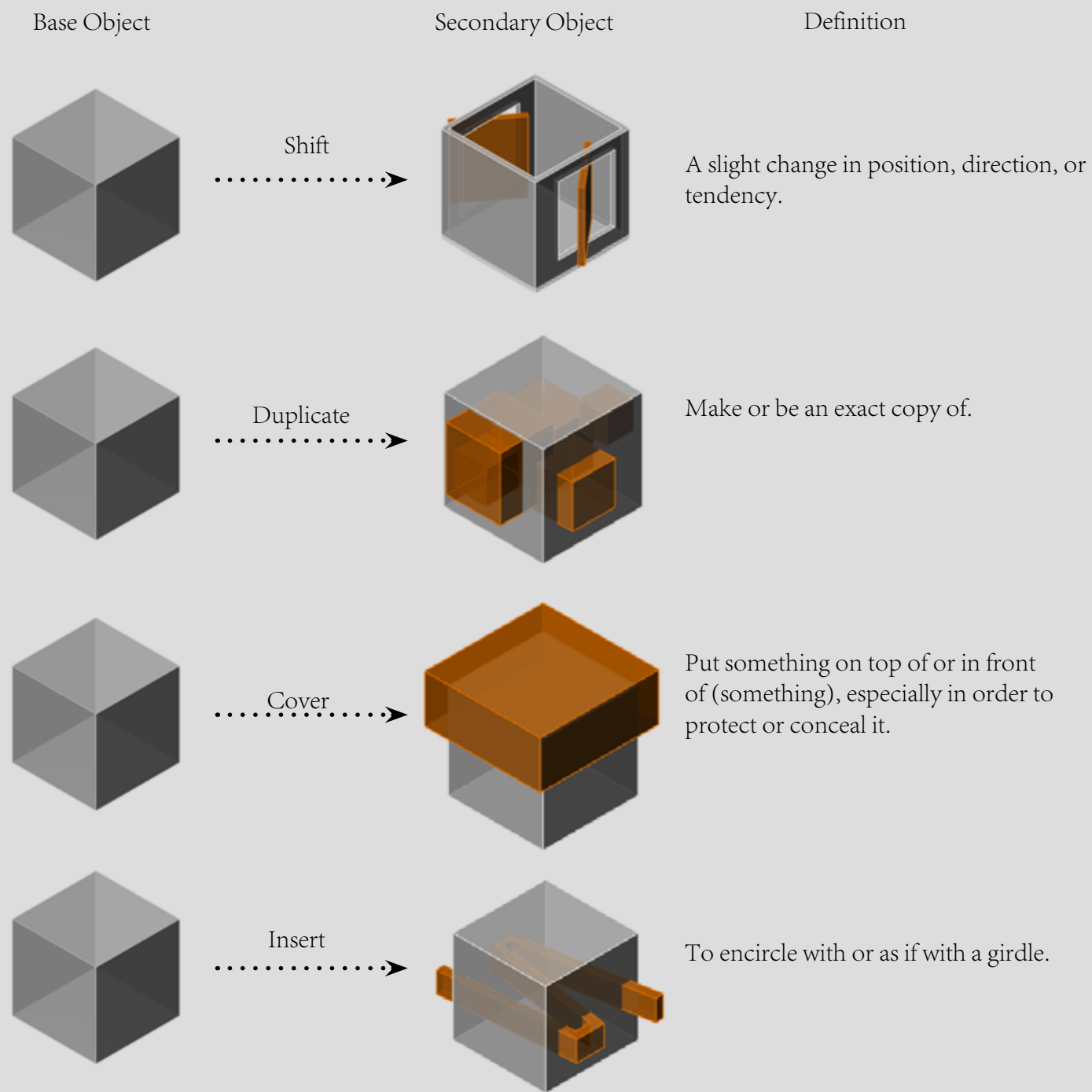


Secondary System



To figure out these questions, the interior design needs to provide a new elderly living principle to promote the communication of the elderly, provide them comfortable living conditions and a barrier-free environment. And use the secondary design system would able to not break the original living habit but also provide new improvement.

PRECEDENT ANALYSIS



Definition of Four Ways of Adding Secondary System

Example



Exterior view of the Storefront Gallery



Exterior view of the Tulou Project

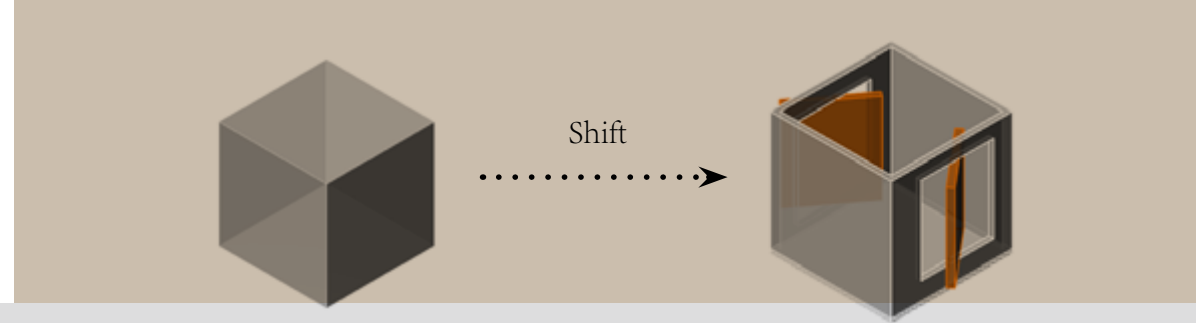


Exterior view of the Broad Museum

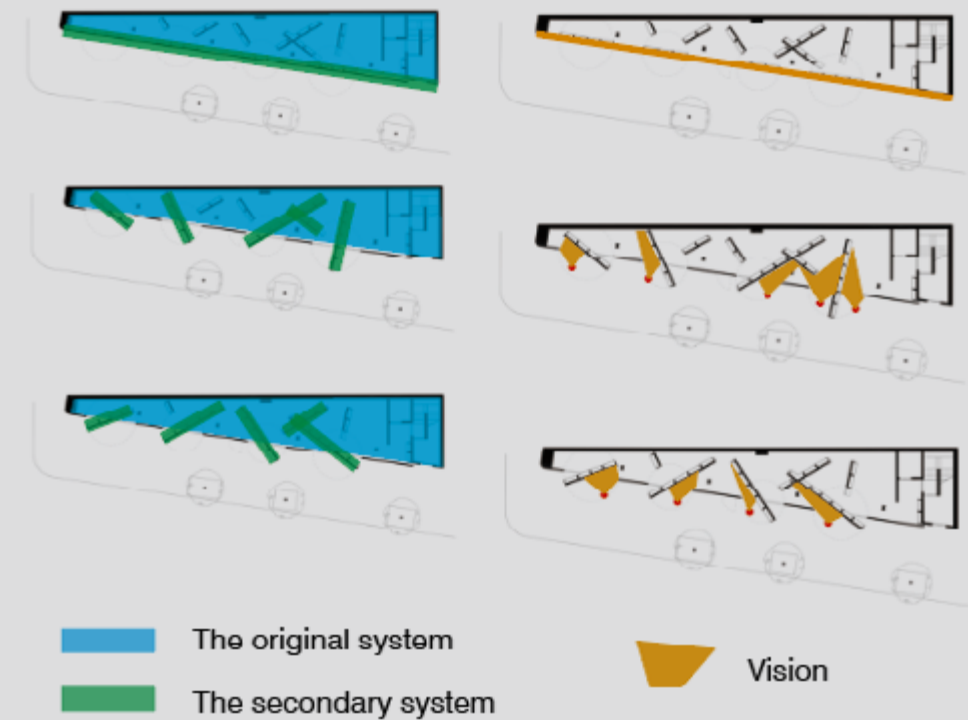


Exterior view of the Social Complex in Alcabideche





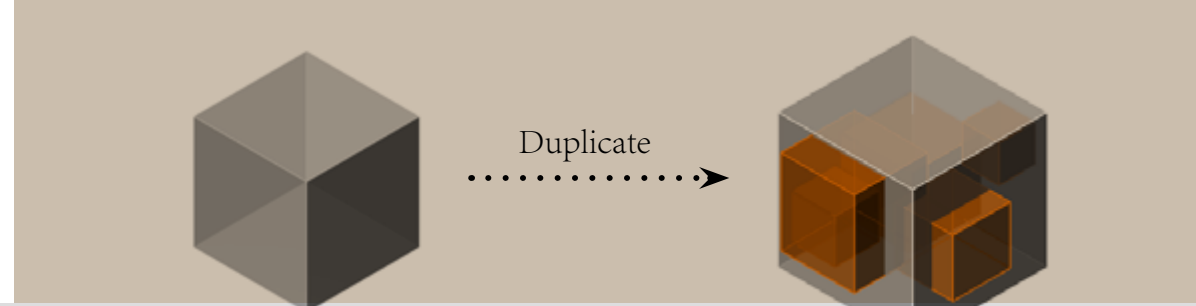
## Storefront for Art and Architecture



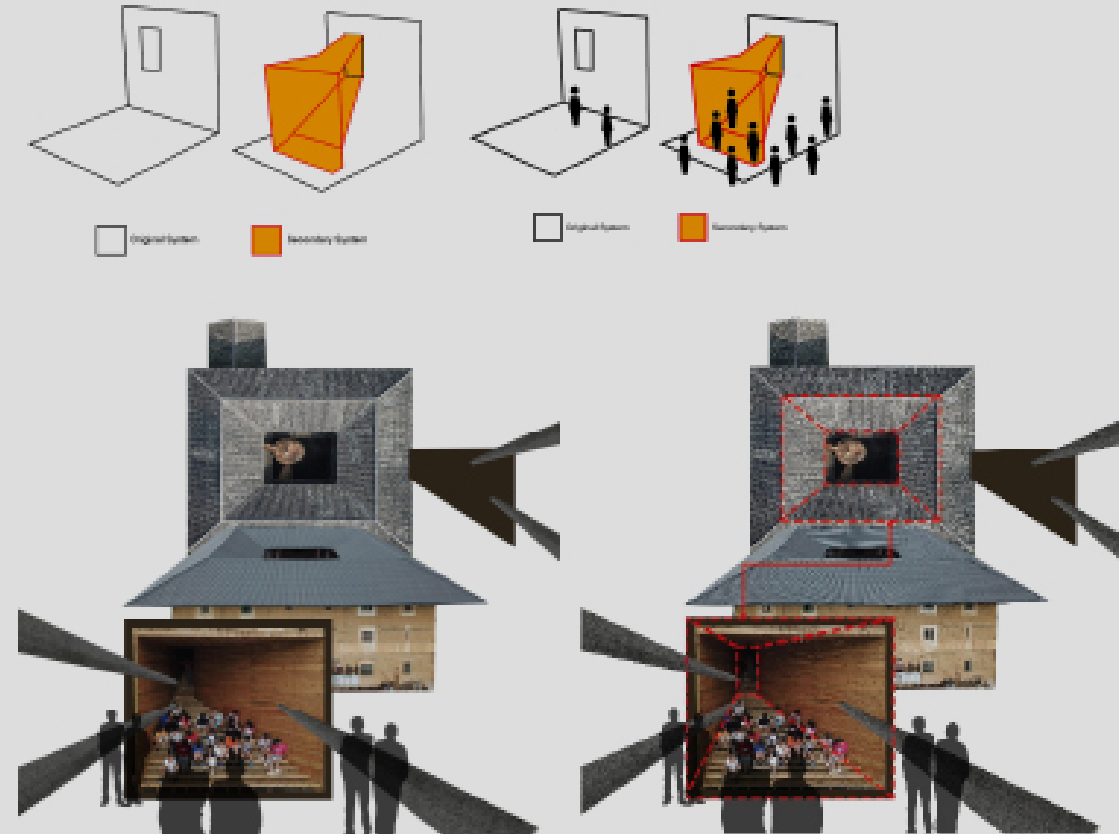
The storefront gallery features an ingenious facade, made in fiber-reinforced concrete, whose pivoting panels make it possible to "open" the building and expand its interior on to Kenmare street's north sidewalk, thus creating a permeable space in which private and public realm combine.

The initial system of The Storefront Gallery was a closed concrete space with simple straight circulation and limited display area on the wall, lacking communication with the external space. The second system is a rotatable fiber-reinforced concrete wall hollowed out on the wall. It enriches the circulation of visitors and increases the wall area of the display. It also has a creation for the display methods, appeals to the people on the outside.

Based on the walls of The Storefront Gallery, exhibitions with different themes can be added with their unique systems to create a structure that reflect the concept of the exhibition. The rotating wall of The storefront can be adjusted to different angles to accommodate more possibilities.



## Tulou Renovation



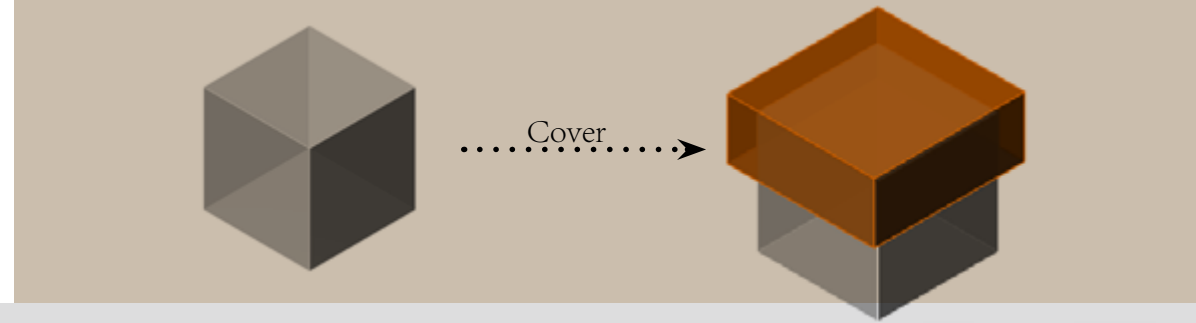
### Introduction;

The Plug— in rethinks the thick defensive wall traditionally characterized by small openings by turning the tulou inside out, opening it to the new surroundings. The funnel staircase plugs into the enlarged opening, inviting people to sit, read and rest in the shade, while also serving as an open amphitheatre for activities in the exterior courtyard.

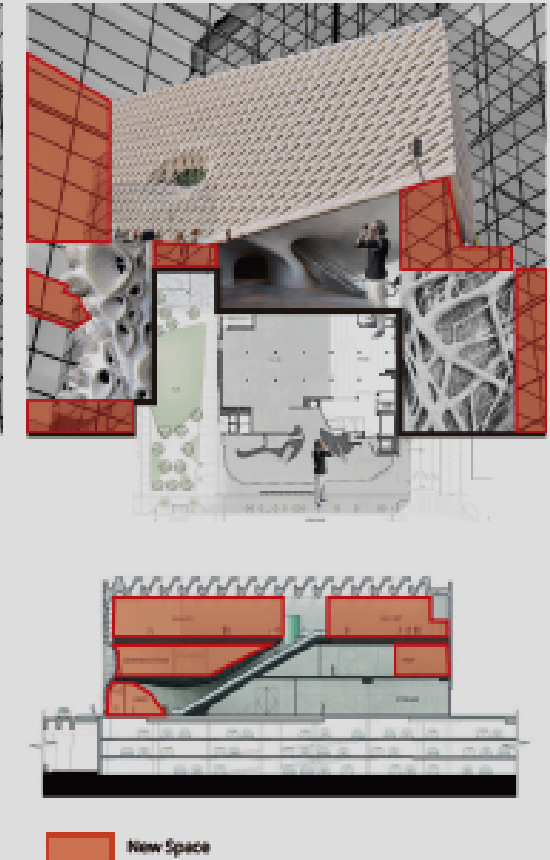
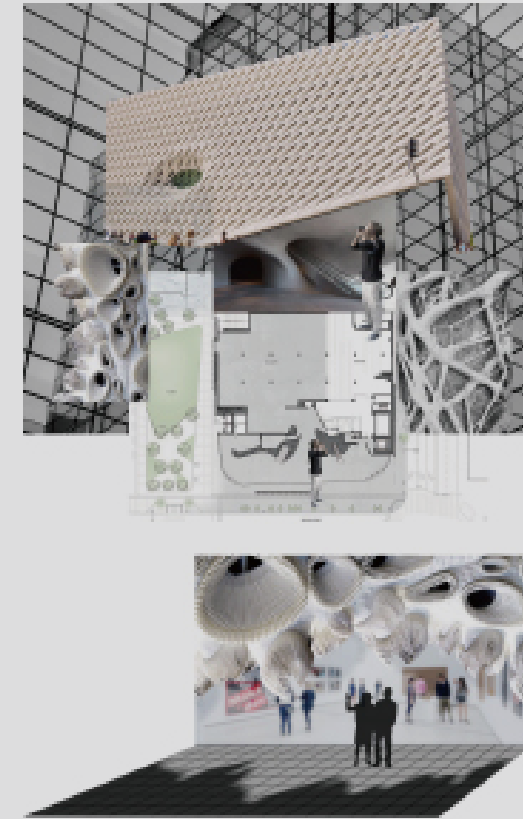
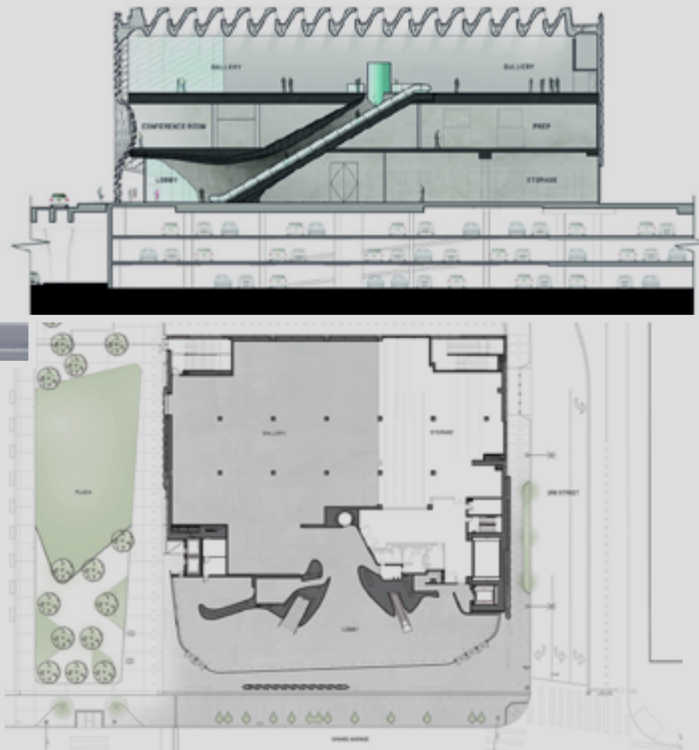
### Analysis:

By adding a second system, the building increases its appeal from outside to inside. This system is similar to the original building in terms of structure and form, and both are nested two geometric shapes. But by offsetting the inner rectangle position and reducing the area, a more interesting and attractive space system is created.





## The Broad Museum

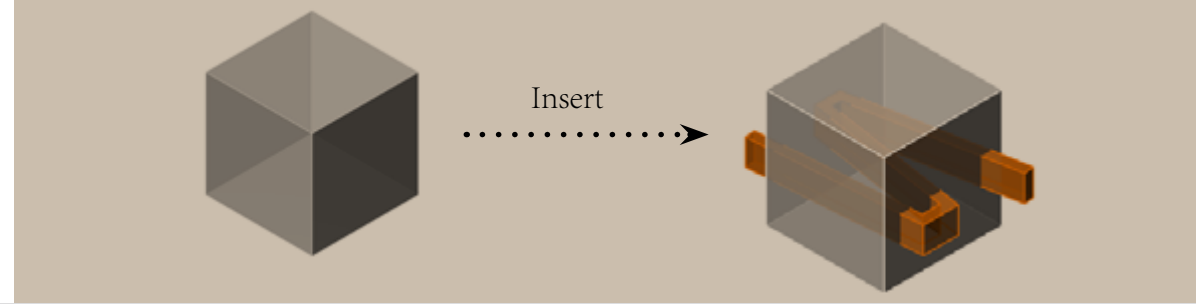


Dubbed the veil and the vault, the museum design merges the two key programs of the building: public exhibition space and the storage that will support The Broad Art Foundation extensive lending activities. Rather than relegate the storage to secondary status, the vault plays a key role in shaping the museum experience from entry to exit.

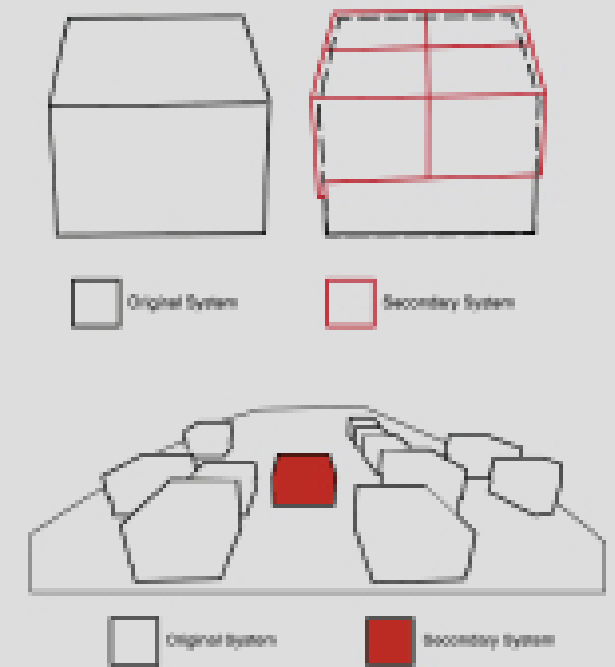
### Analysis:

Through a parametric system, it covers the biomimetic internal structure lightly and squeeze out strong contrast spaces. By covering the new system, new subspaces is created with more appealing light and shadow, at the same time, the secondary system can be a guide to the internal complex space.





