

Reviving Siheyuan and Hutong: A Proposal for the Contemporary Beijing

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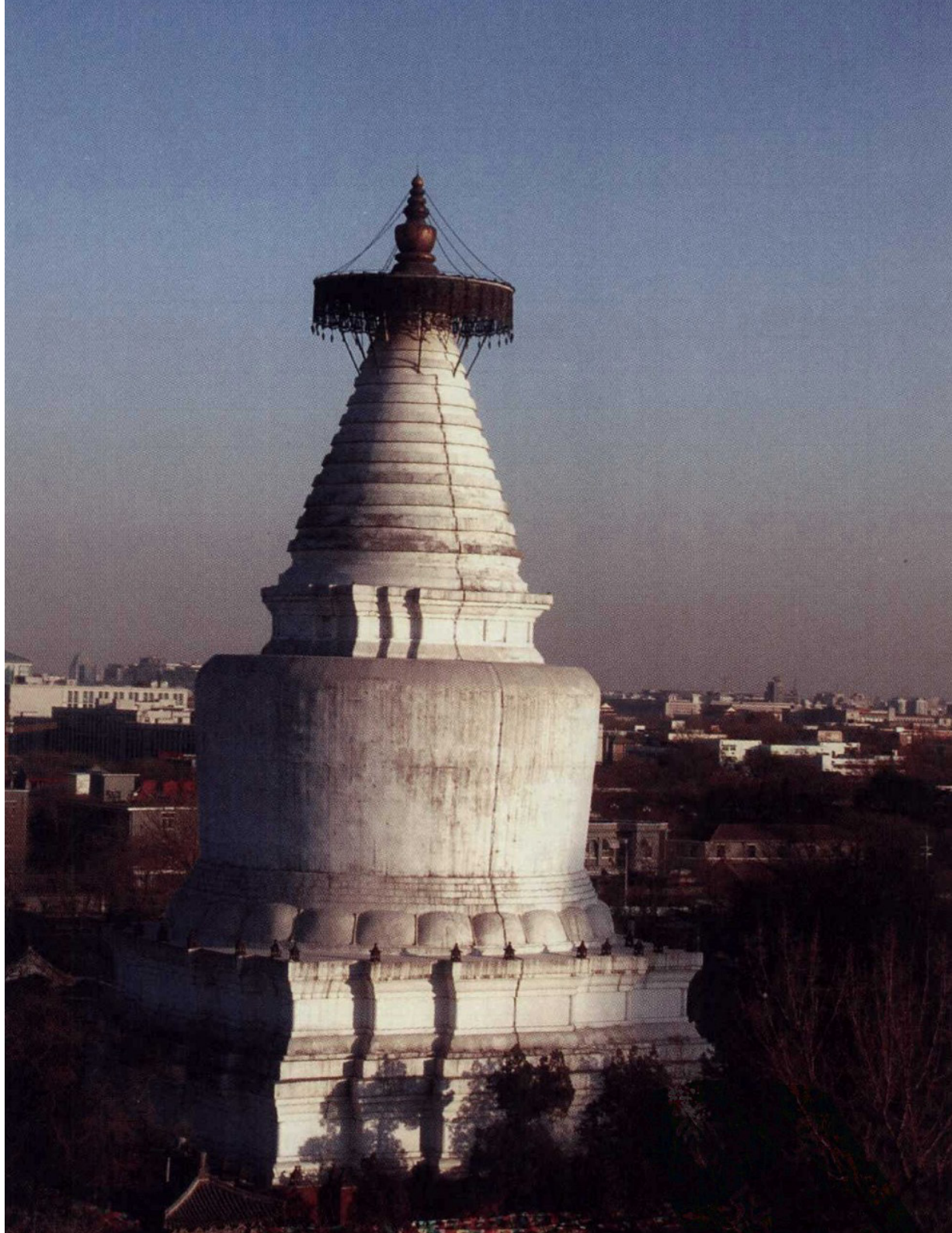
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Abstract in English

Beijing is an historical city, where traditional Chinese architecture coexists with various architectural styles from around the world, which were integrated especially throughout the XXth century. The main components of the original urban structure, the Hutong and the Siheyuan, have been greatly challenged by this integration; furthermore, where they remain, they are menaced by the difficulties in adapting these spaces to the changes in the lifestyles and needs of the contemporary dwellers. Nevertheless, they represent a fundamental witness for the traditional architecture culture, hence they represent a pivotal open question for the future of Beijing: on the one hand, it is necessary to protect them, as they bear material and immaterial heritage values and guarantee the preservation of the local cultural history and identity, on the other, it is fundamental to identify news strategies that allow for the adaptation of these sites to the modern life of the city. The Thesis explores the possibility to develop a requalification approach that combines conservation and transformation, that is tested here in the renovation project of the Gongmenkou No.5 area.