## Social Complex in Alcabideche



### Introduction

Located in the metropolitan area of Lisbon, next to what was a clandestine urban area and rural fields, with a total construction area of approximately 10.000 m<sup>2</sup>, the Social Complex of Alcabideche aims to reconstitute a Mediterranean life style in which the outdoor spaces of streets, plazas and gardens are like an extension of the house itself.

### Analysis:

The roofs of the housing units have other functions. In the event of an emergency, users can activate an alarm that alerts the control station located in the central building and the box— shaped roof's light changes from white to red.

Environmental balance inside the houses is due to the white box of the roof's ability to reflect light and the thermal efficiency of the cushion of air created between the roof and the habitable area on the base of exposed concrete.

## CASE STUDY

### NURSING HOME



## Nursing Home

Nursing home is a place for those people who don't need to be admitting in a hospital but can't be cared at home. It is basically a small classified housing accommodation with health management especially for elderly citizens. Nursing homes specialize in long-term care. Nursing home is also known as convalescent home, care home, rest home or intermediate care.



# NURSIN HOME

## RETIREMENT AND NURSING HOME WILDER KAISER

Project: Retirement and Nursing Home Wilder Kaiser

Architects: Drschinger Architekten, SRAP Sedlak Rissland

Year: 2017

Area: 5120 m<sup>2</sup>

Location: City: Scheffau am Wilden Kaiser, Austria





# NURSIN HOME

## 92-BED NURSING HOME

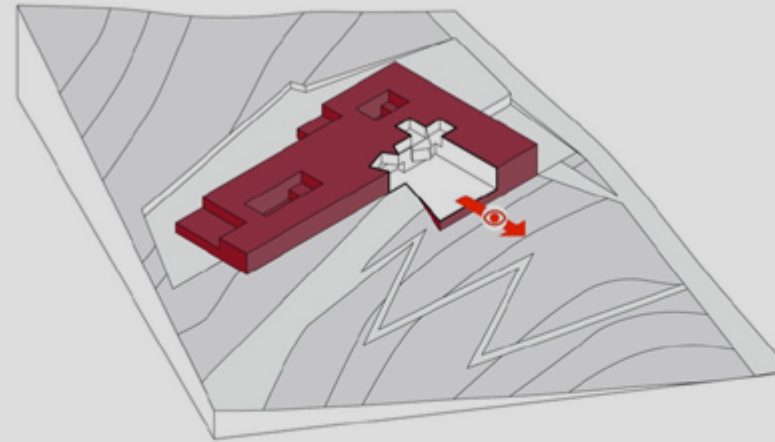
Project:92-Bed Nursing Home

Architects:Dominique Coulon & associs

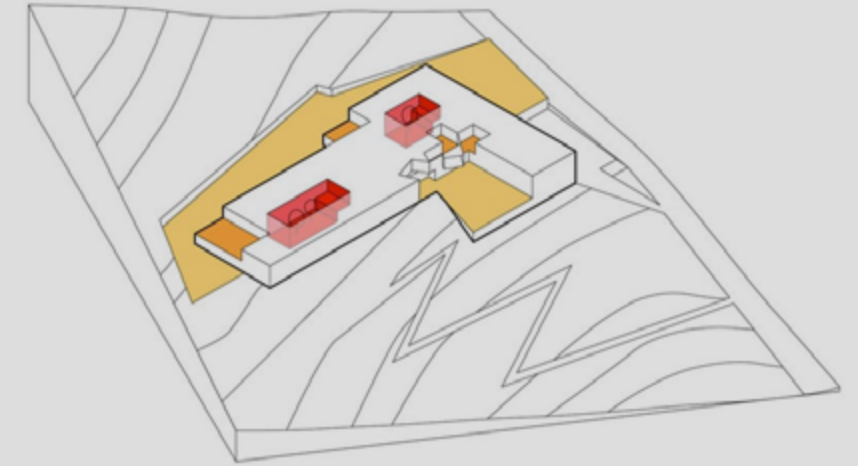
Year:2014

Area:5395 m2

Location:Pont-sur-Yonne, France



the entrance forecourt is designed like village square as a balcony over the river and the town



both, inner courtyards and terraces, are accesible



## CASE STUDY

### RETIREMENT COMMUNITY



## Retirement Community

A retirement community is a residential community or housing complex designed for older adults who are generally able to care for themselves; however, assistance from home care agencies is allowed in some communities, and activities and socialization opportunities are often provided.



# RETIREMENT COMMUNITY

## PETER ROSEGGER NURSING HOME

Project: Peter Rosegger Nursing Home

Architects: Dietger Wissounig Architekten

Year: 2014

Area: 5120 m<sup>2</sup>

Location: GRAZ, AUSTRIA



Apartment   Garden   Social Room   Nursing Station   Care Produce





# RETIREMENT COMMUNITY

## SANTA RITA GERIATRIC CENTER

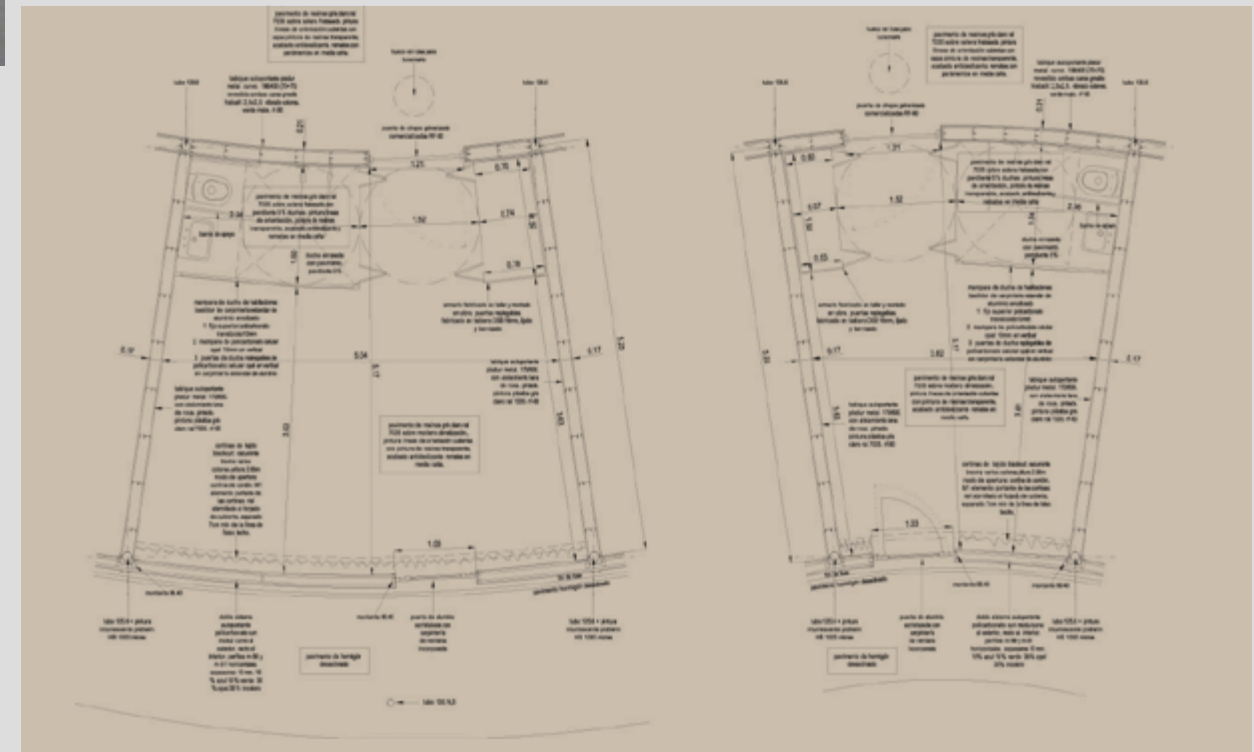
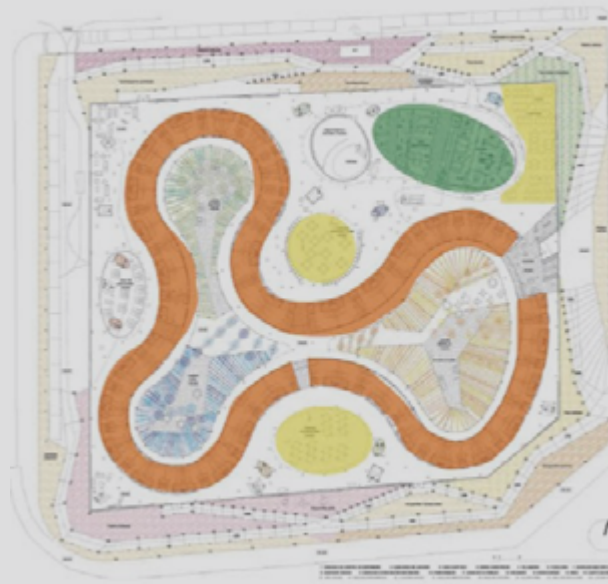
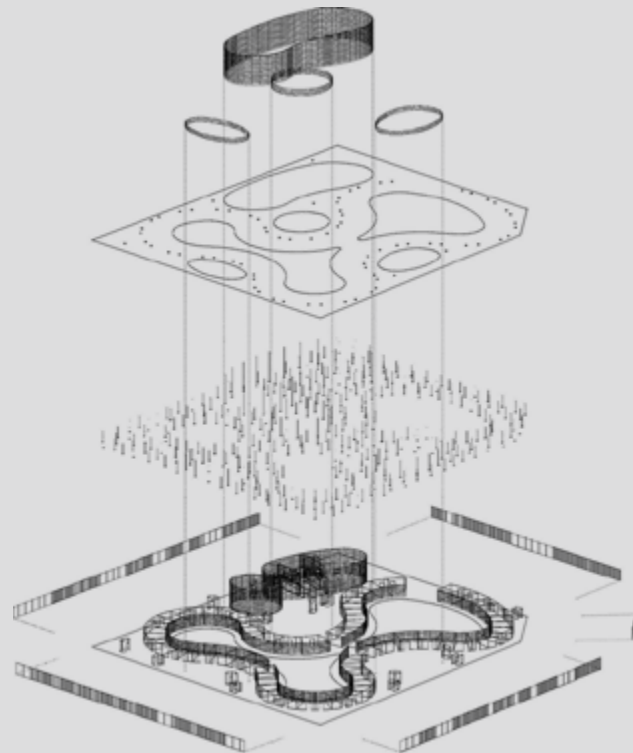
Project: Santa Rita Geriatric Center

Architects: Manuel Ocana

Year: 2003

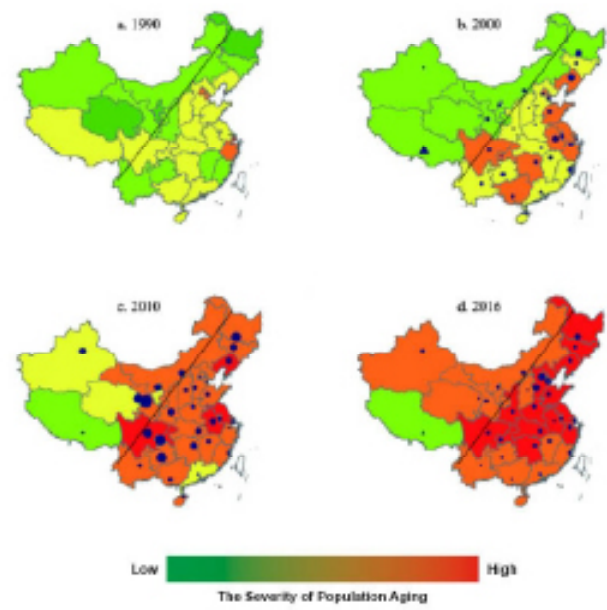
Area: 5 m2

Location: Menorca, Spain





# SITE SELECTION



Zhejiang Province is one of the first provinces to enter the aging society. As early as 1987, the proportion of the elderly over 60 years old in the total population of Zhejiang Province has exceeded 10%, 12 years ahead of the national average level.



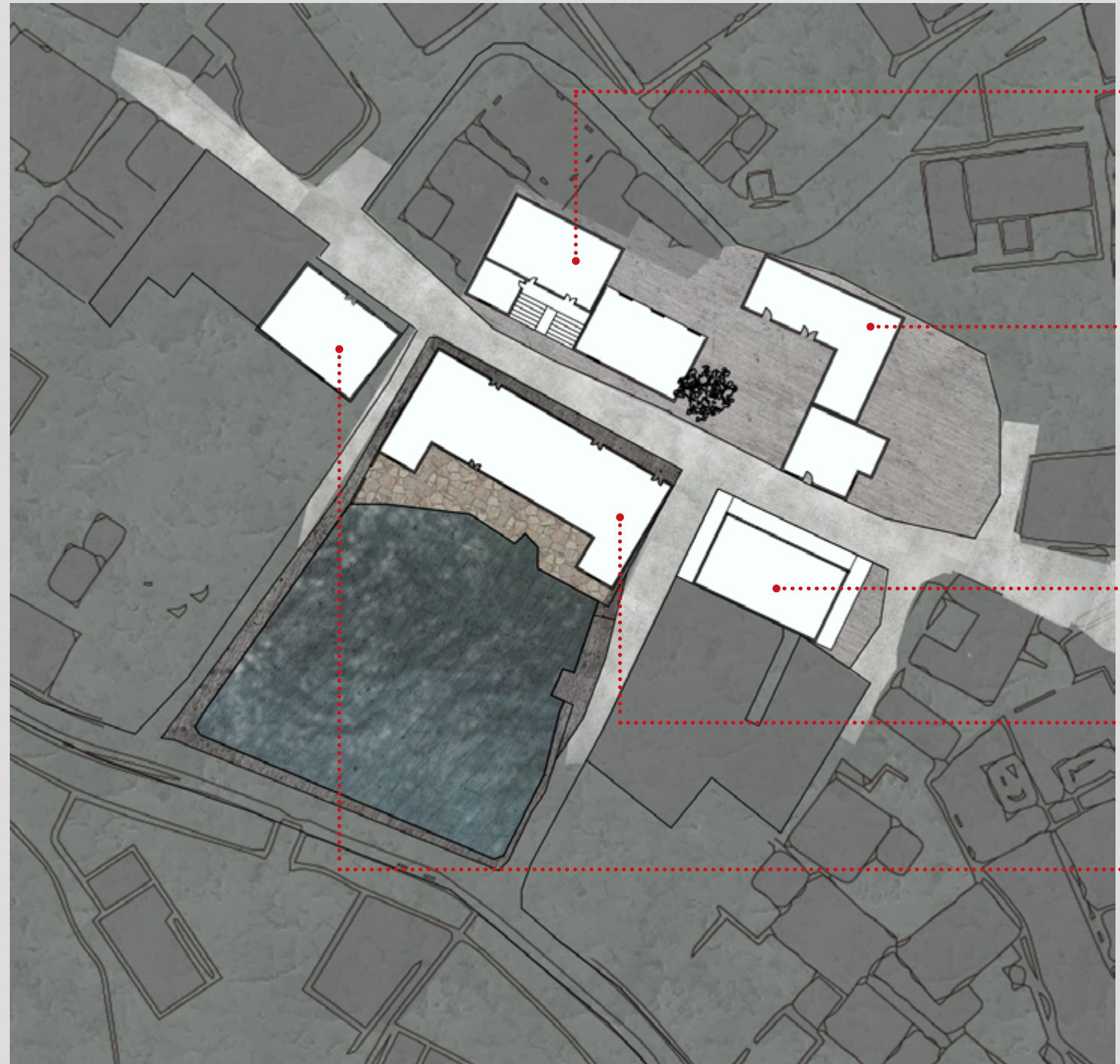
Photos of the Five Selected Buildings





- Village secondary road
- Village main road
- Village road
- The national road

It is located in the most convenient area for the elderly in the village. It also facilitates access to external facilities and visitors. The people in Juetang Village are mostly elderly. And about 10% of them are needed to use wheelchairs. According to the sunshine analysis, the light on the top of the building is very good due to its low height. However, due to the narrow road, the light of the road is limited.



Residence

Residence

Shop+Residence

Senior Activity Center

Residence



Reorganize all the Program in the Existing Site

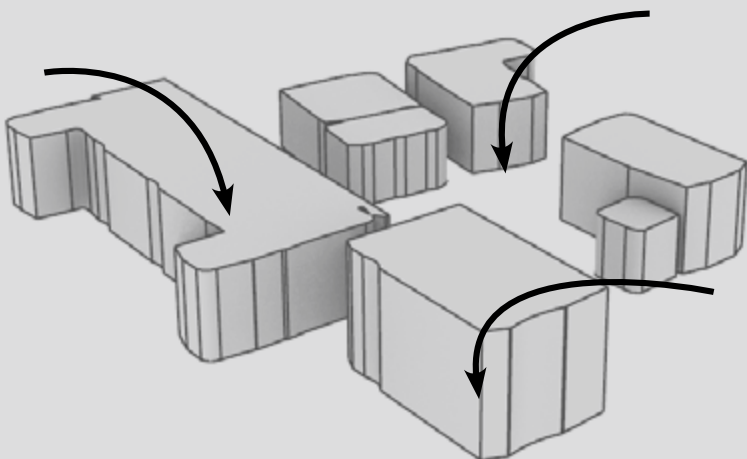
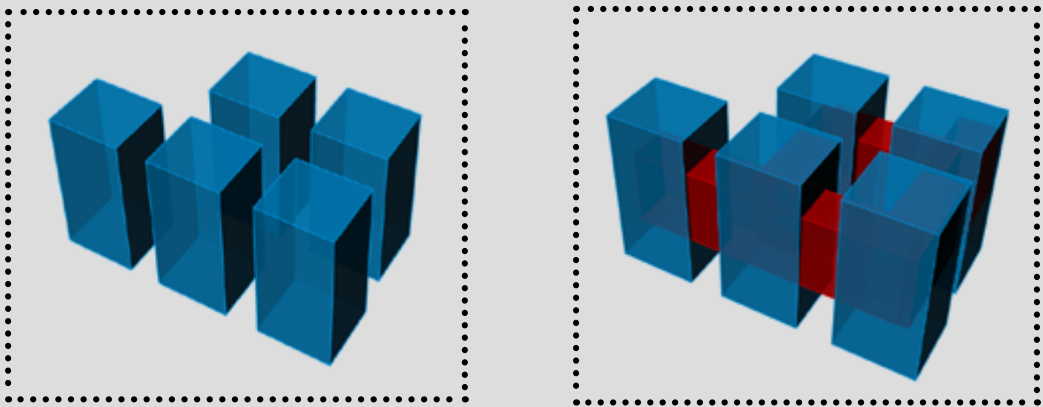


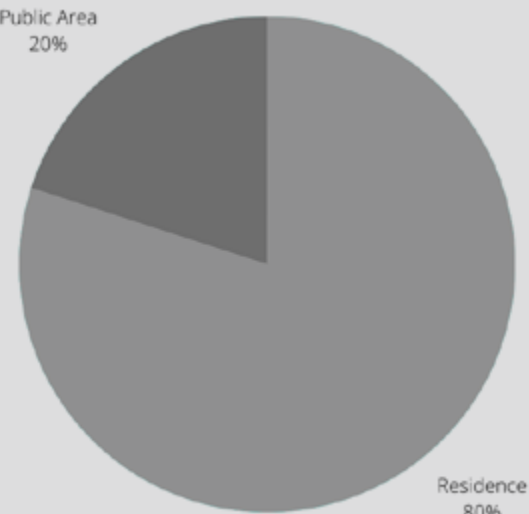
Diagram of Reorganize all the Program

Improve Spontaneity



Secondary System

Diagram of Inserting the Secondary System to Improve Spontaneity



Original Program



New Program

Pie Chart Showing Changes in the Proportion of Public Area

According to the existing program, there are too many living areas and many uninhabited spaces. Therefore, I choose to reorganize the area of residential area and public area, and increase the public area to promote the communication between residents.