Pechino è una città storica, dove l'architettura tradizionale convive con molti e differenti stili architettonici importati da diverse parti del mondo, soprattutto nel corso del XX secolo. La sopravvivenza dei principali elementi che caratterizzano la struttura urbana originale, Hutong e Siheyuan, è minacciata da questa integrazione, oltre che dalle difficoltà di questi spazi nel rispondere ai cambiamenti delle necessità e degli stili di vita degli abitanti che oggi continuano a popolarli. Questi spazi sono i fondamentali testimoni della cultura architettonica tradizionale, e rappresentano una questione aperta nel progetto del futuro di questa città: da un lato, è necessario proteggerli, poichè sono portatori di valori materiali e immateriali e partecipano alla tutela della storia e dell'identità del luogo, dall'altro, è fondamentale identificare nuove strategie progettuali capaci di garantire l'adattamento di questi siti ai modi e ai tempi della vita moderna. La Tesi esplora la possibilità di sviluppare un approccio alla riqualificazione di questi spazi basato sulla coniugazione di conservazione e trasformazione, che è verificato attraverso l'applicazione all'area Gongmenkou No.5.

Abstract in Italiano



Beijing Urban Evolution

1.1 Beijing

Beijing, alternately romanized as Peking, is the capital of the People's Republic of China, the world's third most populous city proper, and most populous capital city. The city, located in northern China, is governed as a municipality under the direct administration of central government with 16 urban, suburban, and rural districts. Beijing Municipality is surrounded by Hebei Province with the exception of neighboring Tianjin Municipality to the southeast; together the three divisions form the Jingjinji metropolitan region and the national capital region of China.

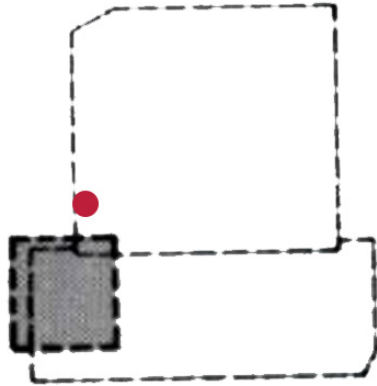
Beijing is situated at the northern tip of the roughly triangular North China Plain, which opens to the south and east of the city. Mountains to the north, northwest and west shield the city and northern China's agricultural heartland from the encroaching desert steppes. The northwestern part of the municipality, especially Yanqing County and Huairou District, are dominated by the Jundu Mountains, while the western part is framed by Xishan or the Western Hills.

Through the period map analysis of capital (nowdays called Beijing) we can know that the location of our site started to exist from Yuan Dynasty (1267) and located in west central of Beijing not far from Royal Palace. From that time, the urban planning system which divided the city into different grids came out. In the mean time, the direction of all the buildings in the towns all follows the due south, north, east and west direction, as well as the Royal Palace.

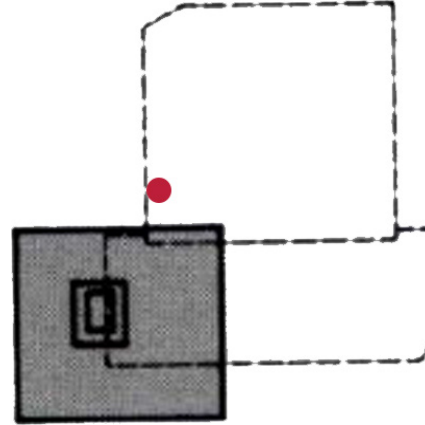
To understand the traditional courtyard and alley, we should understand the urban evolution first. In this way to build the design strategy base on this too.

According to the old map, it is easy to know the reduction of the area of the water in the city center and memorial architecture existed for a long time, such as temples, clock towers...

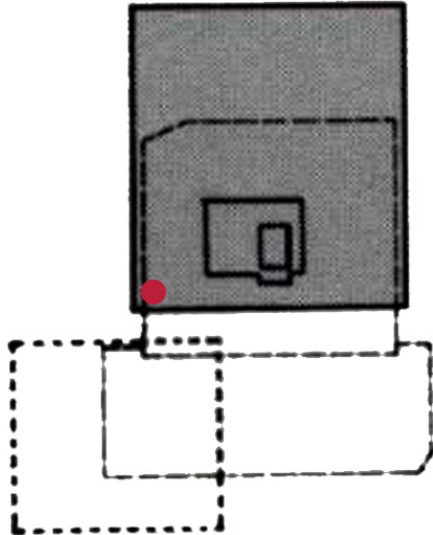
Also, the arrangement of Hutong in the early time and the importance of the site we chose from a historical point of view.



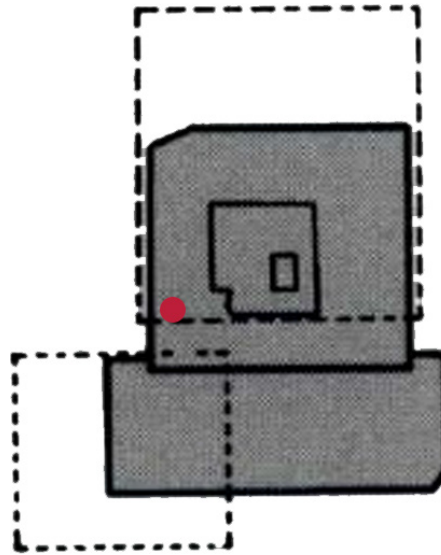
Tang Dynasty (618)



Jin Dynasty (1122)

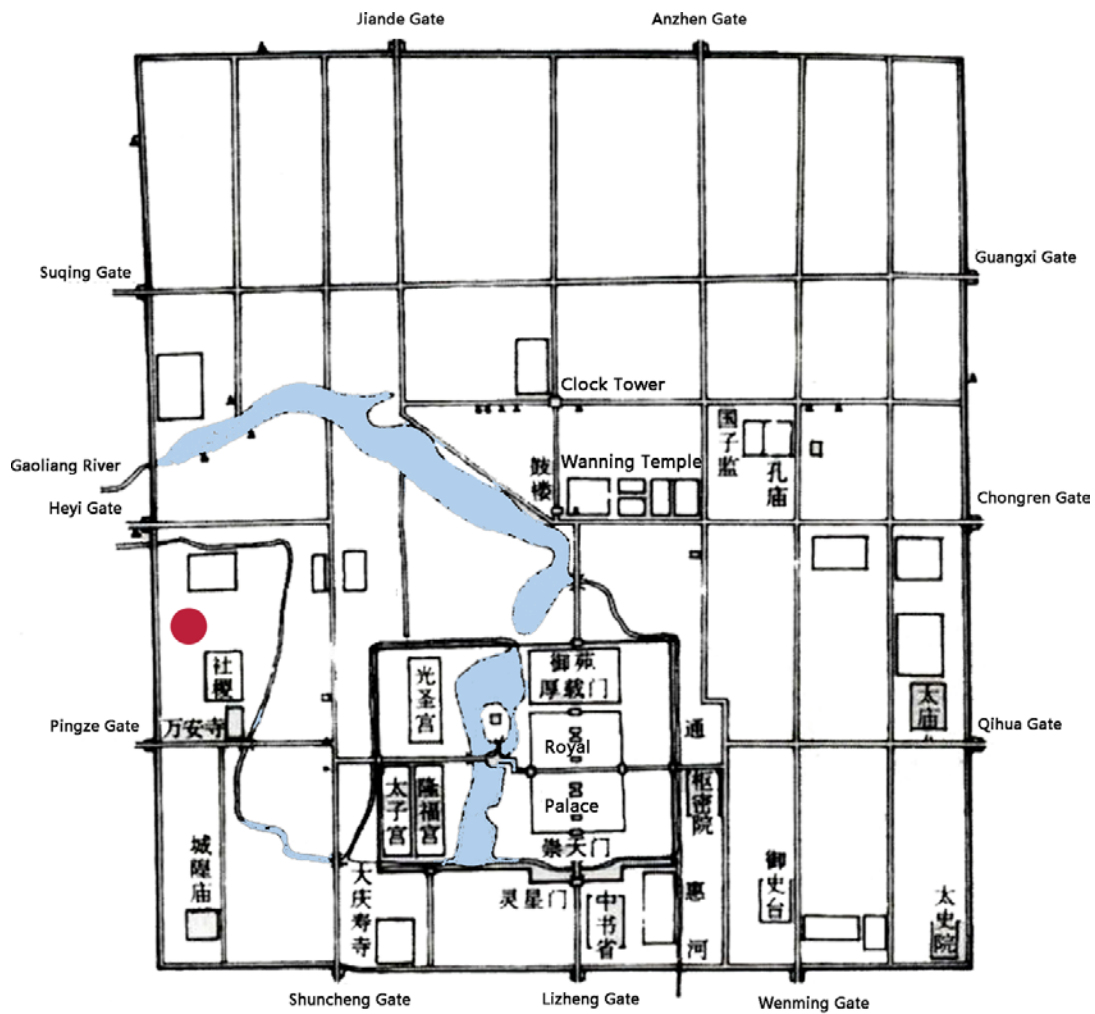


Yuan Dynasty (1267)



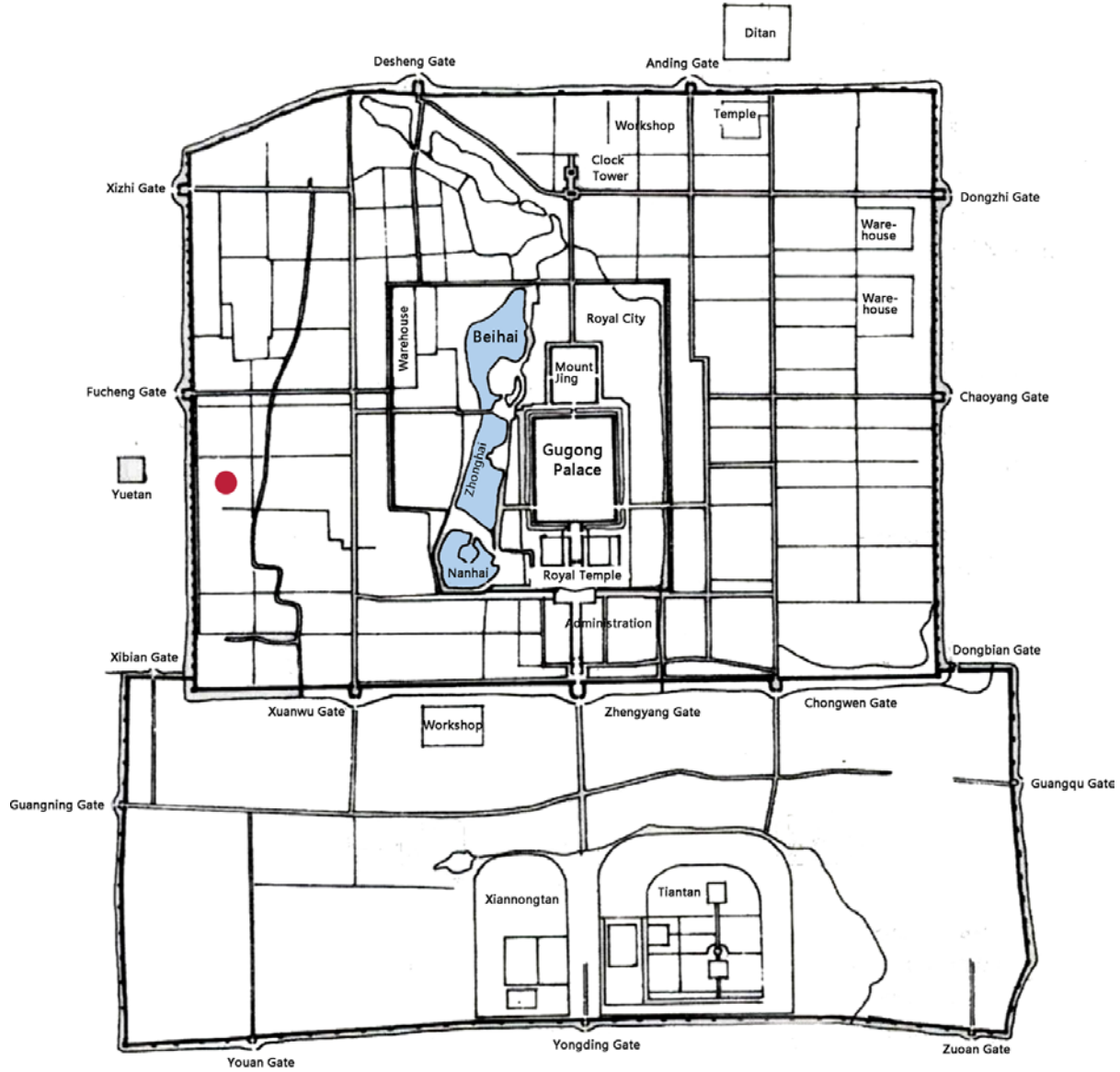
Ming Dynasty (1368)