Original Public Program	New Public Program	
Canteen	Reception	
Meeting	Therapy Room	Spa Days and Self-Care Pet Therapy Music Therapy Basic Health Treatment
Kitchen		
Outdoor Acitivity Area		
Shop	Social Room	Daily: Wii Sports Book Clubs Chess Room
Sell vegetables		
		Weekly/Mothly: Gardening Clubs Group Exercise Classes Family Gathering

Figure6.1.4 Chart Showing the Original Public Program and New Public Program

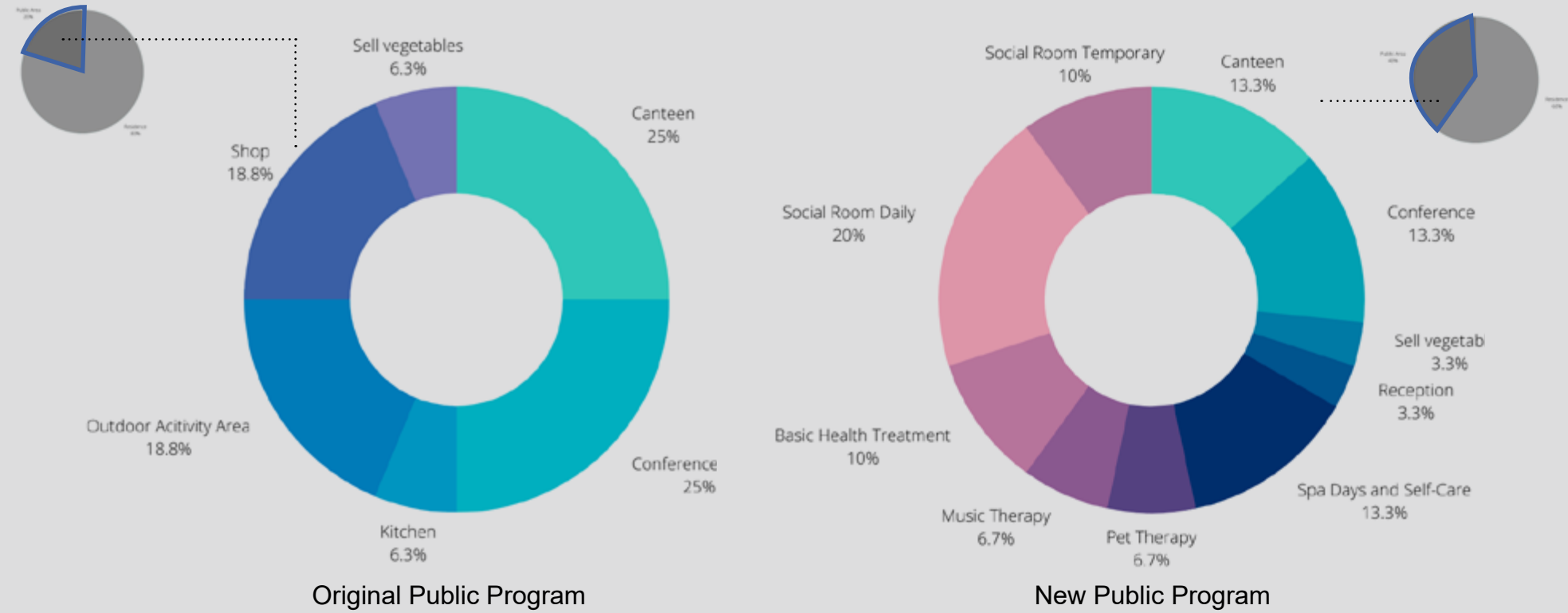
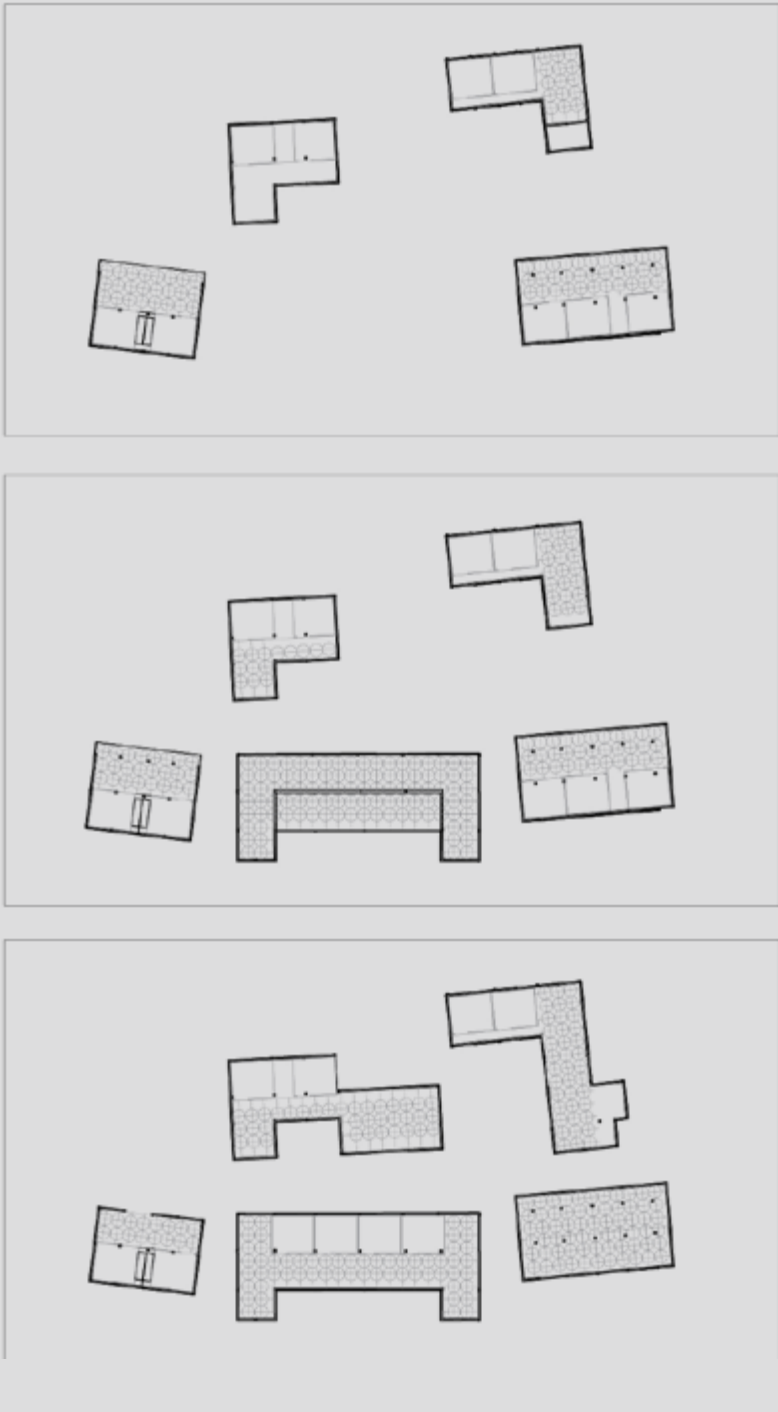


Figure6.1.5 Chart Showing the Proportion of Original Public Program

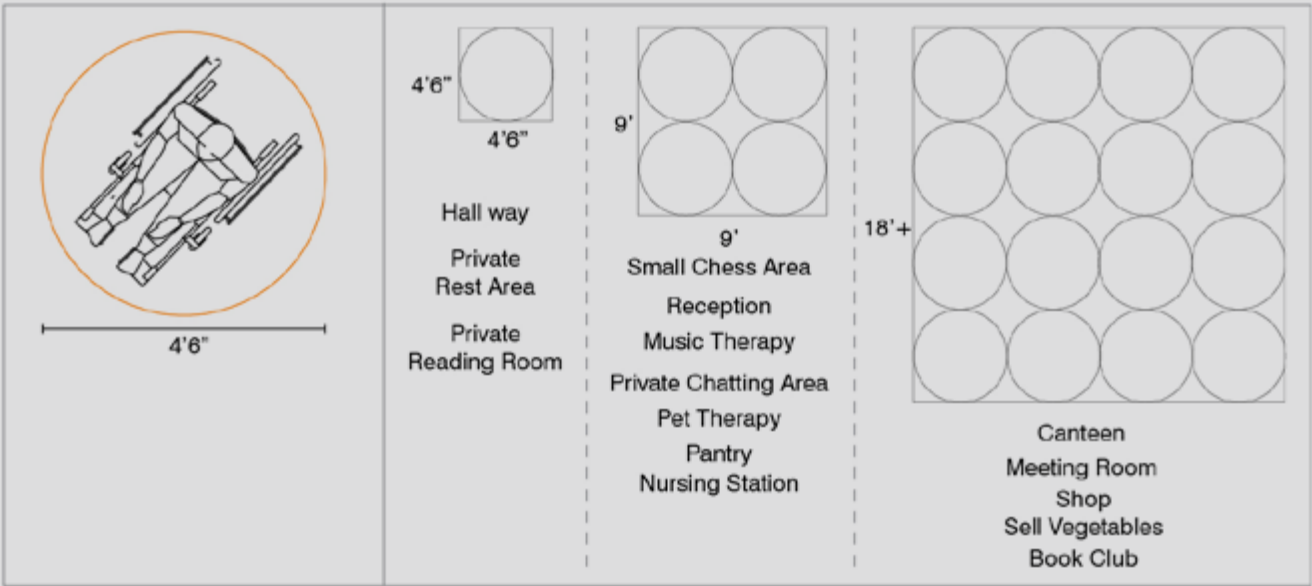
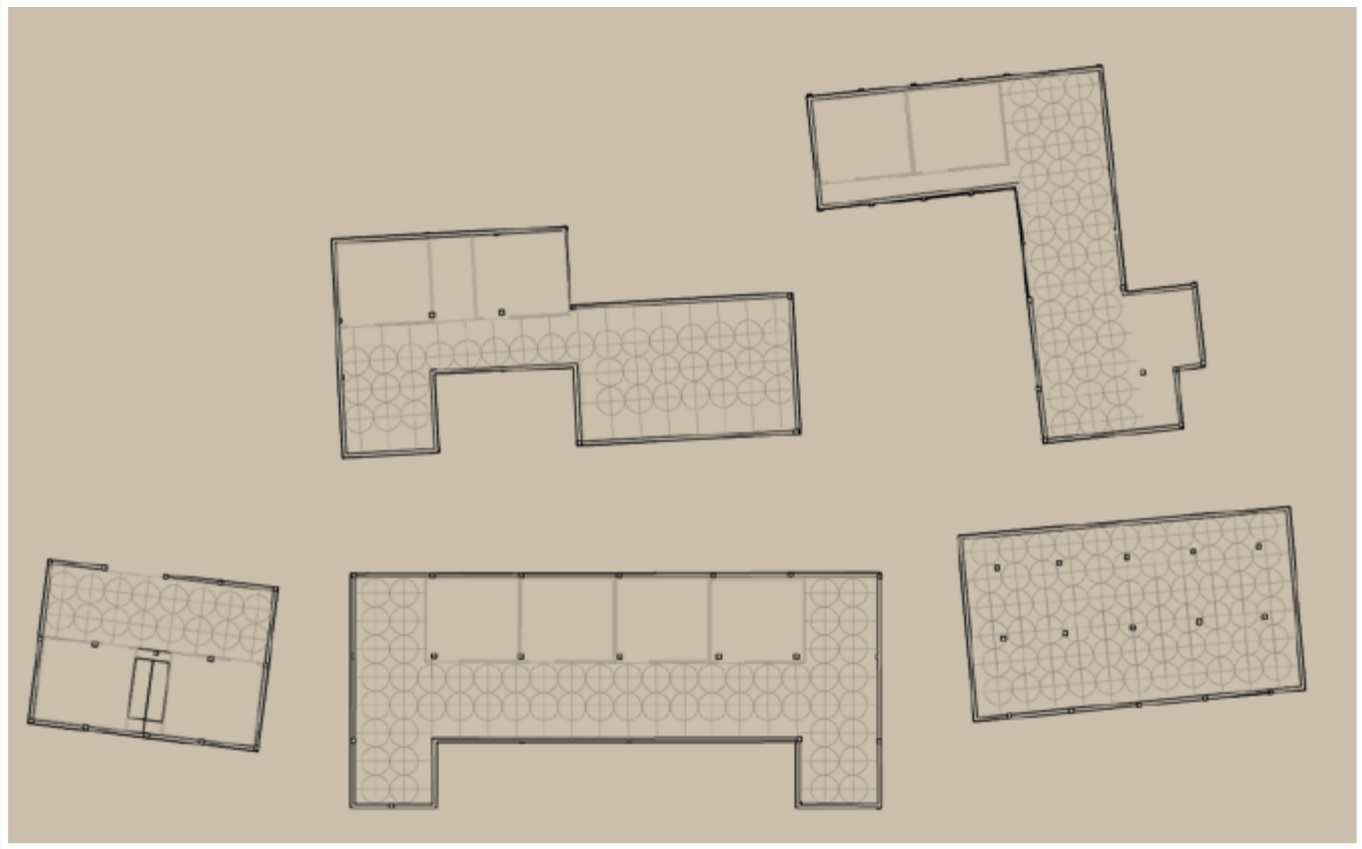
Figure6.1.6 Chart Showing the Proportion of New Public Program

Compared with the original public programs, and the psychological and physiological situation of the local elderly. Therapy room and social room are added to care for the physical and mental health of the elderly on the premise of ensuring their basic eating and living needs.

DESIGN APPROACH – GROMETRY



Geometric Analysis of Three Floors

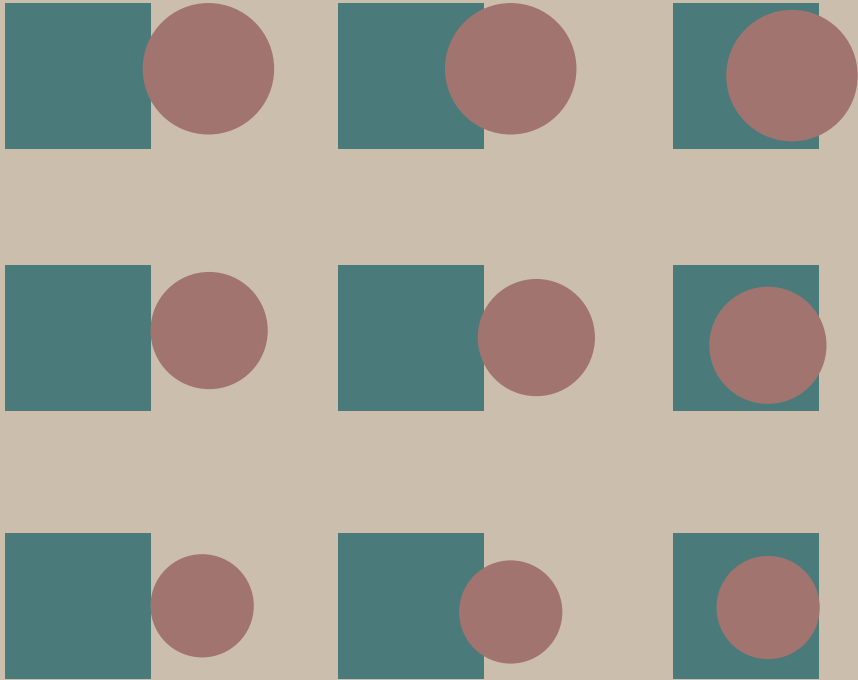
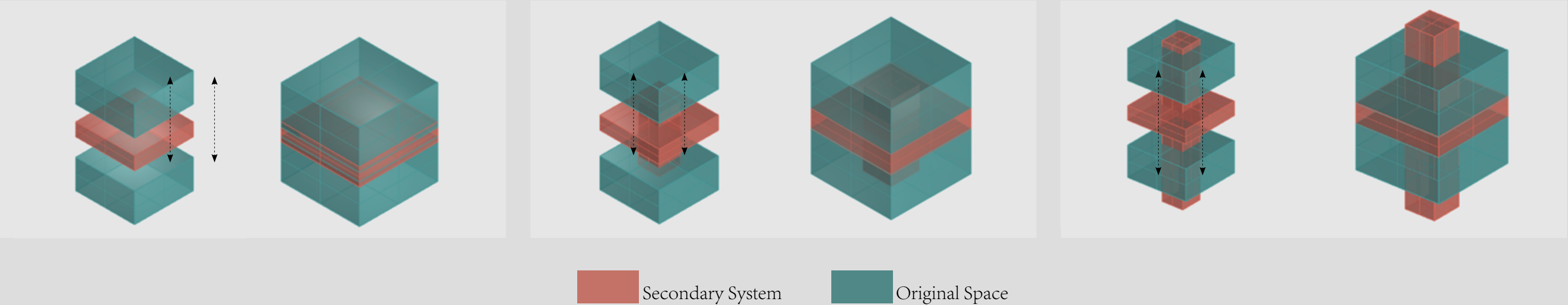


Geometric Analysis of Different Programs

Taking the circle drawn by the wheelchair's rotatable range as a basic unit, the whole space is geometrically segmented. And calculate the approximate area required by different programs.



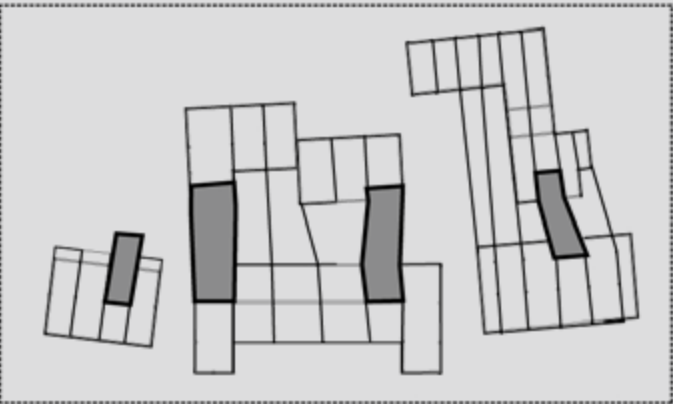
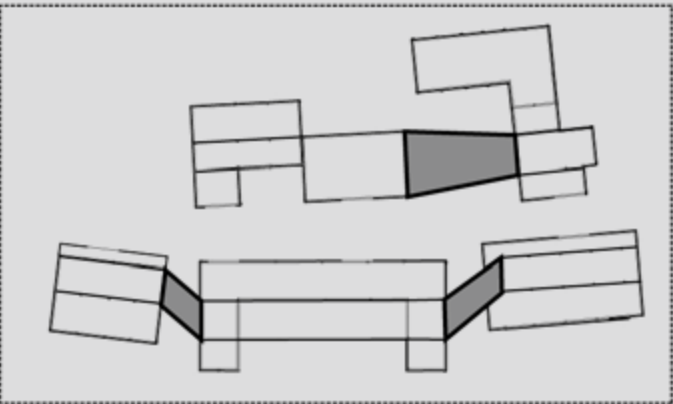
DESIGN MATRIX



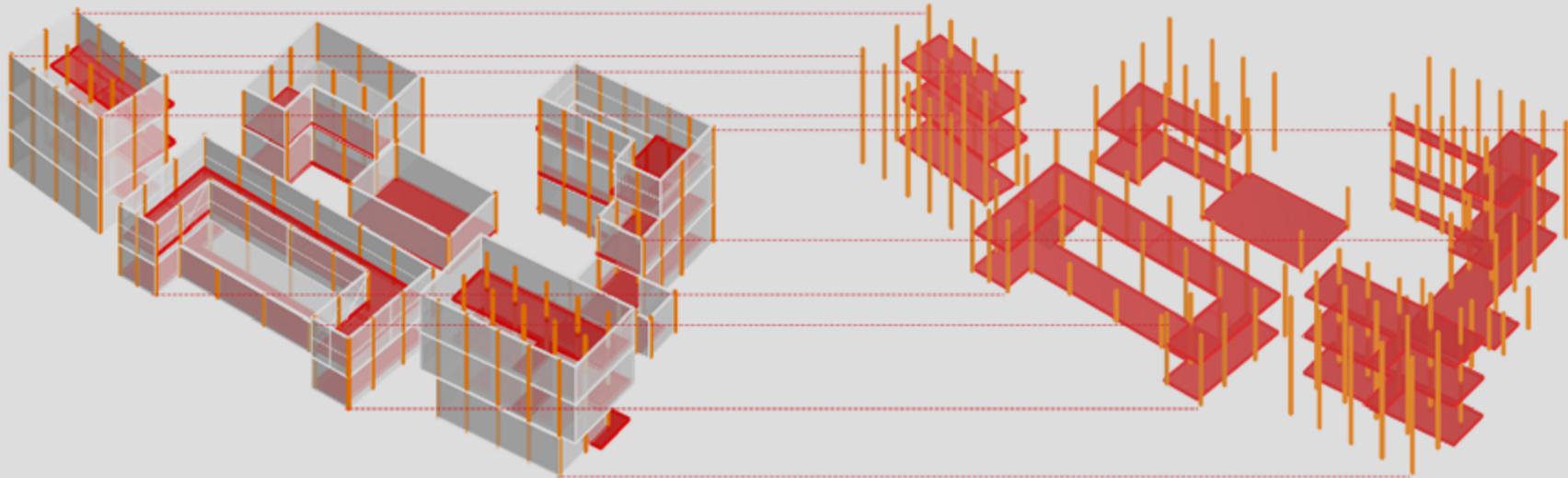
For the definition of spontaneity, in this design, my goal is to attract the elderly to the public space. So as to promote their social interaction and communication. And encourage them to walk more. So the size of the public space and the overlapping area of the public space and the living space are the factors that affect the spontaneity.

# PROGRAM-GEOMETRIC ANALYSIS

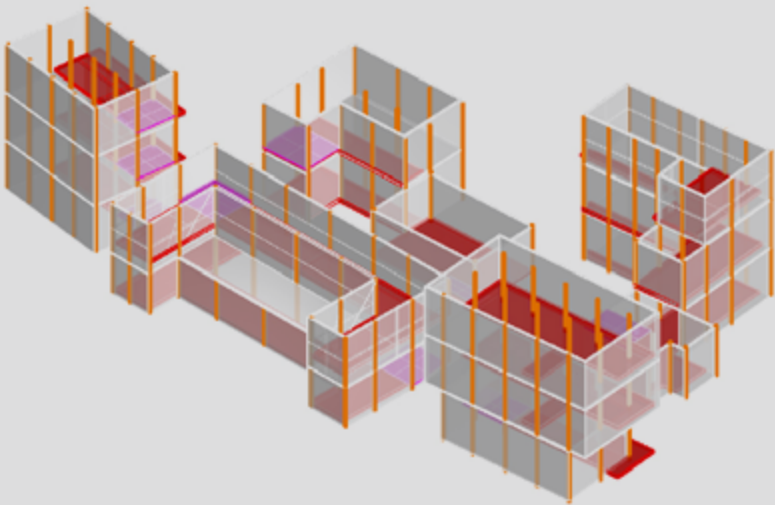
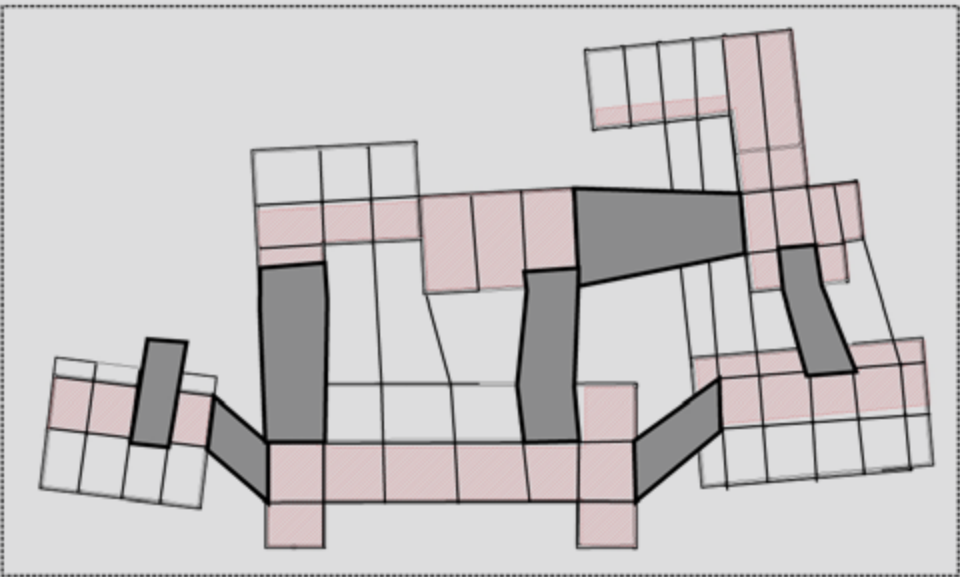
Besides the living space, other part is regarded as the basic space of the secondary system. According to the architectural geometry, considering the potential connection between different buildings, the interactive space is reserved in the corresponding buildings.