figure 1.1.1 City evolution of Beijing in different period
THE HISTORICAL ARCHITECTURAL MAP OF BEIJING, 2009



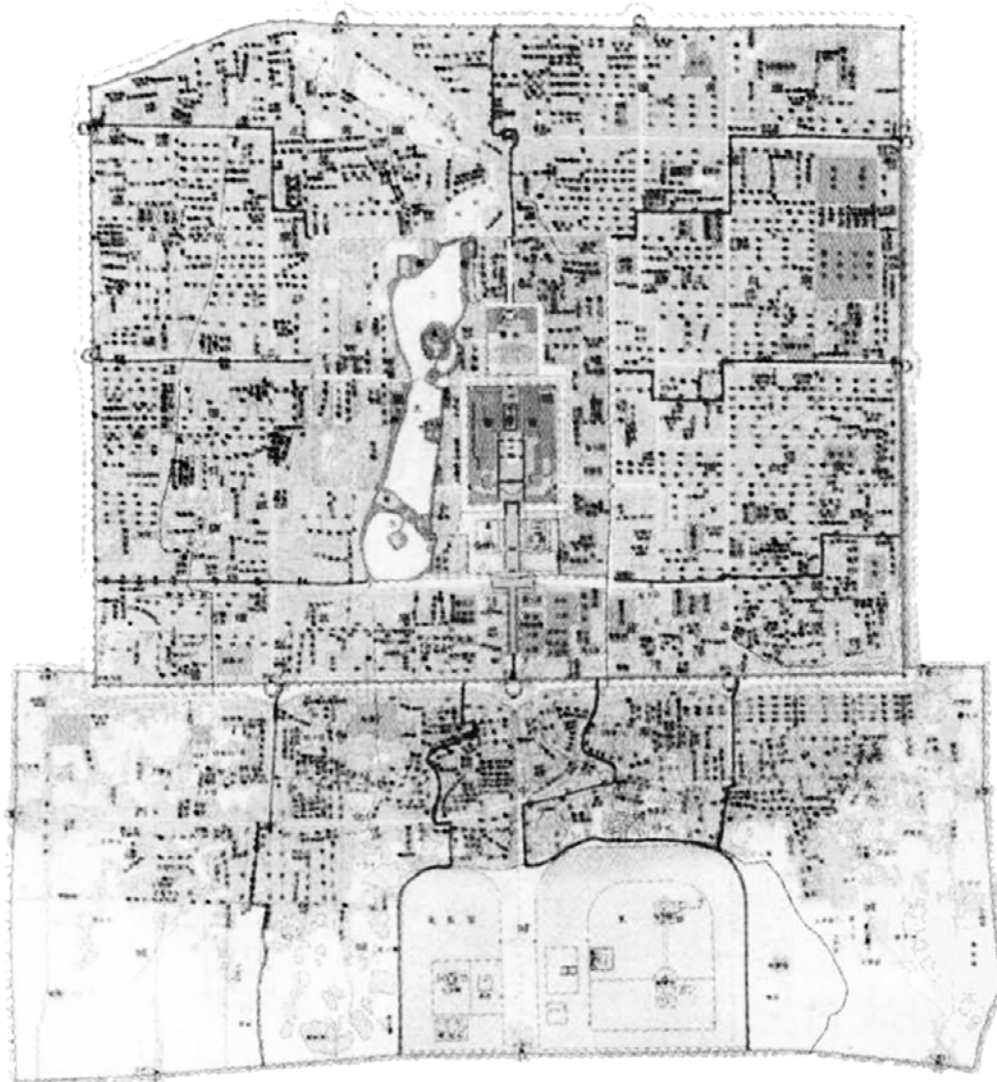
Yuan Capital City Plan

figure 1.1.2 City plan in Yuan dynasty
THE HISTORICAL ARCHITECTURAL MAP OF BEIJING, 2009



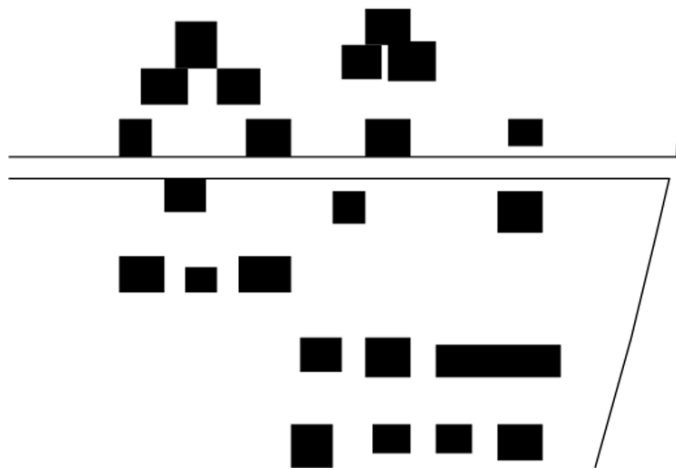
Ming Capital City Plan

figure 1.1.3 City plan in Ming dynasty
THE HISTORICAL ARCHITECTURAL MAP OF BEIJING, 2009



Qing Capital City Plan

figure 1.1.4 City plan in Qing dynasty
THE HISTORICAL ARCHITECTURAL MAP OF BEIJING, 2009

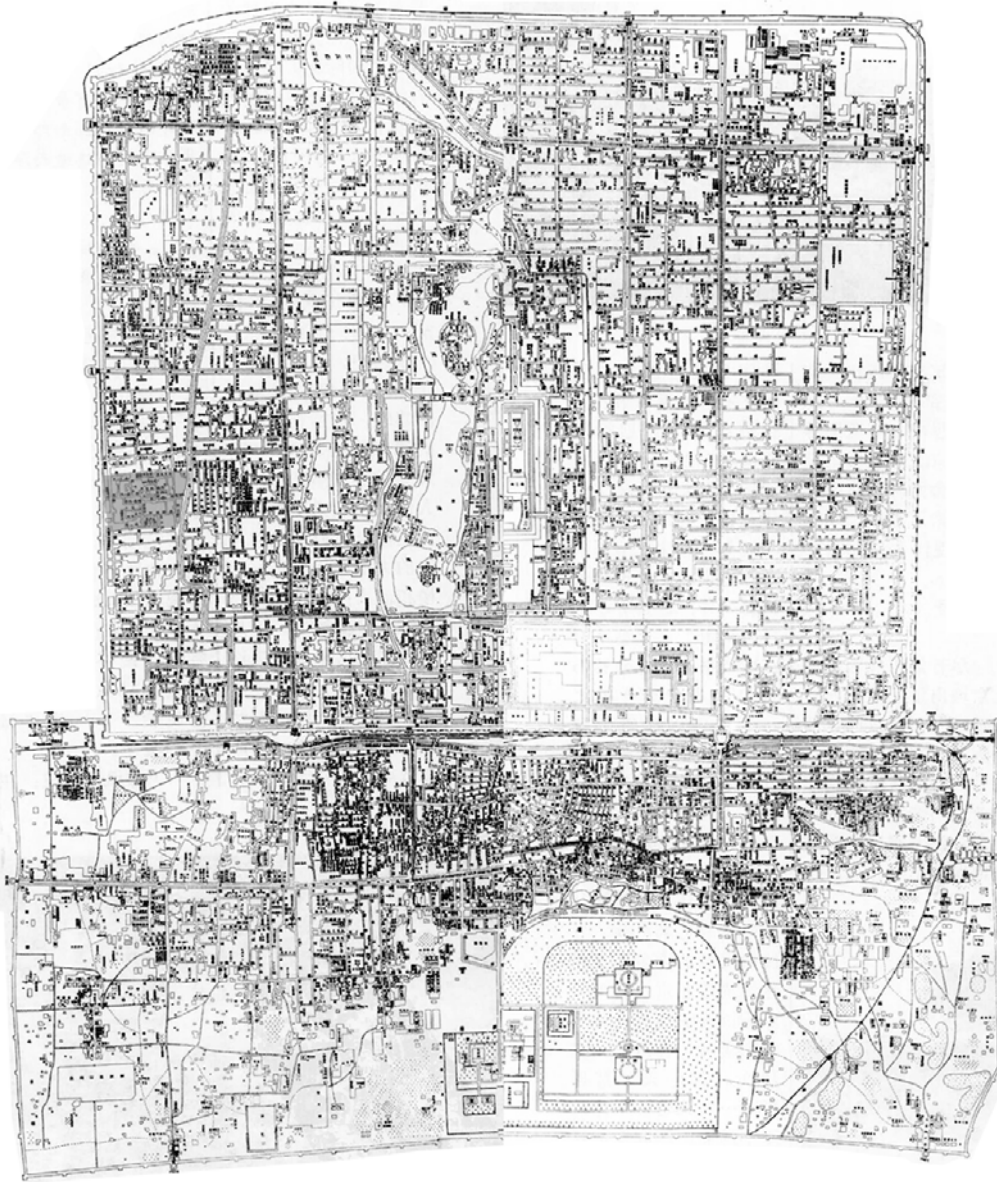


Morphology of Alley Qing Capital City

From the map of Qing Dynasty it illustrated that our site area existed as alleys and basic urban morphology from that time and people started to make there as inhabitation place and the location is good for urban expansion too, because it is still inside of the city gates.