Geometric Analysis



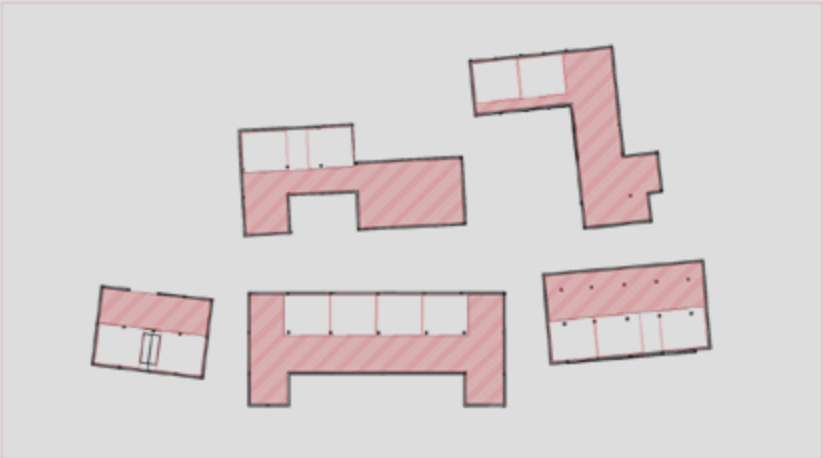
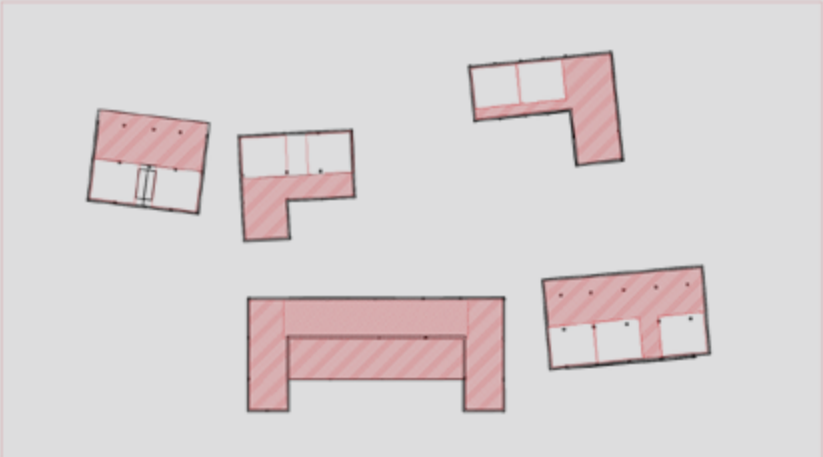
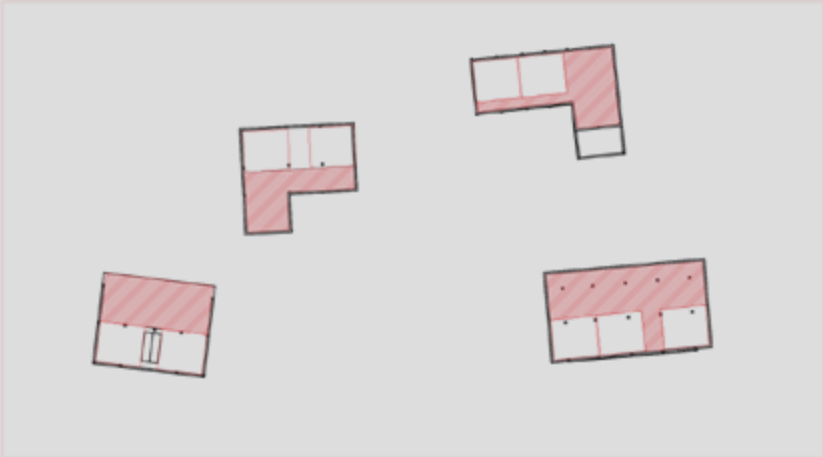
Geometric Analysis in Exploded View



Potential Connection Space

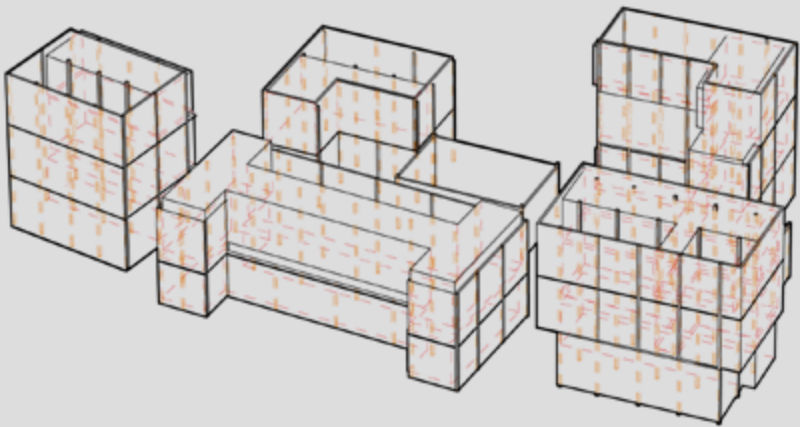
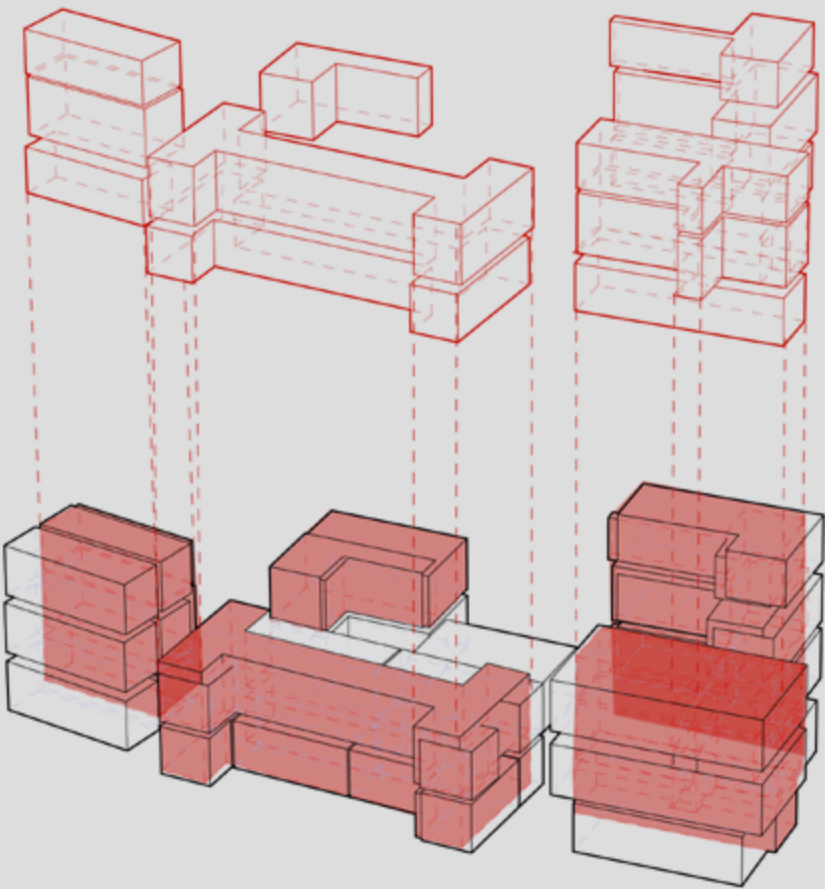
# PROGRAM-RESIDENCE & PUBLIC AREA

According to the number of elderly people around the site, the living area is suitable for 20–30 elderly people. The public activities brought about by the secondary system can provide more elderly people around for activities.



28 Residence Rooms

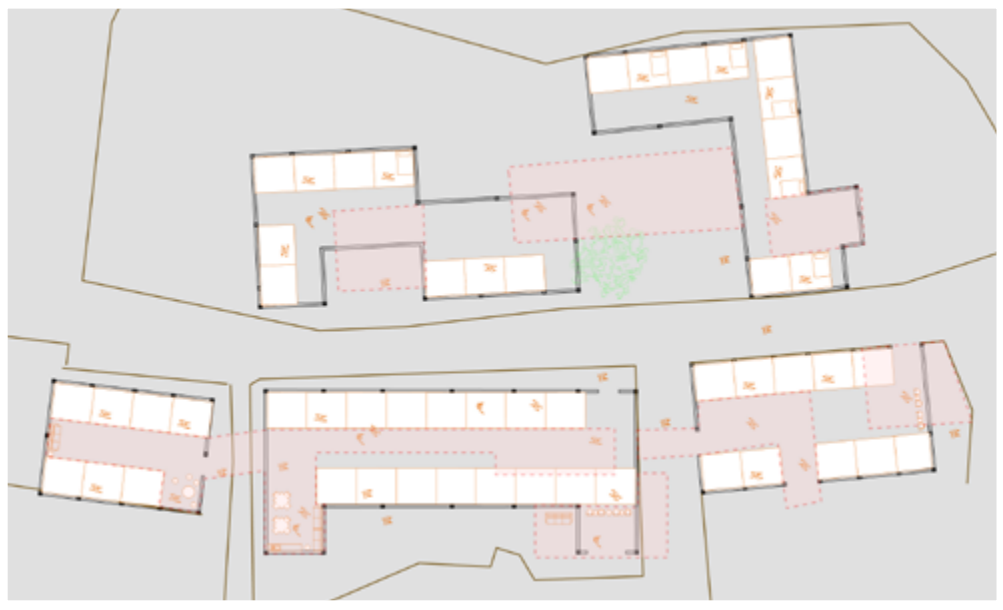
Proportion of Residence Rooms and Public Area



Exploded View of the Public Area

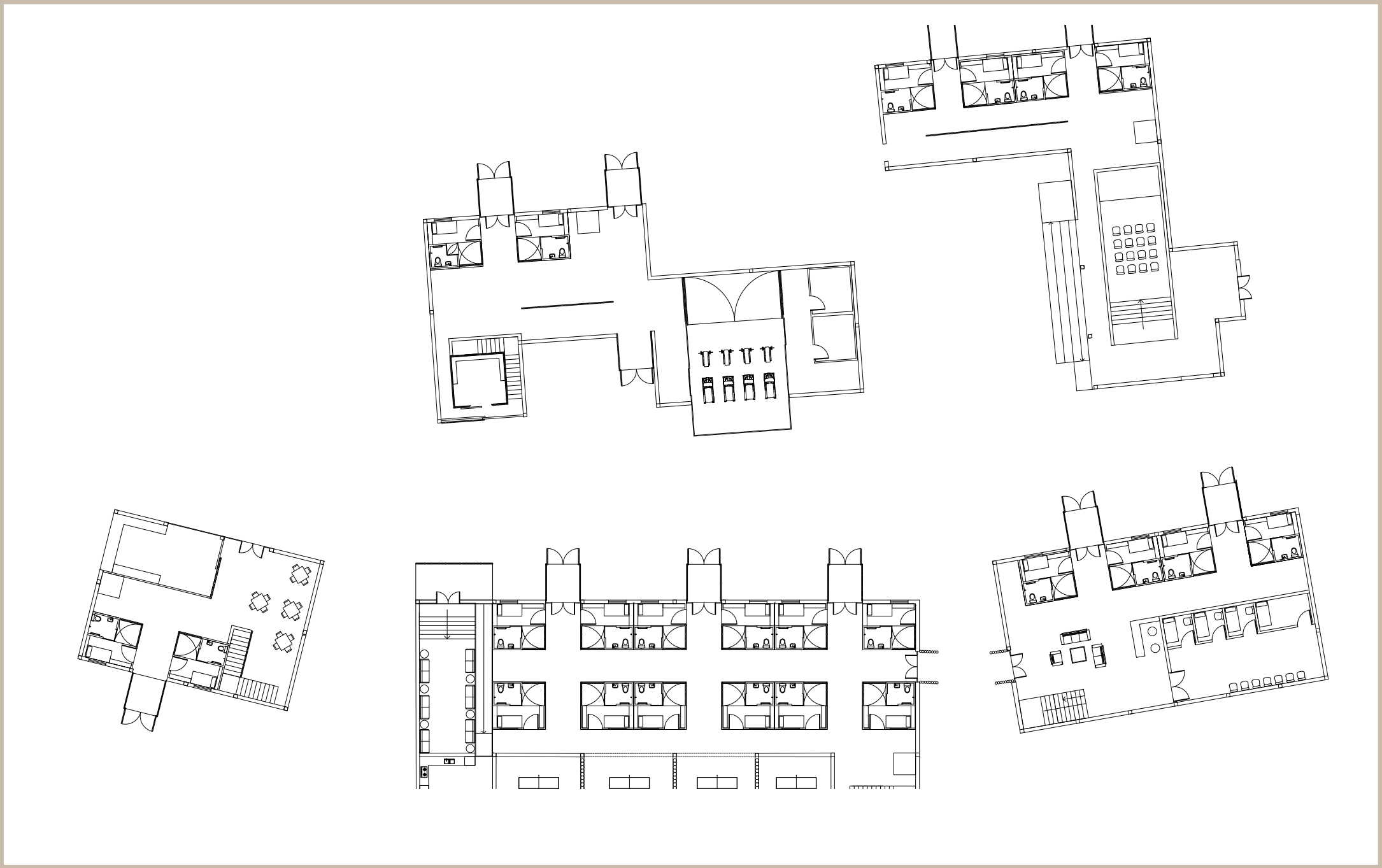


SCHEMETIC PLAN

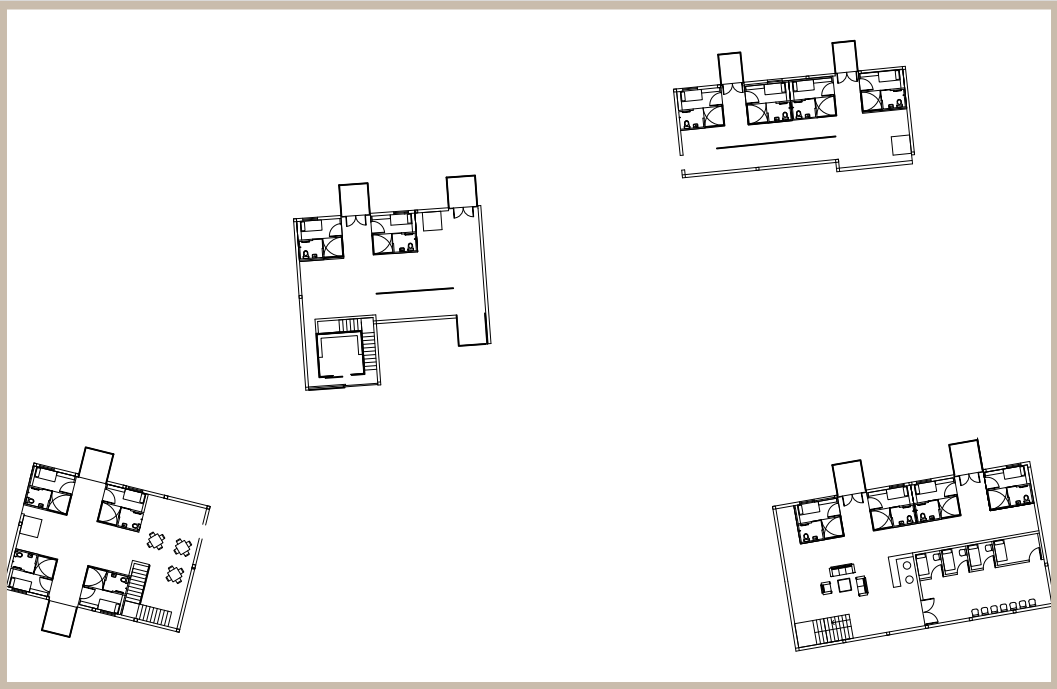
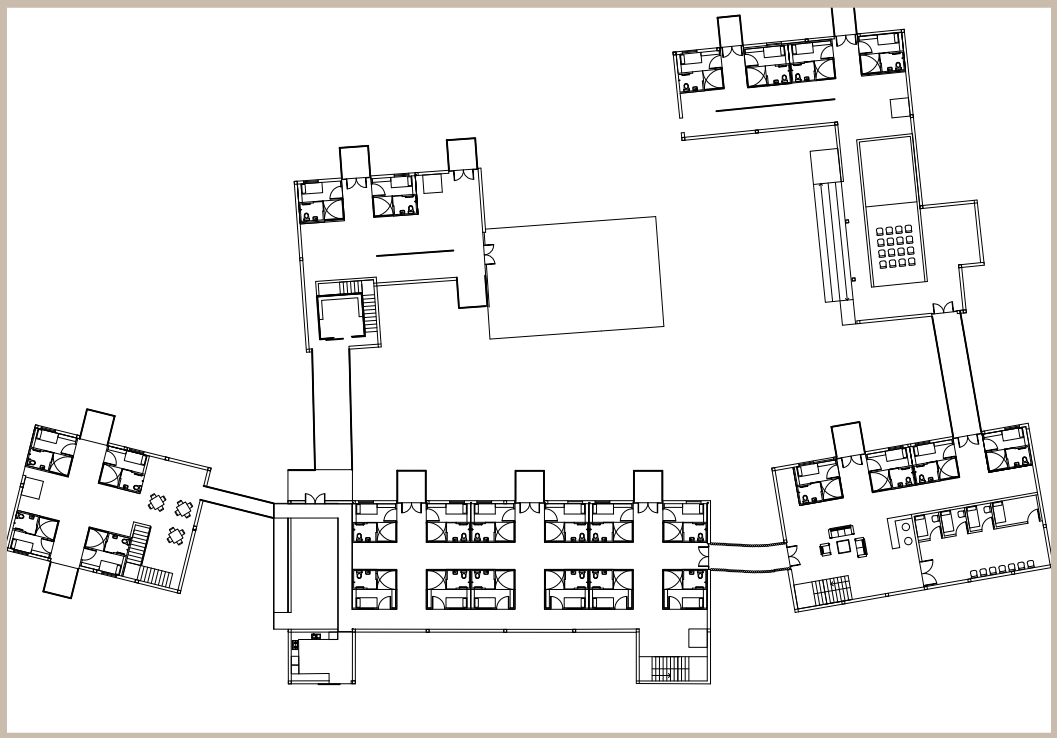