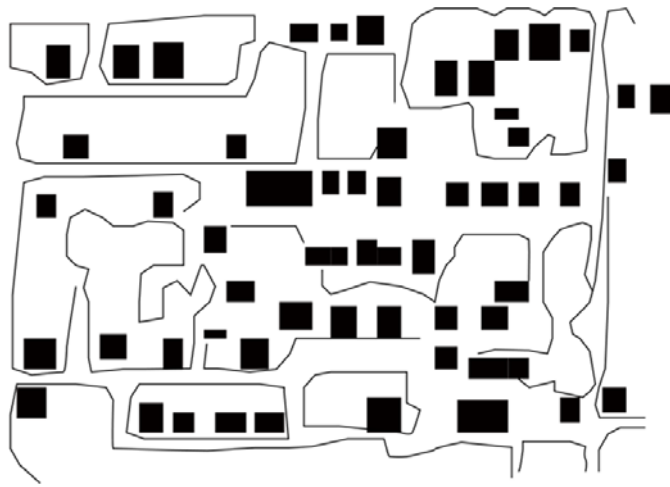
In the meantime ,due to the good condition of economic that time, the increasing of poplutaion seek more space in that area to live too.

figure 1.1.5 Morphology of alley in Qing dynasty



The Republic of China City Plan

figure 1.1.6 City plan of Republic of China
THE HISTORICAL ARCHITECTURAL MAP OF BEIJING, 2009



Morphology of Alley Republic of China

From the map of the period of Republic of China (1912-1945) explained that it already became an organized community around our project area and we can believe that most of the courtyard of traditional buildings were in the good condition or built from the old ones or even brand new built that time , which we can consider the period of prosperous period for society and local residents.

Also, this urban organization as the basement of new Beijing in the future is concrete and useful.

figure 1.1.7 Morphology of Republic of China



Urban Morphology of Beijing(1912-45)

figure 1.1.8 Urban Morphology of Beijing(1912-45)
THE HISTORICAL ARCHITECTURAL MAP OF BEIJING, 2009



Aerial Photo of Beijing(1925)

figure 1.1.9 Aerial Photo of Beijing(1925)
THE HISTORICAL ARCHITECTURAL MAP OF BEIJING, 2009



**Beijing
Courtyard
(Siheyuan)**

2.1 Brief history and description

To understand Beijing courtyard , we must know two keywords : Siheyuan and Hutong. The first one means the courtyard in Beijing which is enclosed by one floor small rooms with 4 sides make it looks like a square, the second one means that the alley between courtyard communities.

The enclosure courtyard (Siheyuan) is a historical type of residence that was commonly found throughout China, most famously in Beijing and rural Shanxi. Throughout Chinese history, the courtyard composition was the basic pattern used for residences, palaces, temples, monasteries, family businesses, and government offices. In ancient times, a spacious courtyard would be occupied by a single, usually large and extended family, signifying wealth and prosperity. In the old times, courtyard houses basically met the needs of a family's life. At that time, the two depths courtyard houses and the larger courtyard houses were usually the residences of bureaucrats and gentry.

Generally we believe that the origin of Courtyard began from Yuan dynasty when old Beijing became the capital that time , also according the different

levels of people that time they developed different kinds of courtyards . They created a whole standard of how to building a courtyard . In some points , it developed the economy that time because the lots of construction work included. However, there are few remaining courtyard from that time . The most common ones still existing now is from the Qing dynasty and also with the ideal condition.

When the time arrived Qing dynasty , it has been the peak developing period of courtyard. Different from Yuan dynasty , people from that time stressed the function of the back yard and enlarge it which considered to be a improvement makes the space more useful for family. With some very luxuriant examples as the courtyard palace for the princes or head chief that time.

In modern society, on one hand, sanitation facilities such as water and heating system are not presented in the courtyard, and the courtyards have not been continuously improved to meet the needs of automobiles, air conditioners, and other types of equipment. On the other hand, large families such as four generations become rare because of the

population control, wealthy people are usually willing to buy villas in convenient suburbs, rather than living in densely populated urban areas.

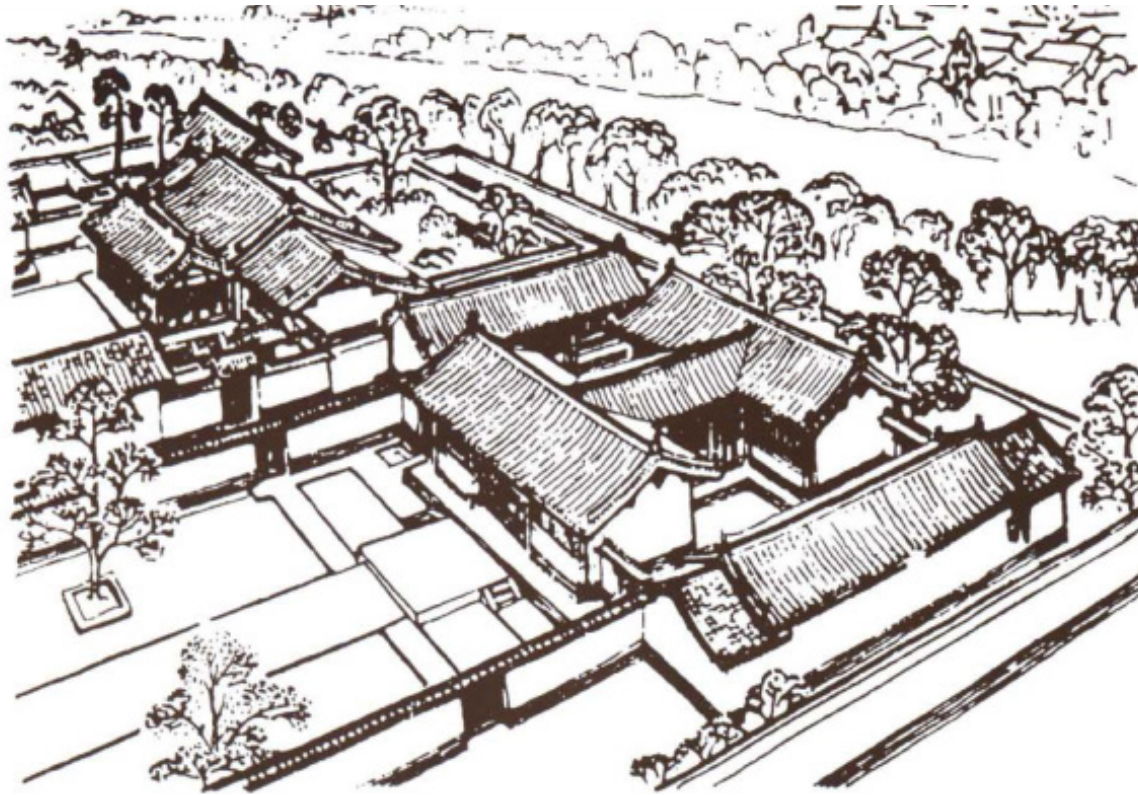
Today, remaining courtyards are often still used as subdivided housing complexes, although many of them lack modern amenities and facilities. In the urban planning process, the traditional courtyard houses also face the contradiction between protection and development. Some courtyard houses are listed as cultural relics protection units, and some have been demolished.

To understand the configuration of the courtyard, the direction of setting it should be mentioned firstly. Most of the times it is located at the North-South side which is according to the sunlight, climate and Chinese traditional culture Feng Shui which will be explained below. Therefore, it is determined that the configuration of Hutong is also.

The courtyard house is closed by a house with a door in front of the courtyard. If it is in the form of "mouth", it is called a courtyard; the "day" is called the second courtyard; the "eye" is called the three

courtyards. Generally speaking, in the large house, the first entrance is the door house, the second entrance is the hall, the third entrance or the back door is the private room or the boudoir. It is the activity space of women or relatives. The average person is not allowed to enter at will, so the ancients have poetry clouds: "The courtyard is deep and deep." The deeper the courtyard, the less you should gaze at it.

The formal courtyard house, one family for one house, the layout can be big or small. The owner of the house can build according to the size of the land and the number of people in the family. It can be as small as one, and can go up to three or four. It can also be built into two courtyards with wide courtyards. The smaller, usually has 13 rooms; the first or second courtyard, the room is 25 to 40. The back wall of the wing is the courtyard wall, and the brick wall is built around the corner. The large courtyard is surrounded by walls from the outside, and the walls are tall and open without windows to show its privacy. In terms of standards, many palaces and temples are also designed and built according to the layout of the courtyard.



the recover image of courtyard, Yuan dynasty, China

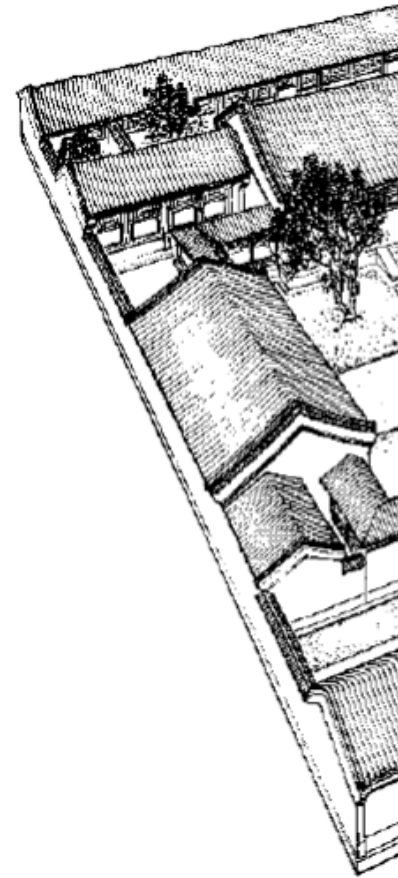


figure 2.1.1 Courtyard of Yuan dynasty
THE BEIJING OF THE QUADRANGLE IN BEIJING, 1999