100-200 Elderly

PLAN – FIRST FLOOR – INTERIOR



PLAN – 2nd&3rd FLOOR – INTERIOR



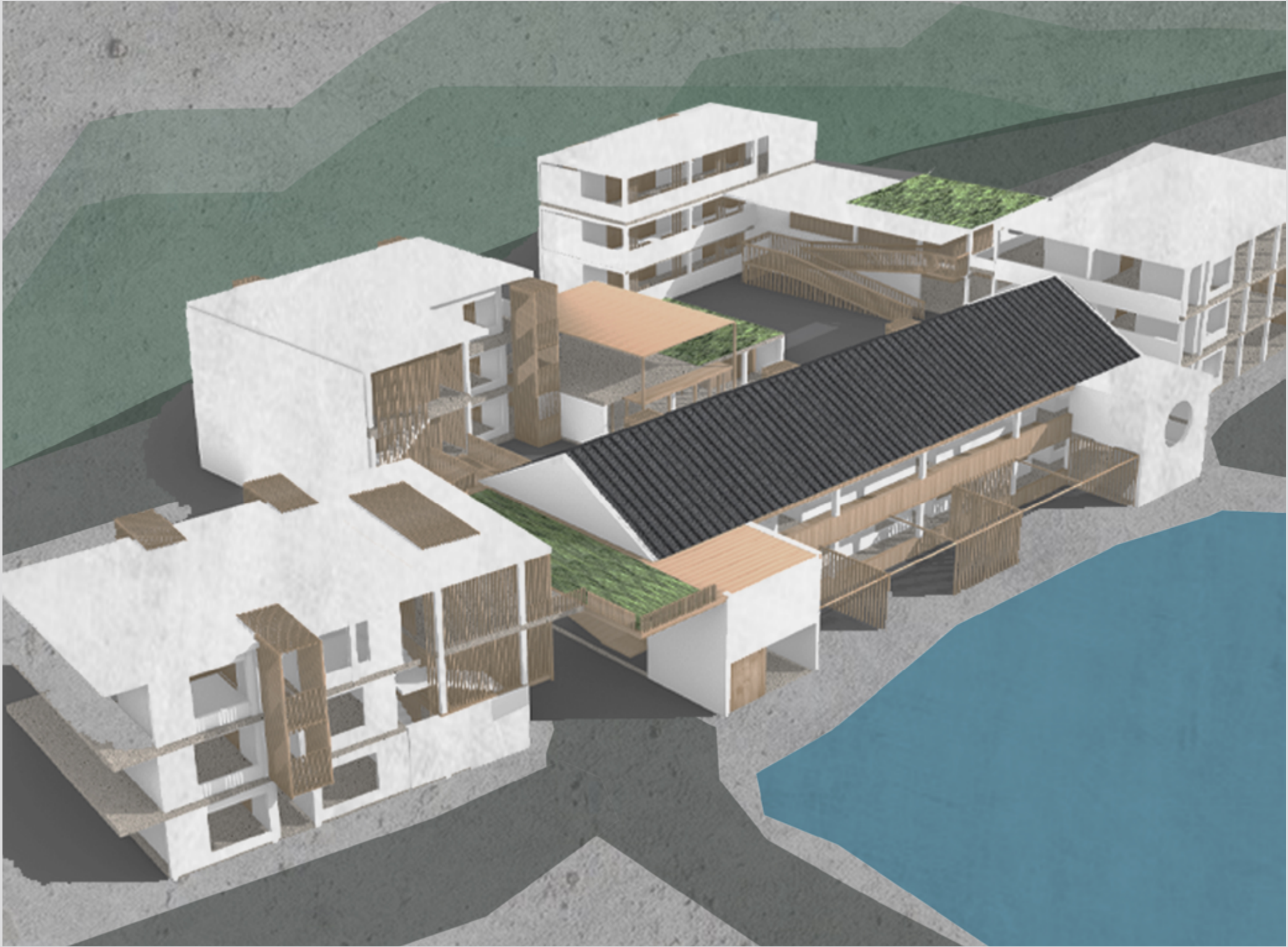


## PLAN – FIRST FLOOR – MATERIAL

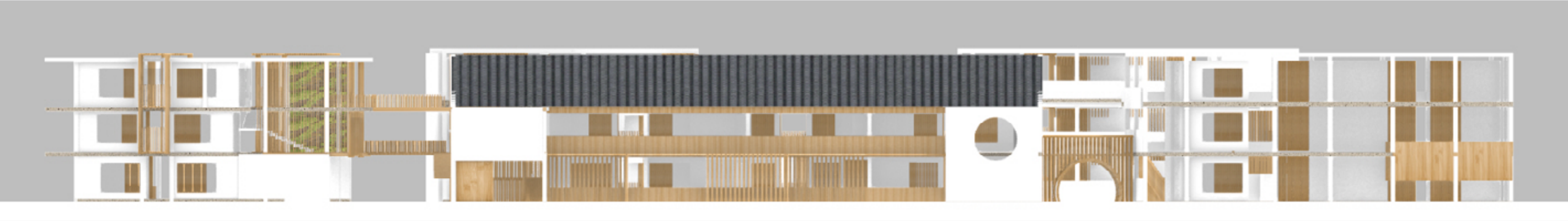
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ELEVATION

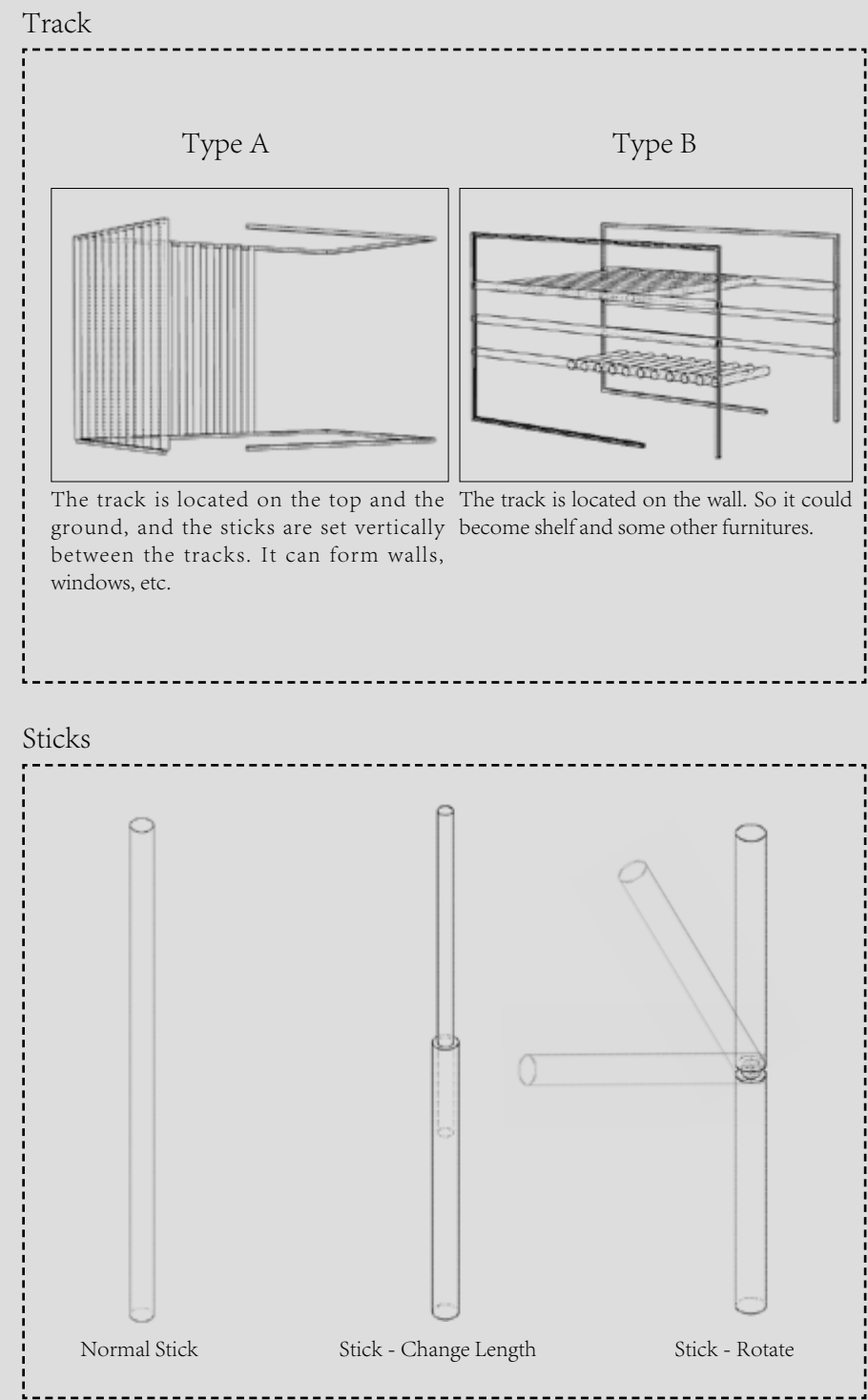
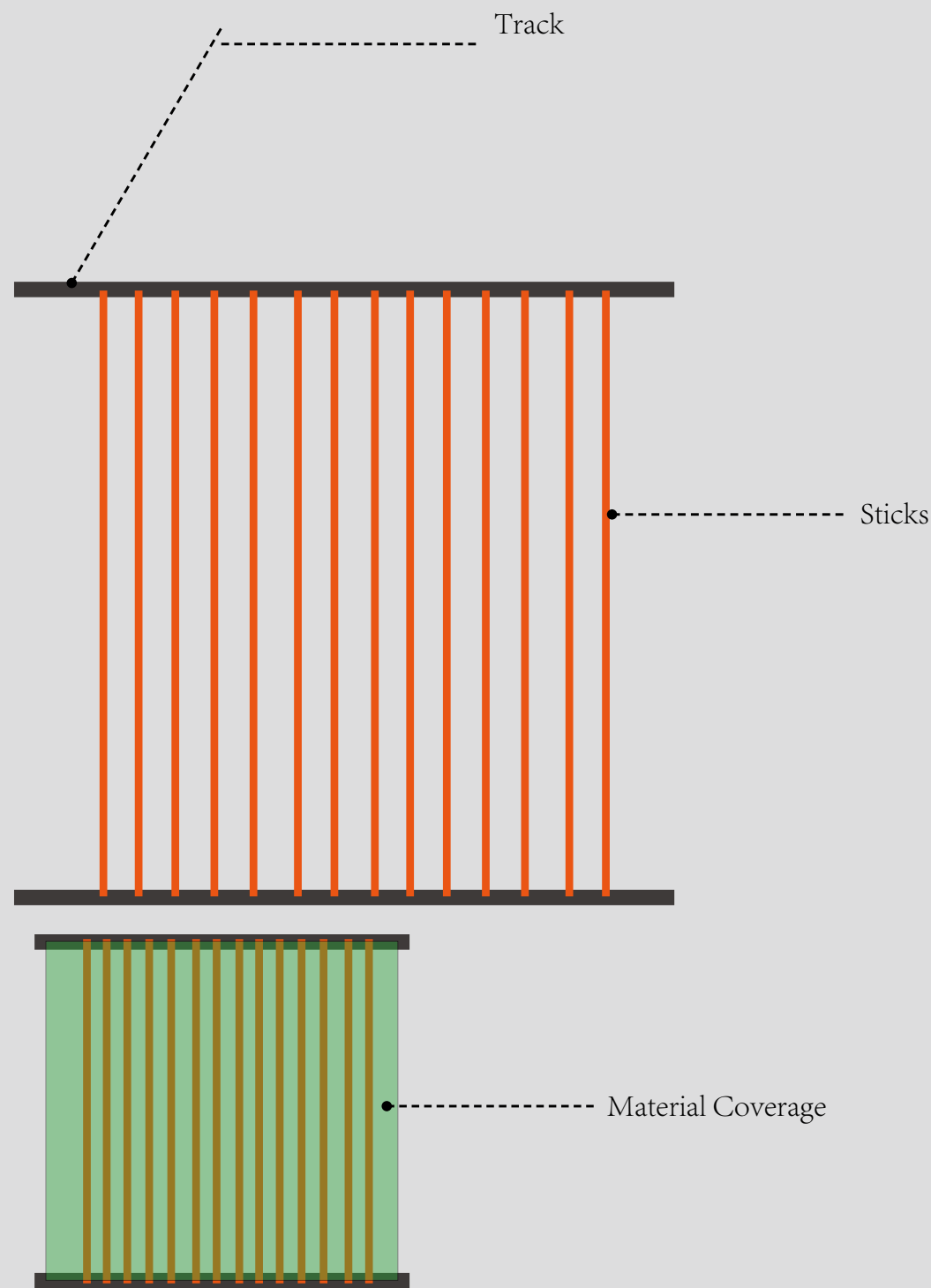


SECTION



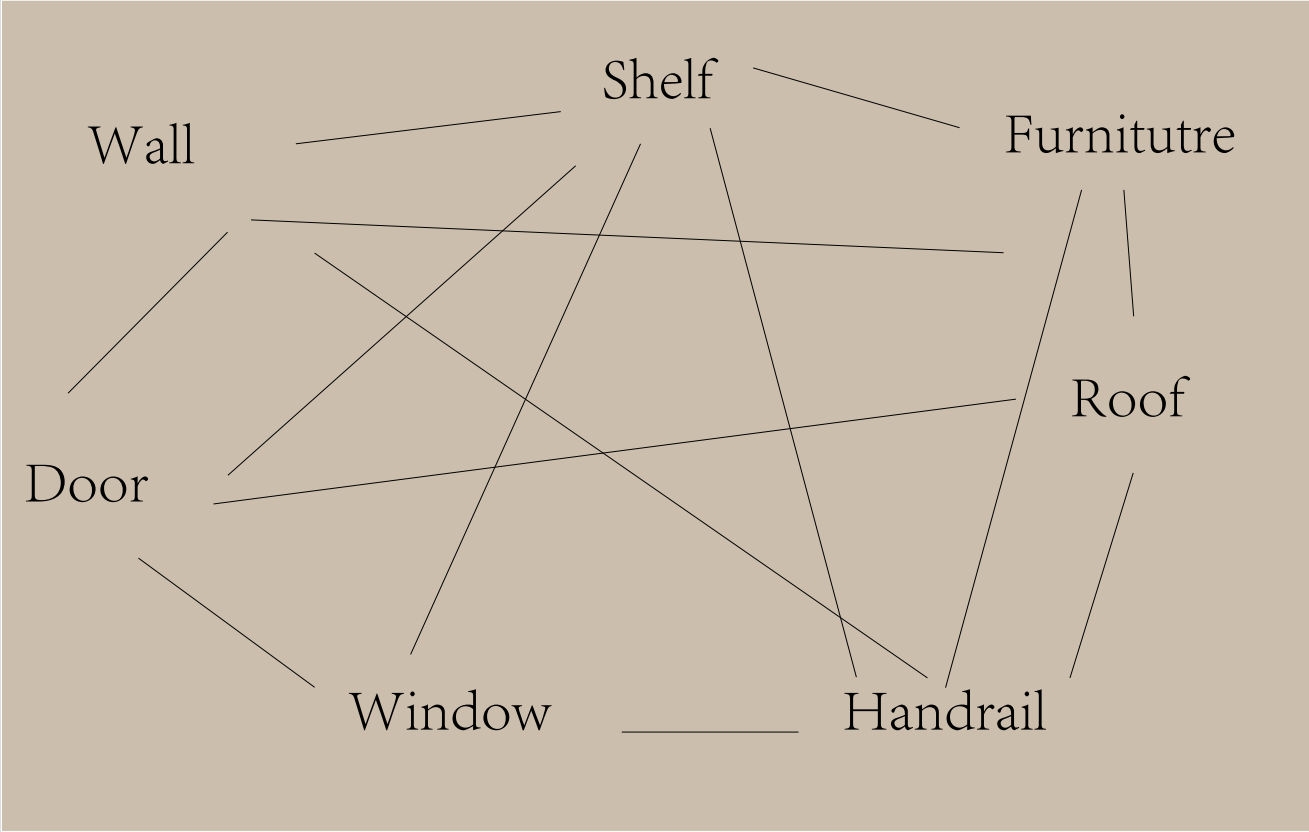


DESIGN RESEARCH – DEVELOPMENT

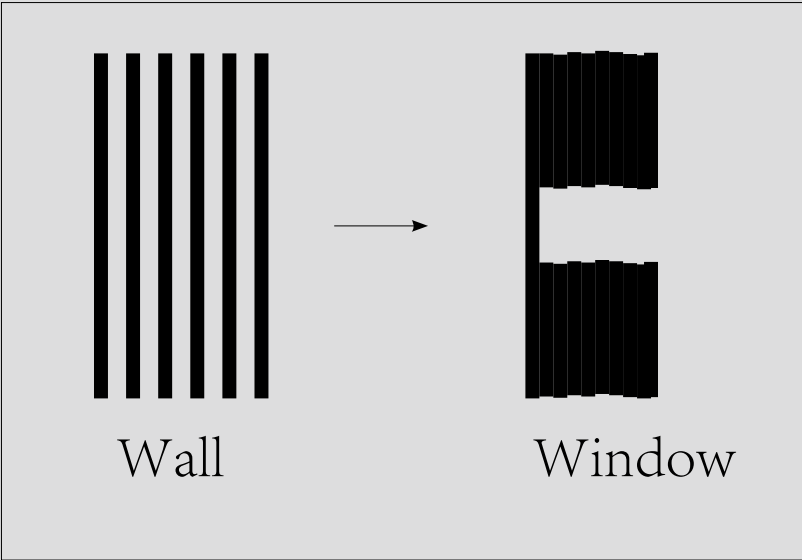
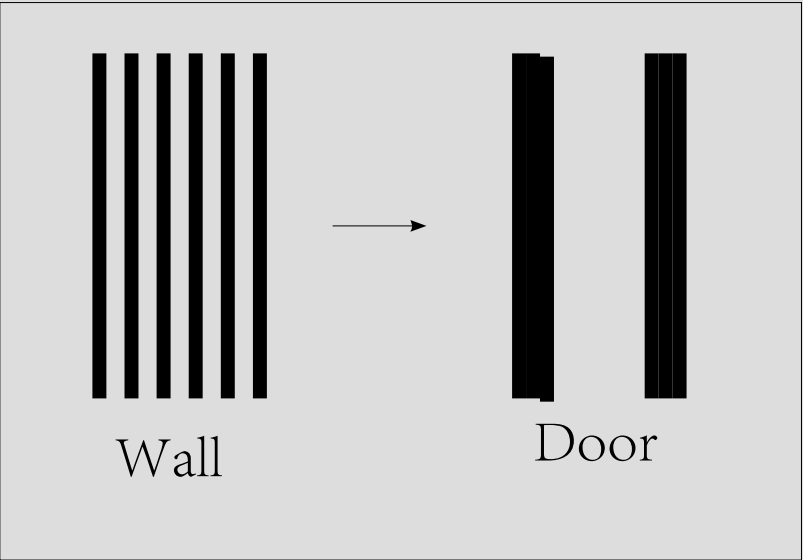
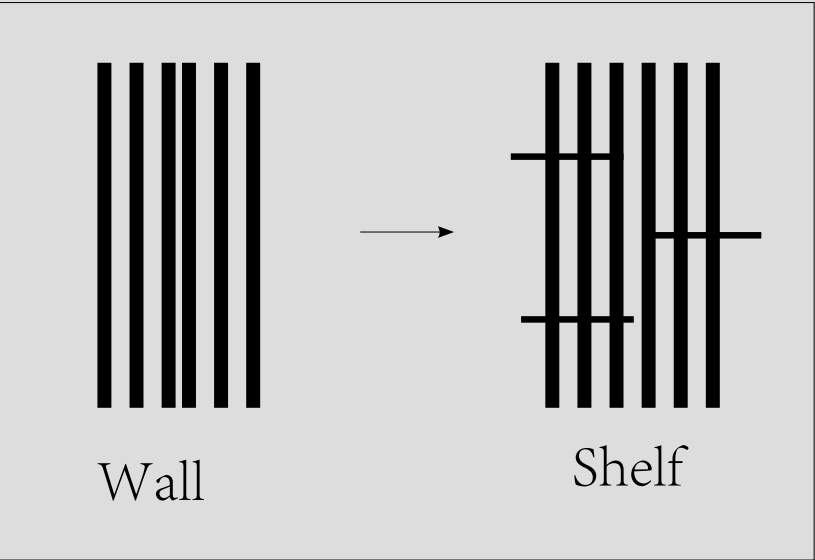
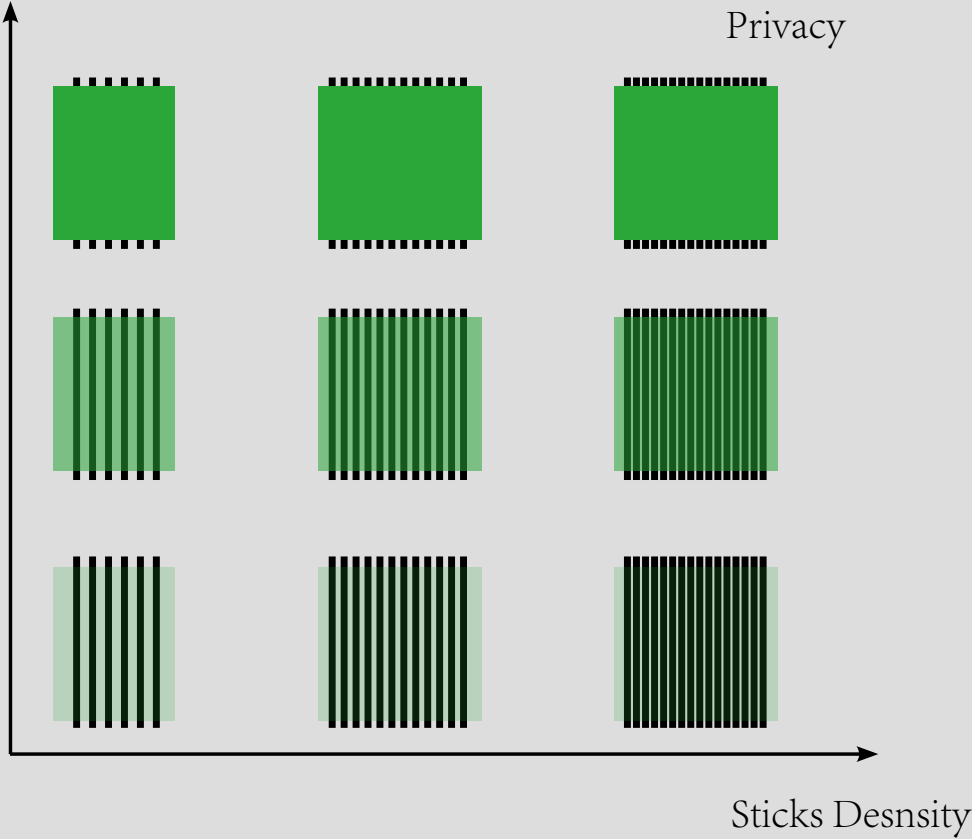


Along the boundary of the program, a series of wood rods are established as the design of secondary system, which extends from indoor to outdoor, so that each single building has a hidden connection. At the same time, as a partition, these rods divide the space and create an interesting living environment and dynamic circulations.

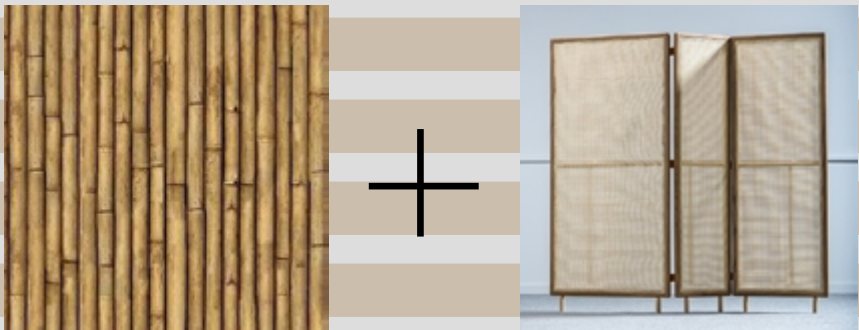
Transformation



Transparency of Covered Material



DESIGN RESEARCH – LANGUAGE



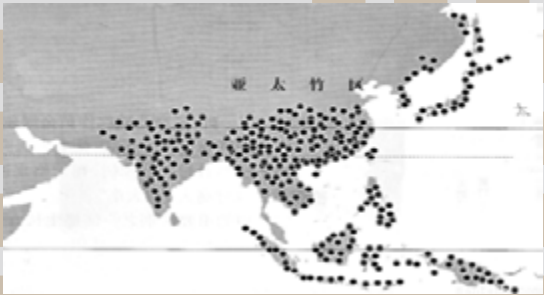
Bamboo Folding Screen



Bamboo



Bamboo Structure



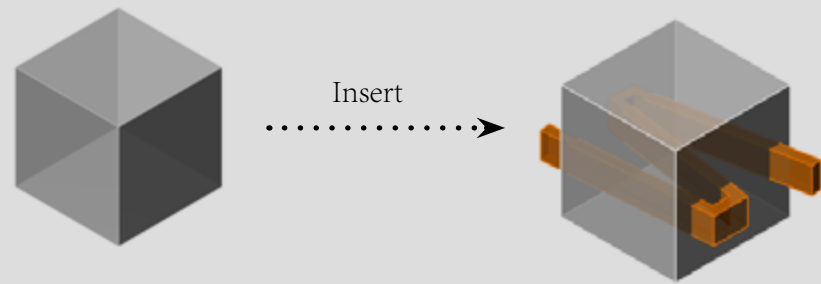
Distribution of Bamboo Forests in Asia Pacific Region



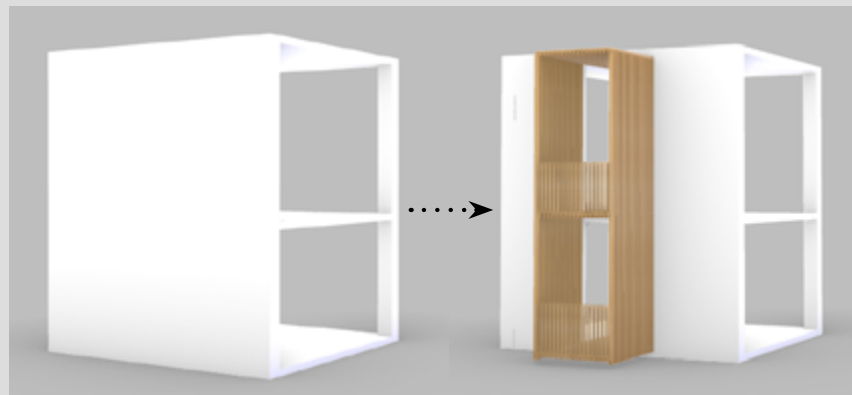
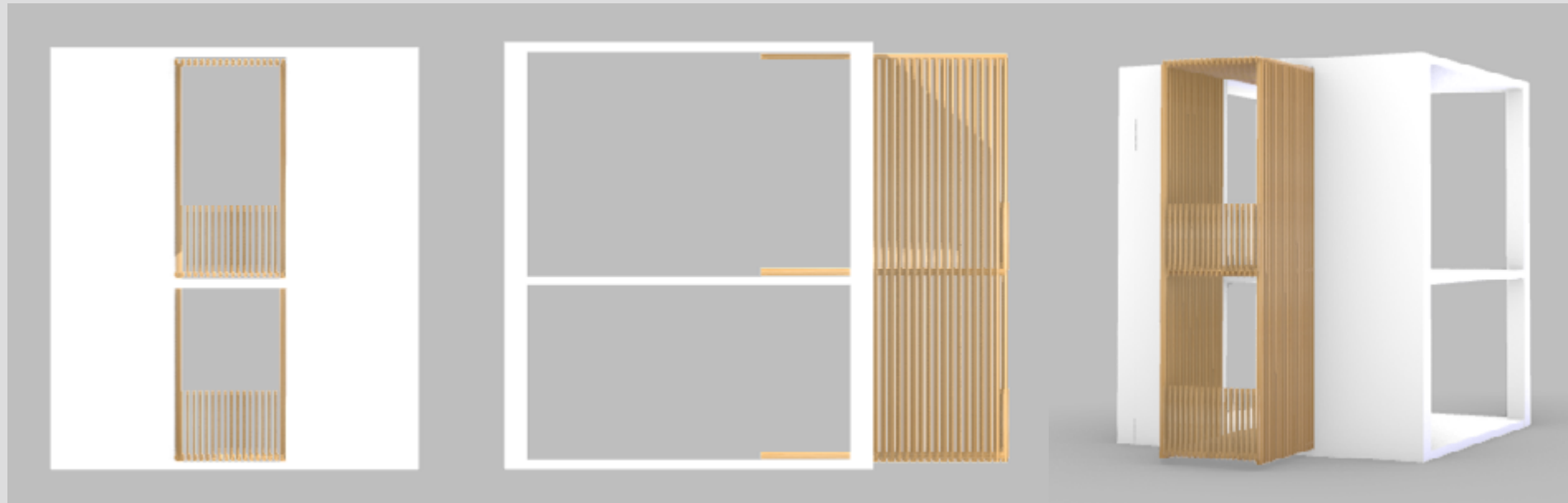
Wooden House Projecting Over the Water

Bamboo is often used as the scenery in Chinese classical gardens. The combination of bamboo with water and rocks is one of the most typical and characteristic landscapes in Jiangnan gardens. Bamboo is used for construction, and it has a long history in southern China.





To encircle with or as if with a girdle.



VEGETABLE SALES + PLANTING AREA



READING AREA + LIBRARY

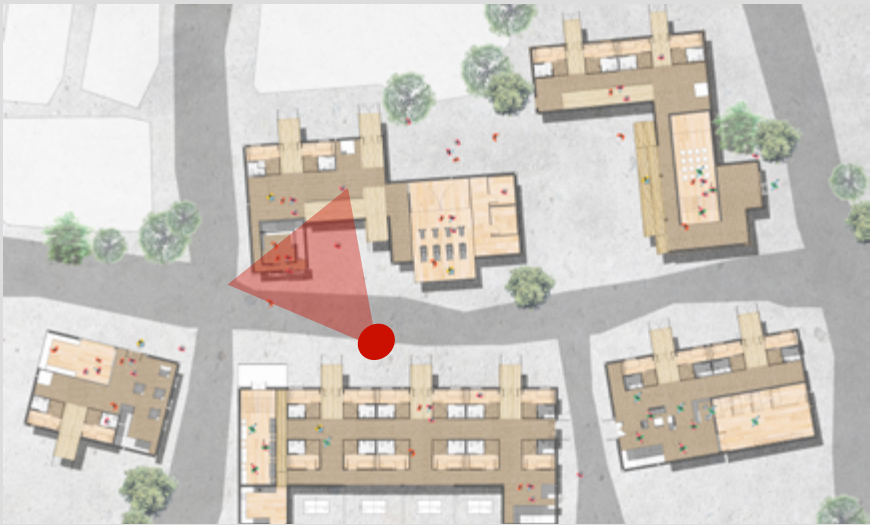


VEGETABLE SALES + PLANTING AREA

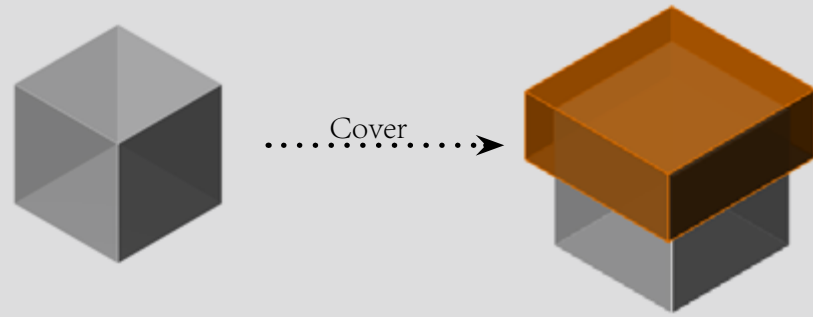




READING AREA + LIBRARY



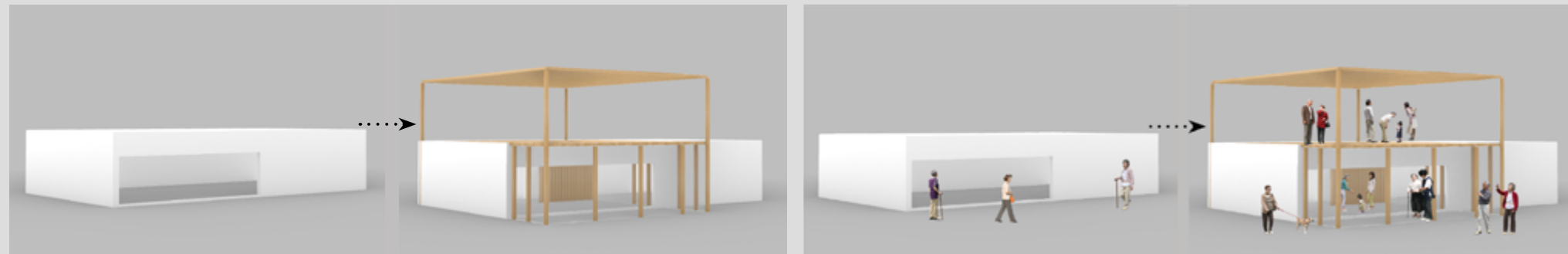
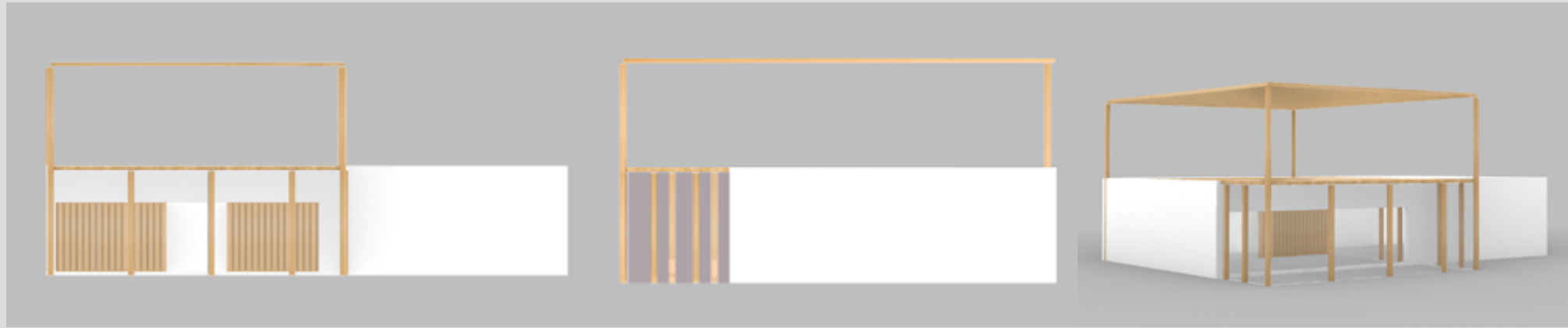




Put something on top of or in front of (something), especially in order to protect or conceal it.

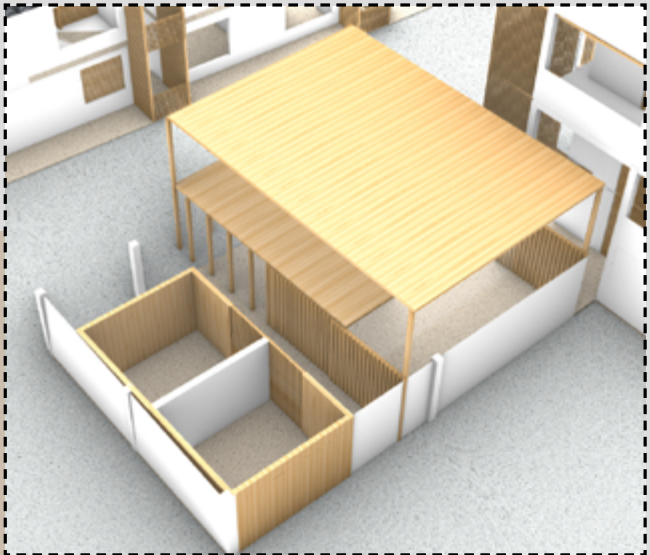
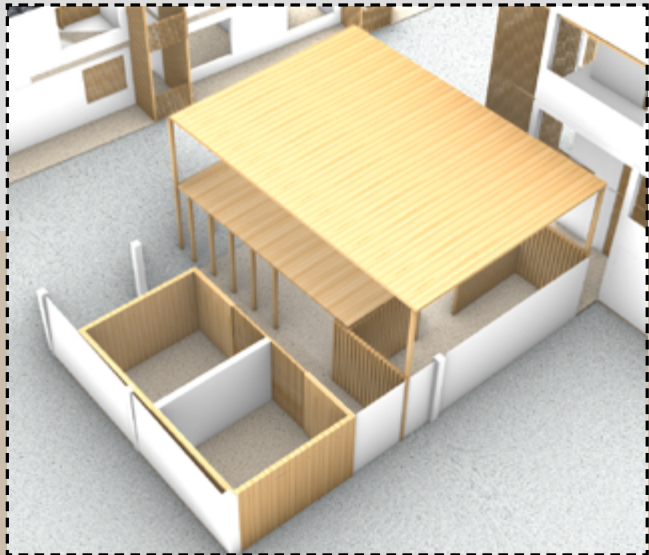


PHYSICAL THERAPY + MEDITATION

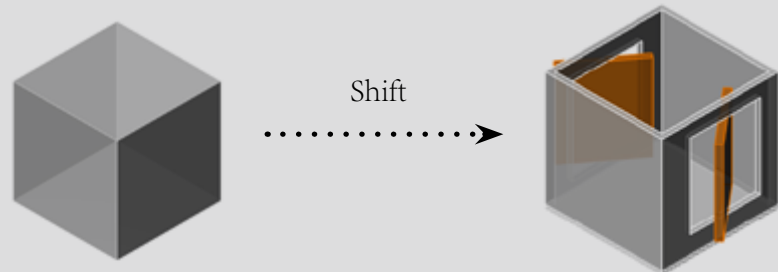




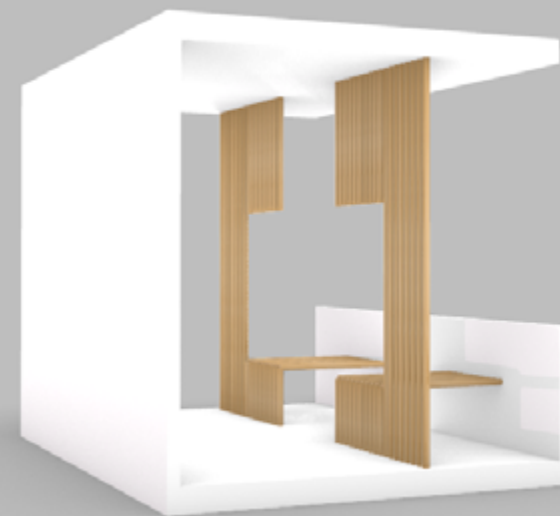
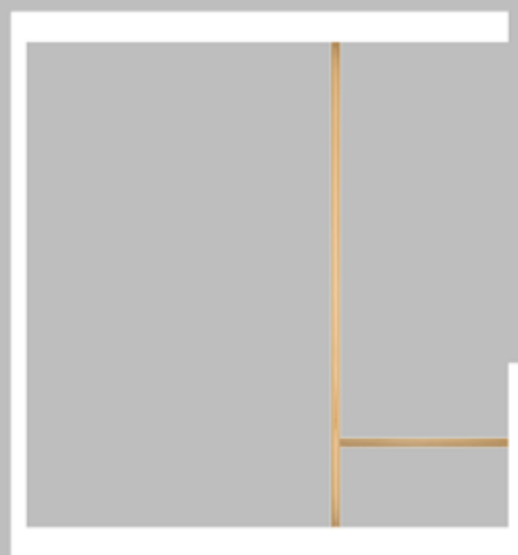
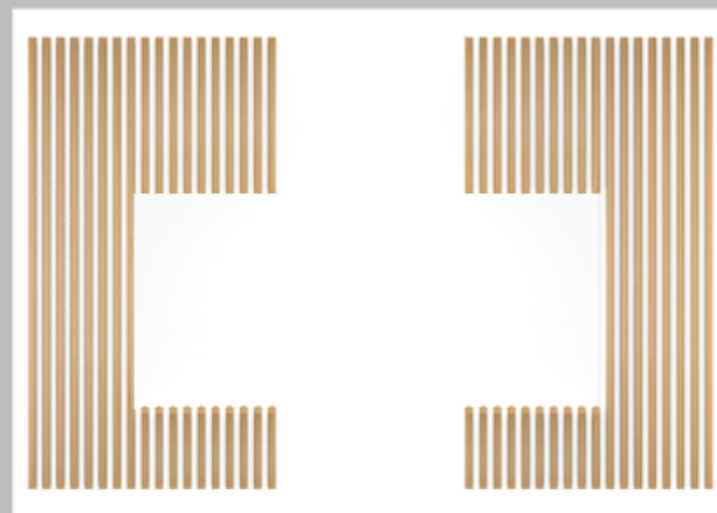
PHYSICAL THERAPY + MEDITATION



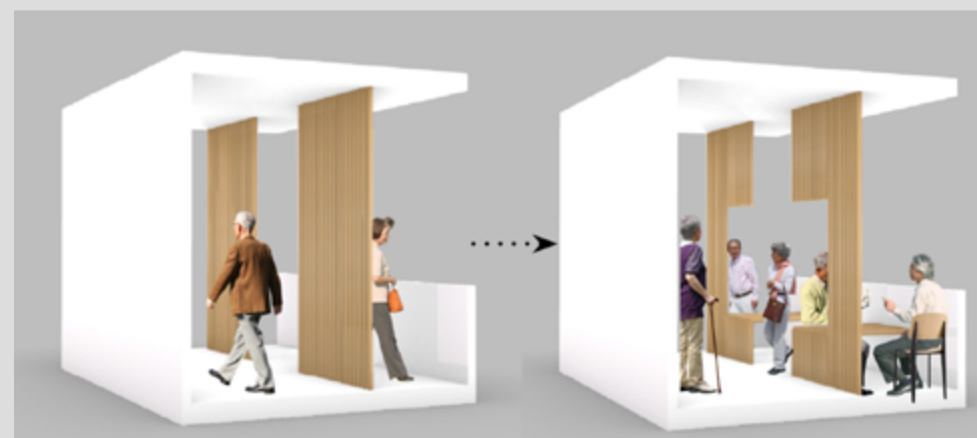
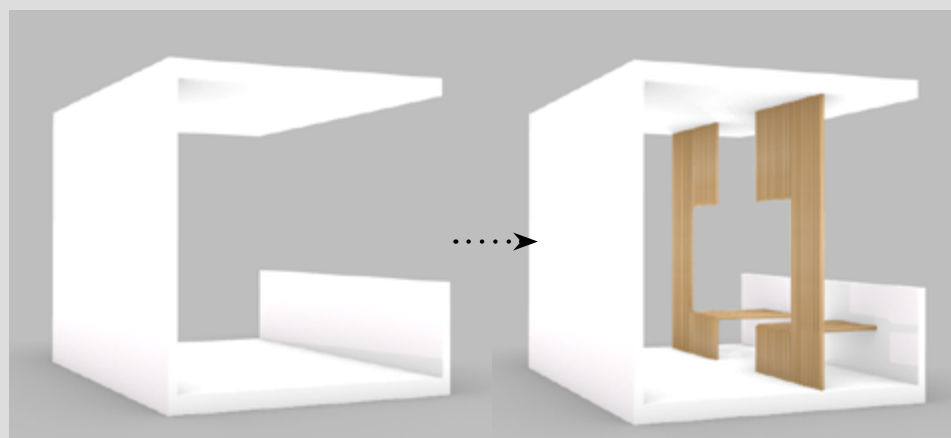




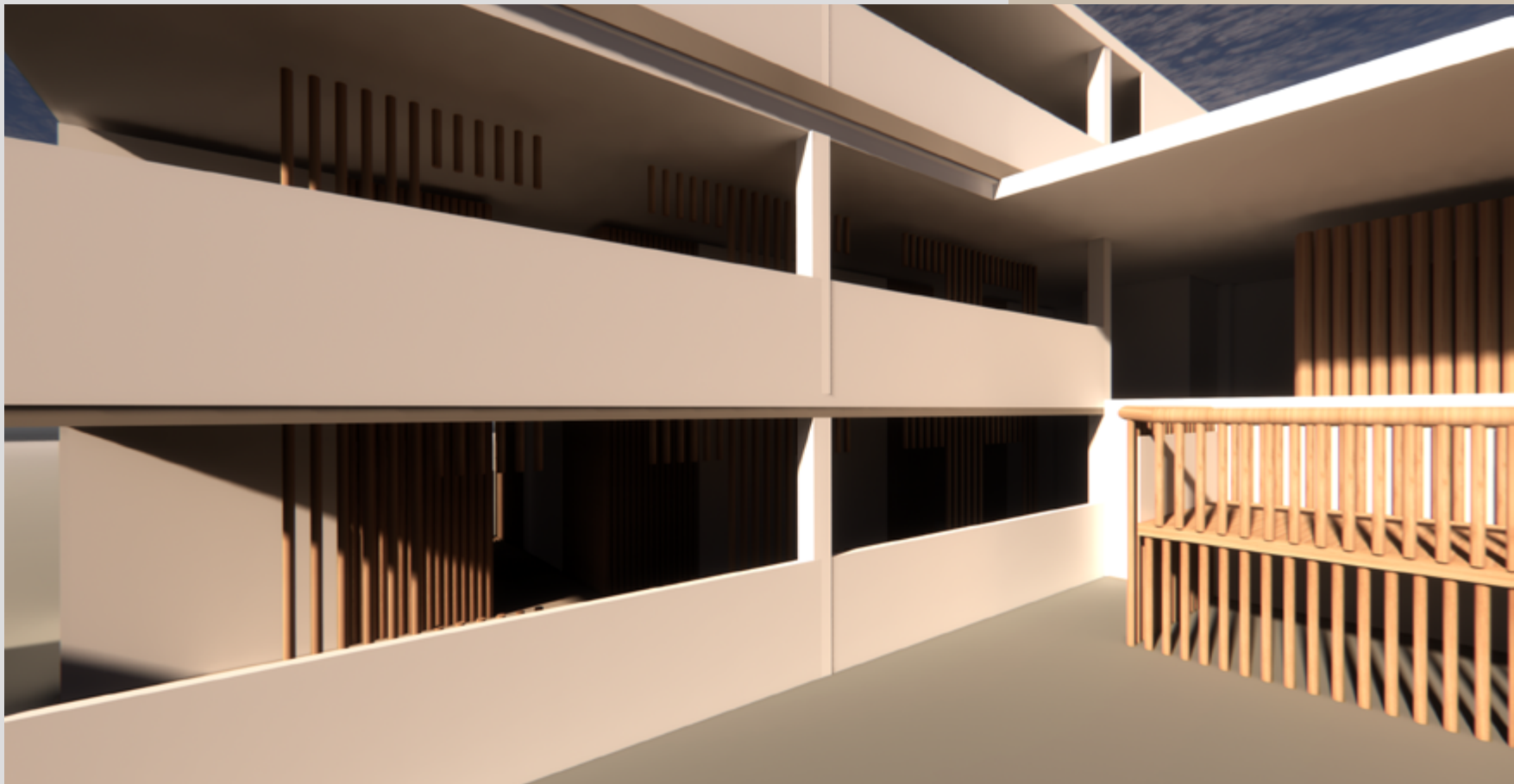
A slight change in position, direction, or tendency.



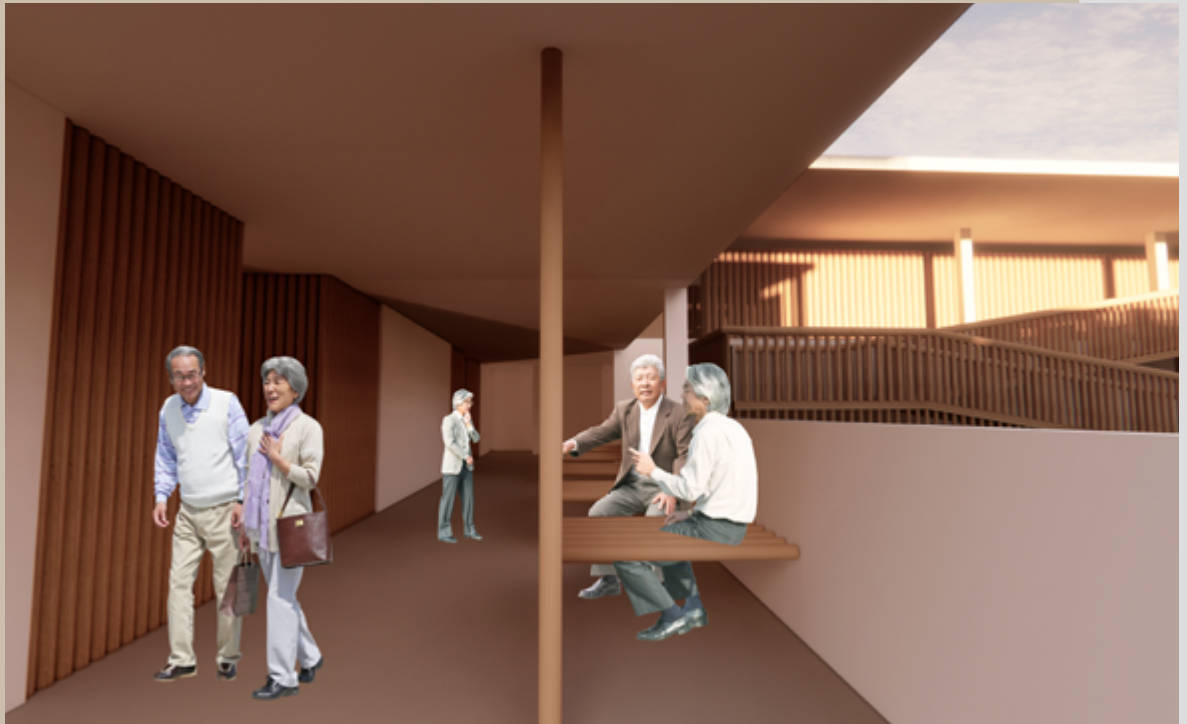
CHESS AREA + SEATING AREA







CHESS AREA + SEATING AREA

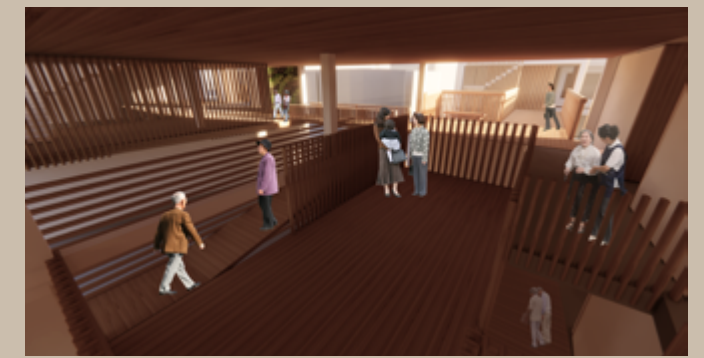
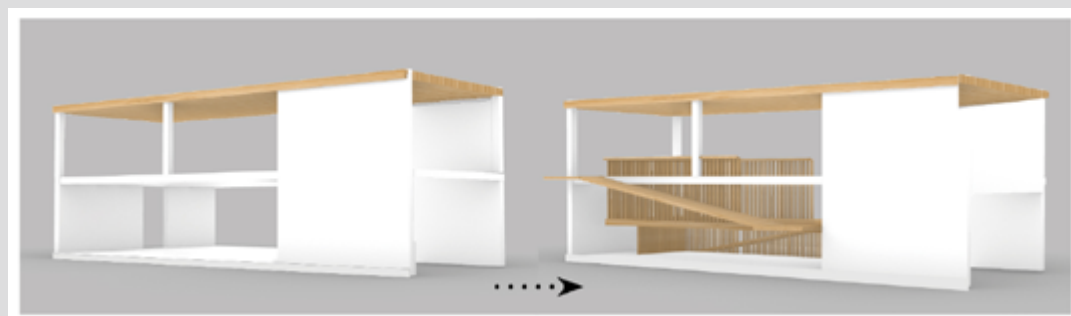
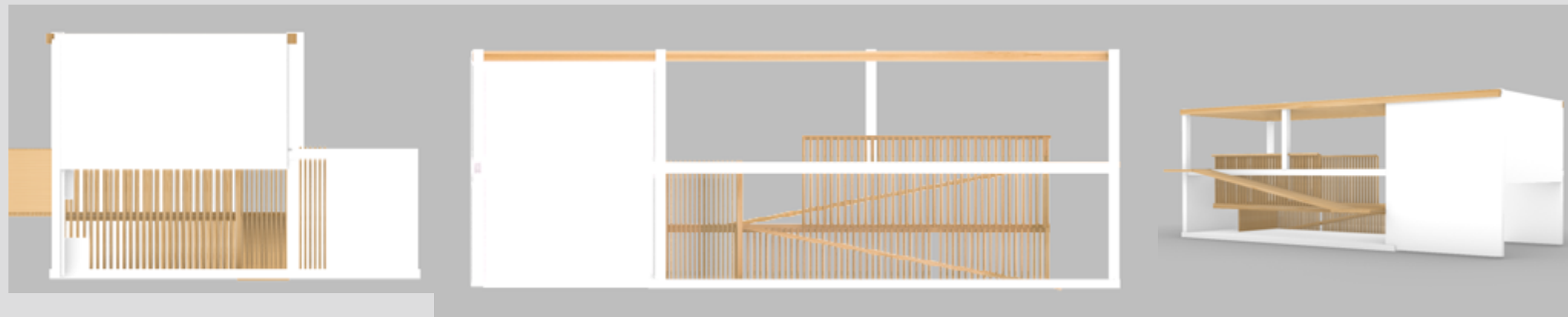




Duplicate  
.....➔

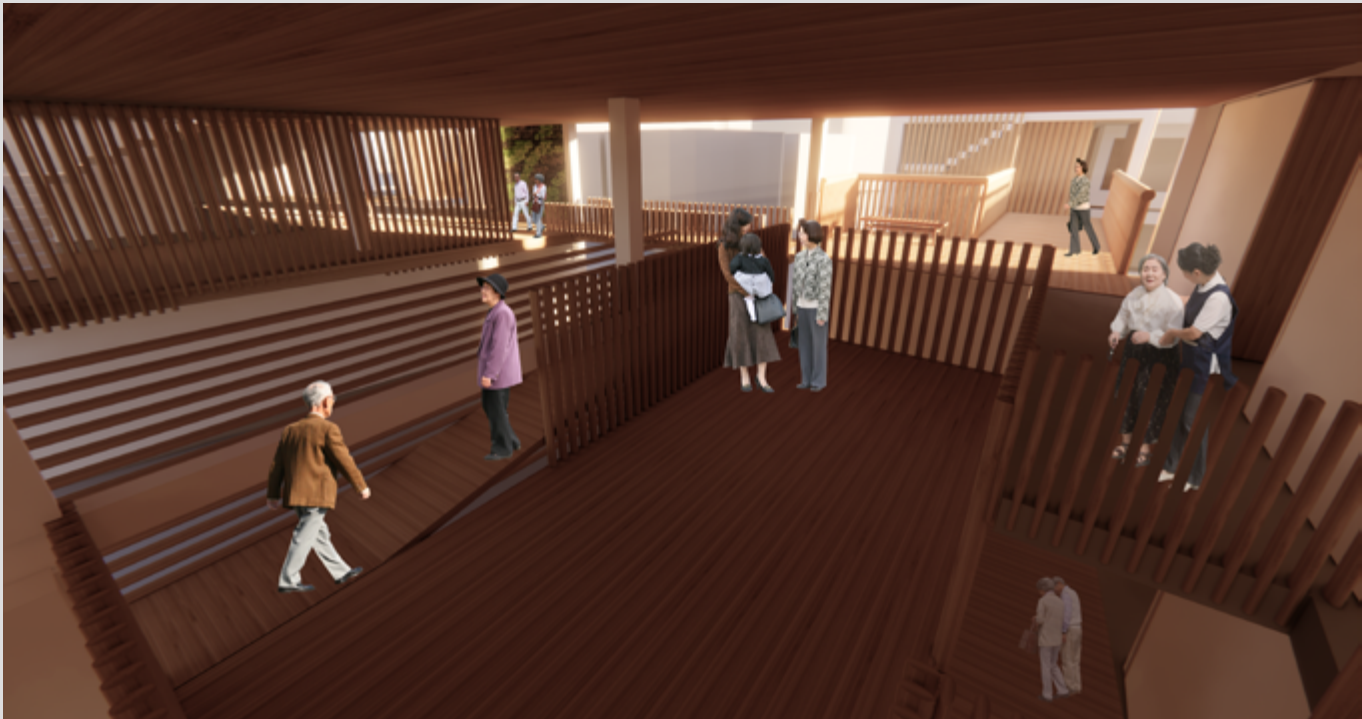


Make or be an exact copy of.



CANTEEN + BALCONY

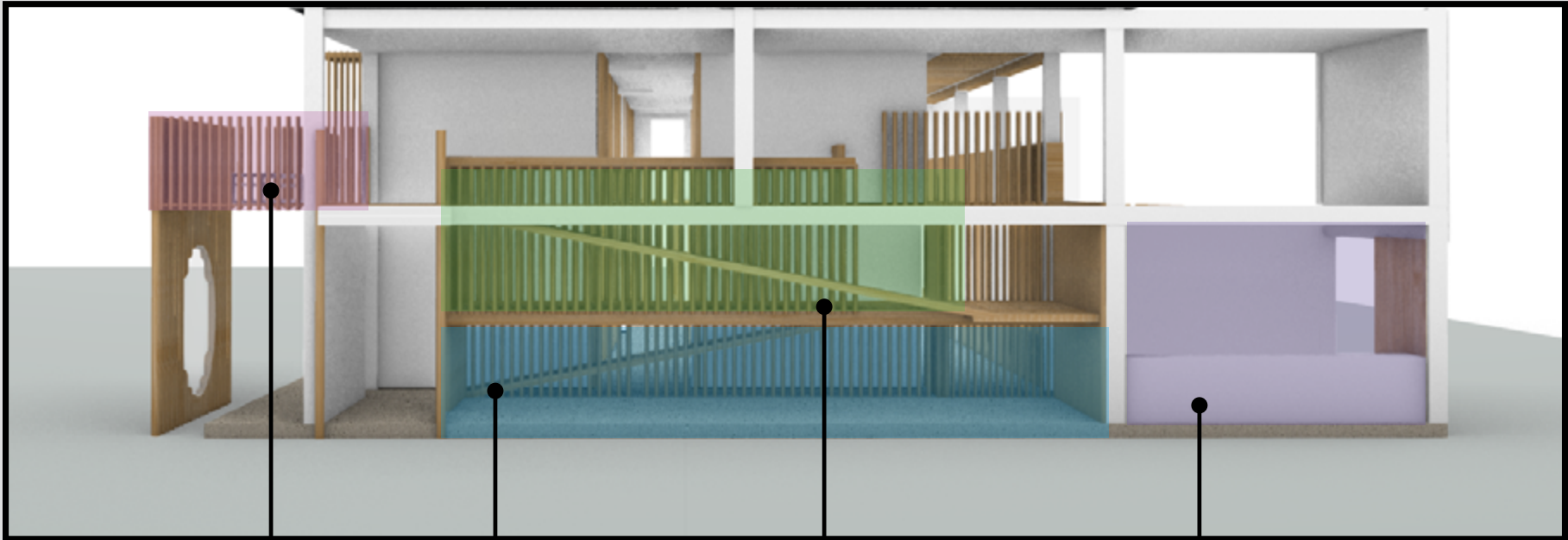




CANTEEN + BALCONY



KITCHEN



BALCONY

PET THERAPY

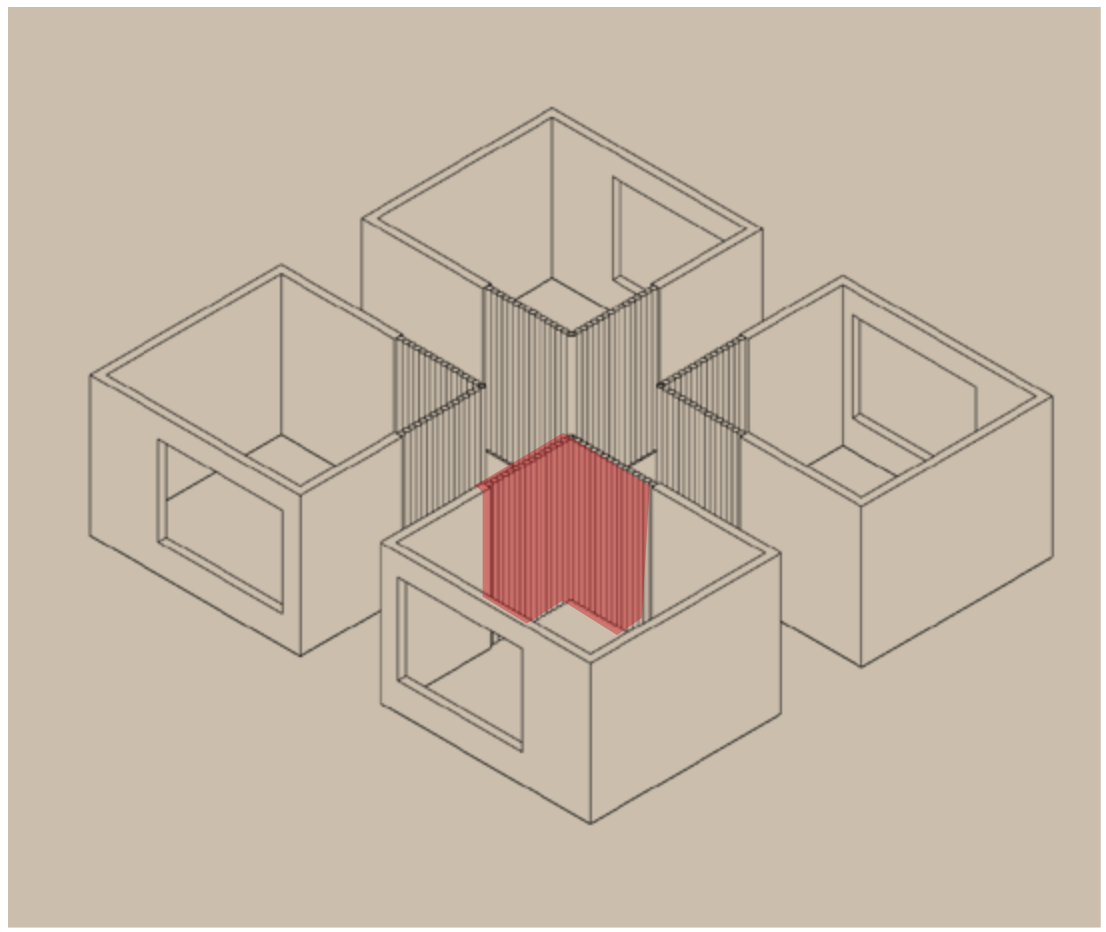
CANTEEN

KITCHEN

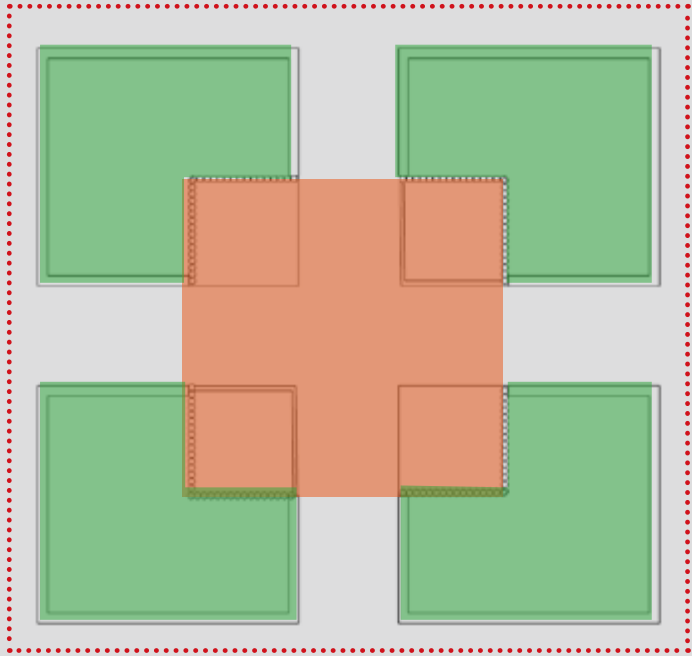
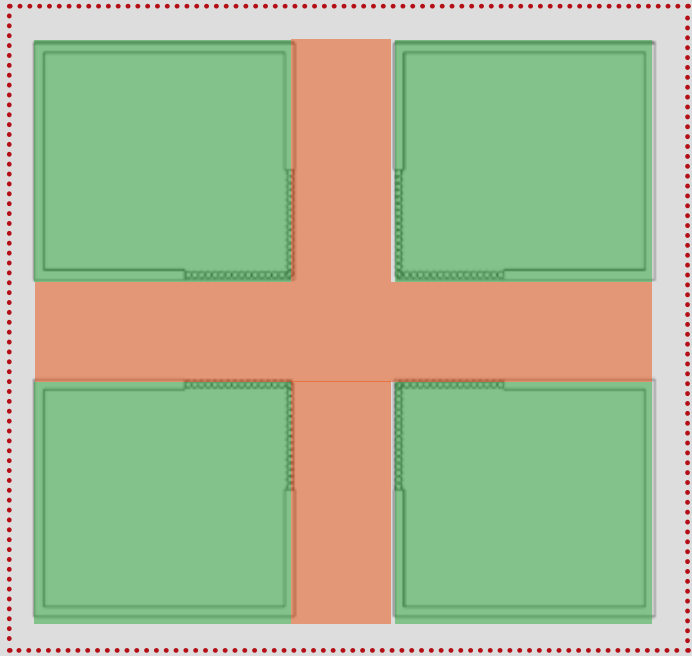




ROOM GROUP DESIGN



Movable Stick Partition



Private Area

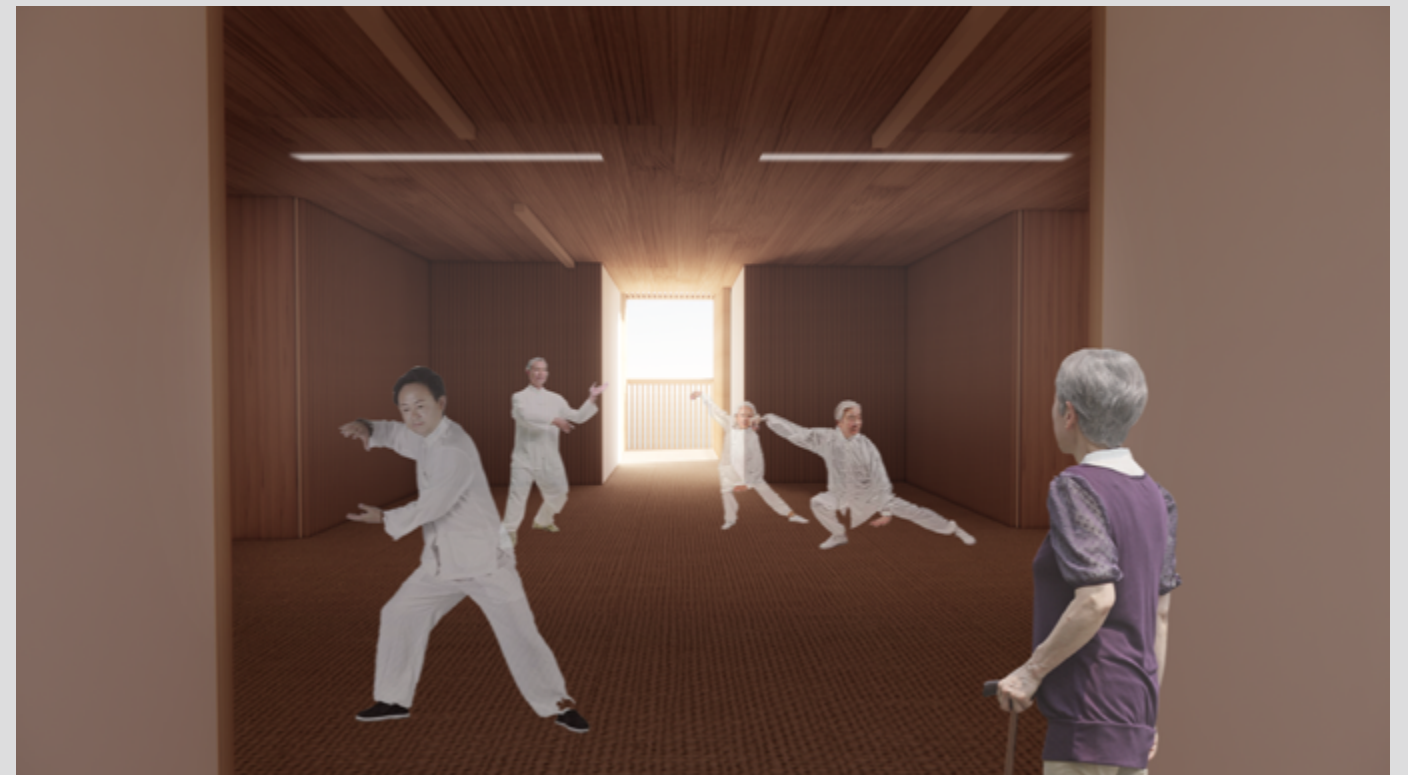
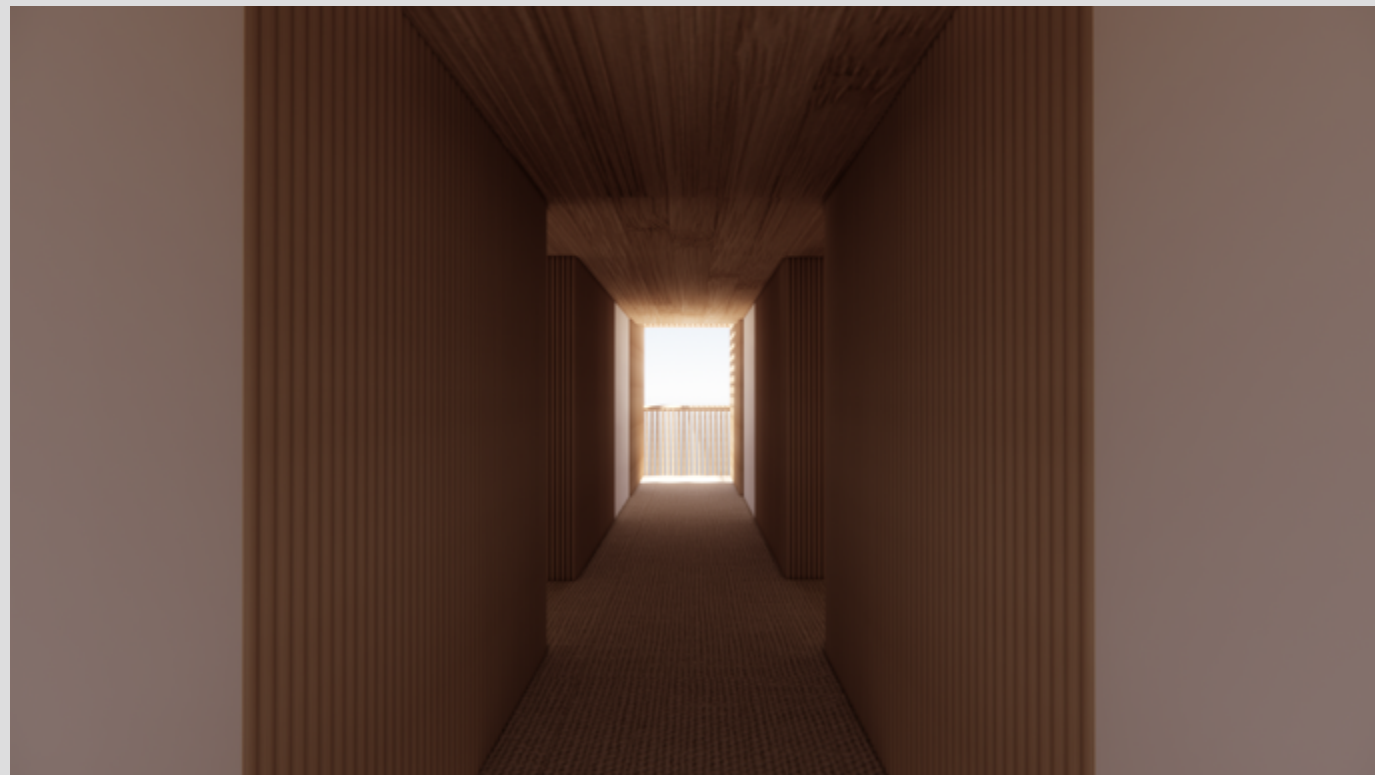
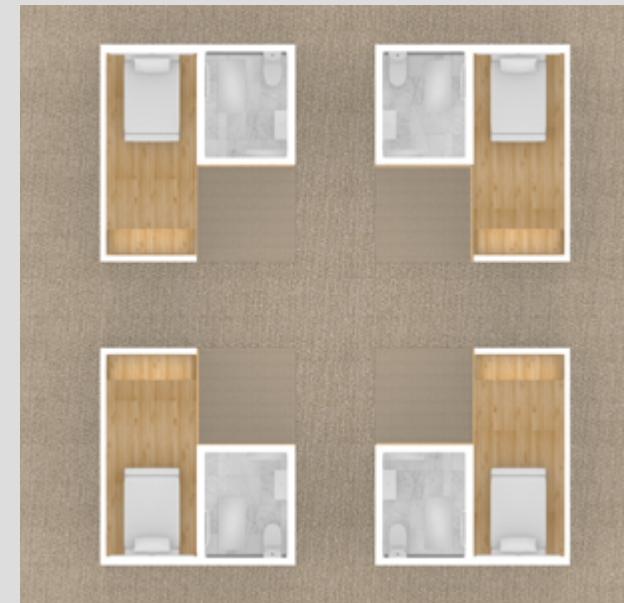
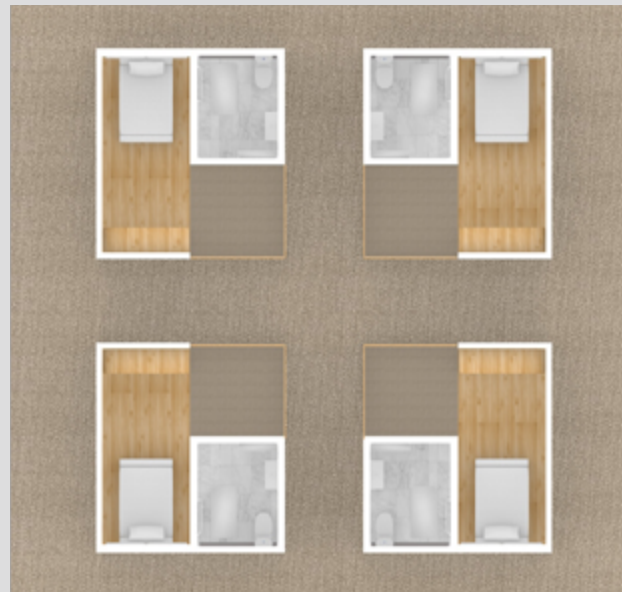


Public Area

ROOM GROUP DESIGN



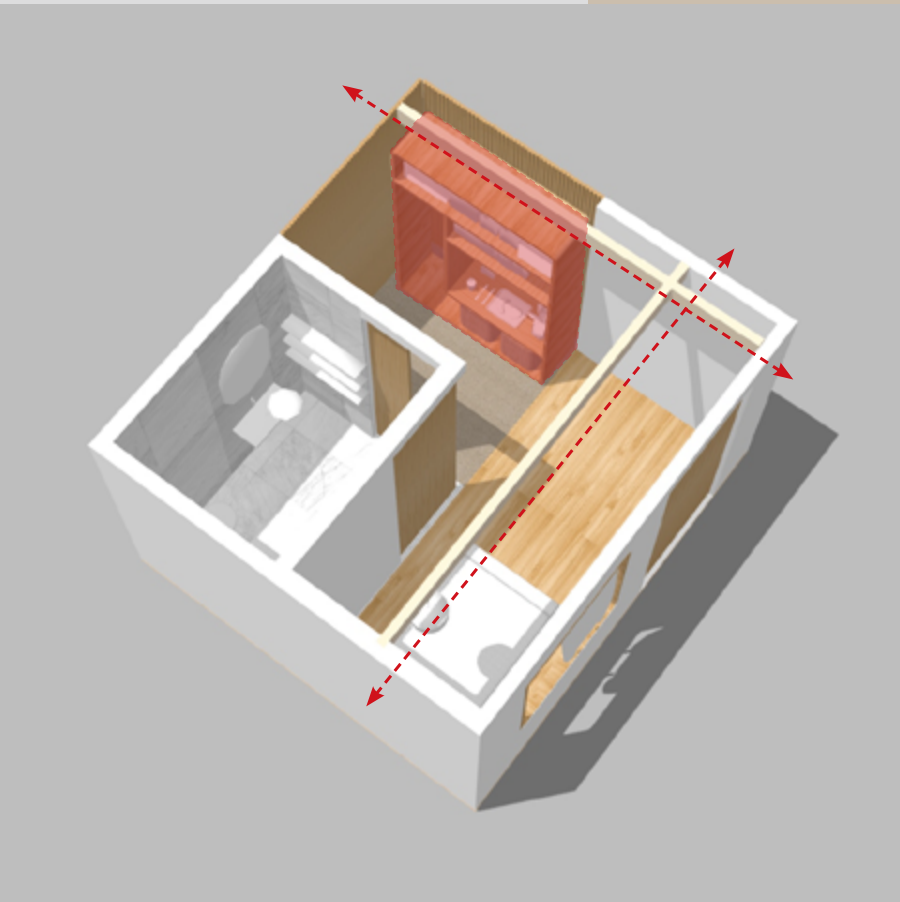
# SPATIAL TRANSFORMATION





ROOM GROUP DESIGN

MOVABLE SHELF



ROOM GROUP DESIGN

INTERIOR VIEW





ROOM GROUP DESIGN

INTERIOR VIEW

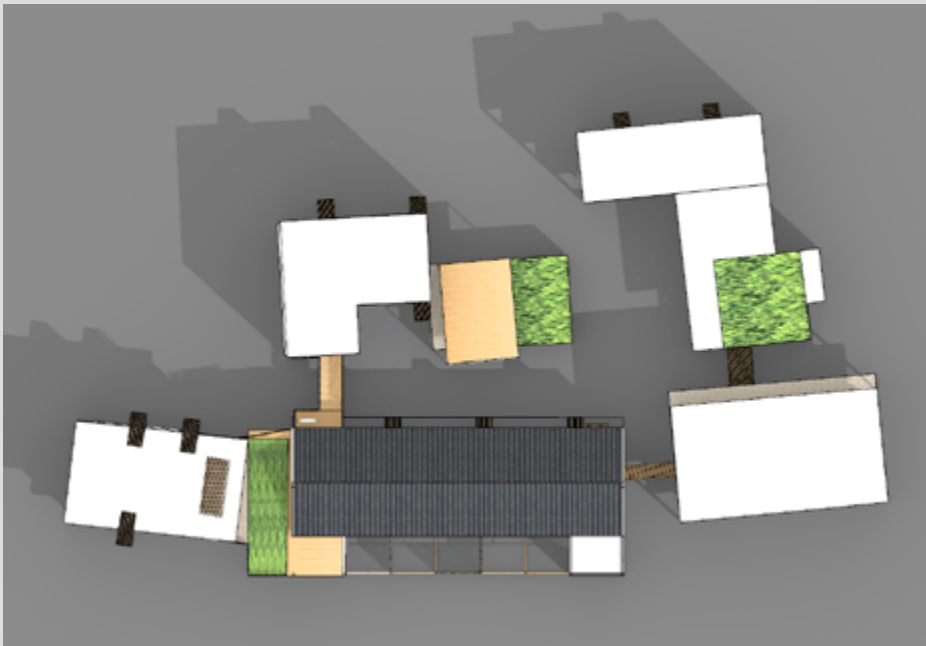




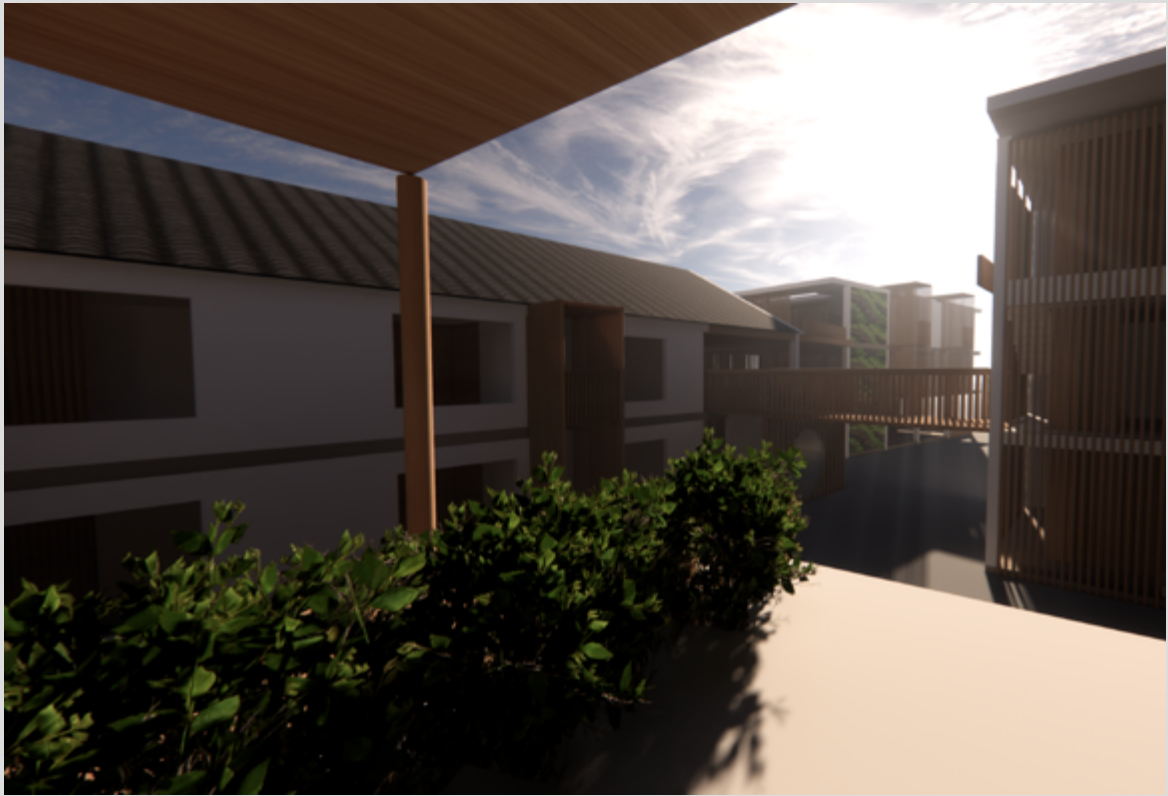
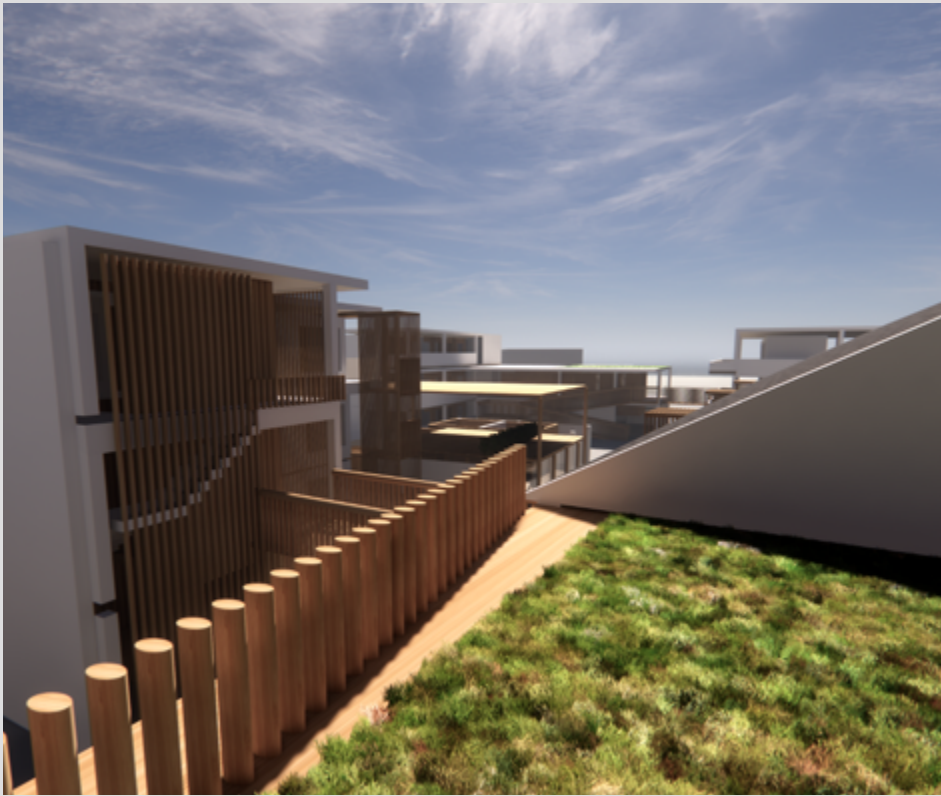
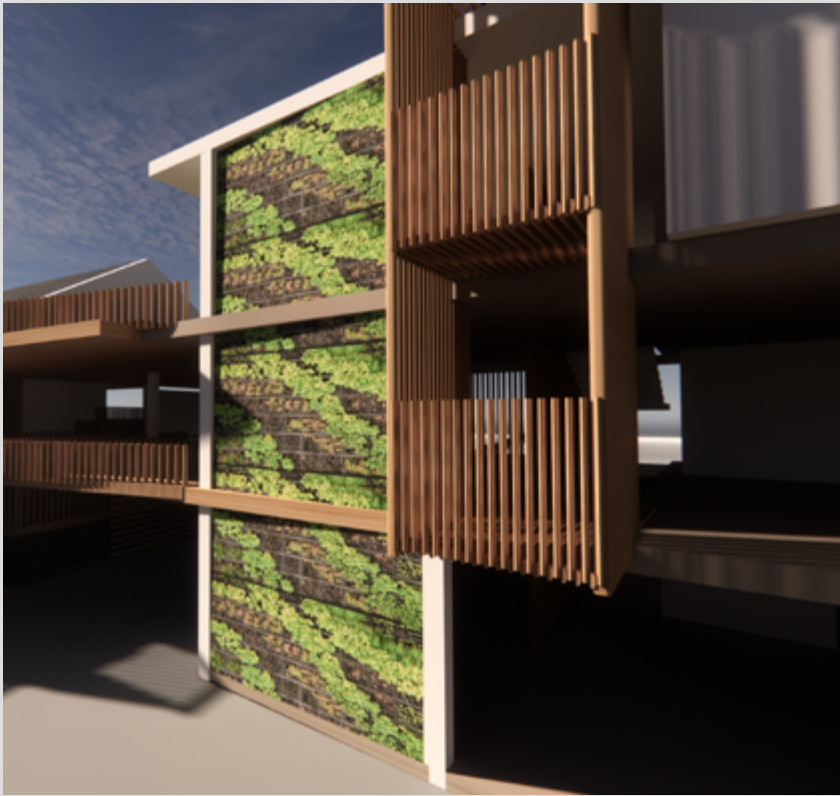
## ROOM GROUP DESIGN

### INTERIOR VIEW





ROOF GARDEN + VERTICAL GARDEN







## BRIDGES





The secondary system, as a public activity space, makes the circulation of five buildings dynamic. The translucent partition brings people the desire of exploration and stimulates the enthusiasm of the elderly. At the same time, the garden and pet treatment area are added around the original building to make full use of the public space.