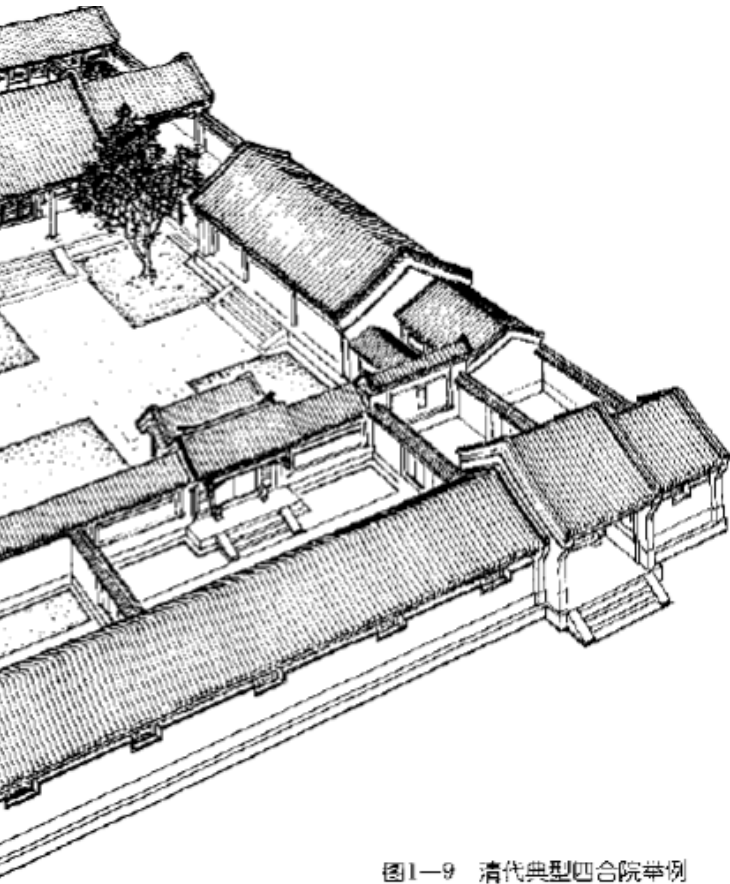
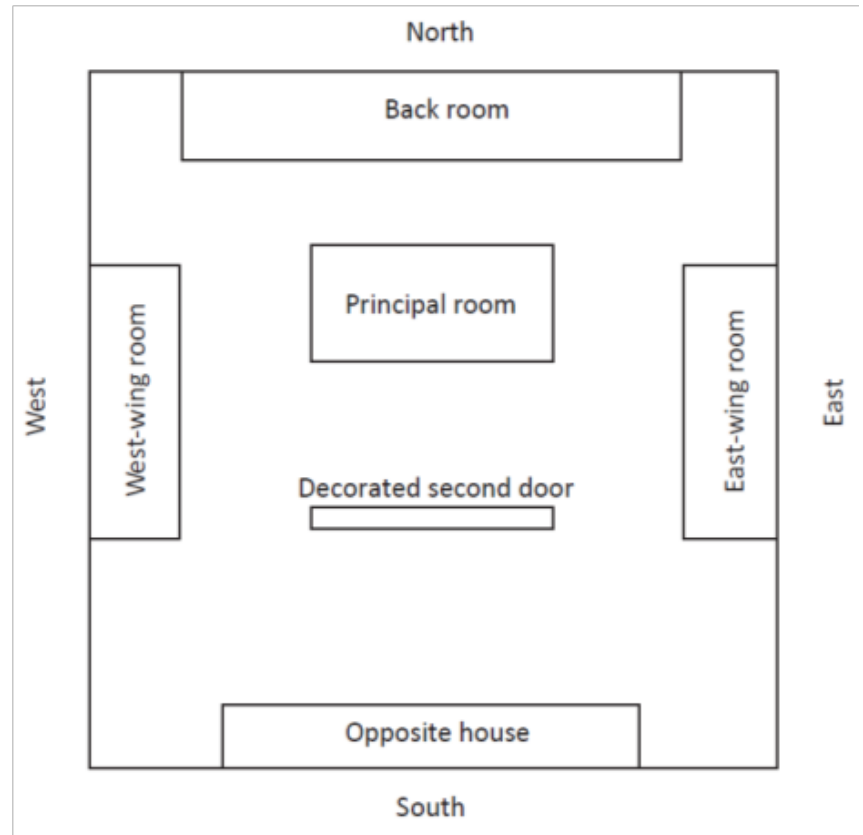


图1-9 清代典型四合院举例

the example of courtyard, Qing dynasty, China

figure 2.1.2 Courtyard of Qing dynasty
THE BEIJING OF THE QUADRANGLE IN BEIJING, 1999



the Overall Configuration

figure 2.1.3 Configuration of courtyard
THE BEIJING OF THE QUADRANGLE IN BEIJING, 1999

2.2 Single Courtyard



It is the most basic kind of courtyard , enclosed by four sides of rooms , the most typical character is that the north is the main room and two sides rooms between it . Two more aside rooms as wing rooms so it is five rooms in total. Sometimes it has only three rooms enclosed the yard.

The smallest one the entrance from the street is directly to the yard. The central axis runs through. The houses are single-story. The inverted room, the principal room and the wing rooms are surrounded by courtyards. The north house is the main room, and the east and west rooms are as wings, and the south door opens to the north, so it is called an "inverted house." Planting trees and trees in the courtyard for viewing.

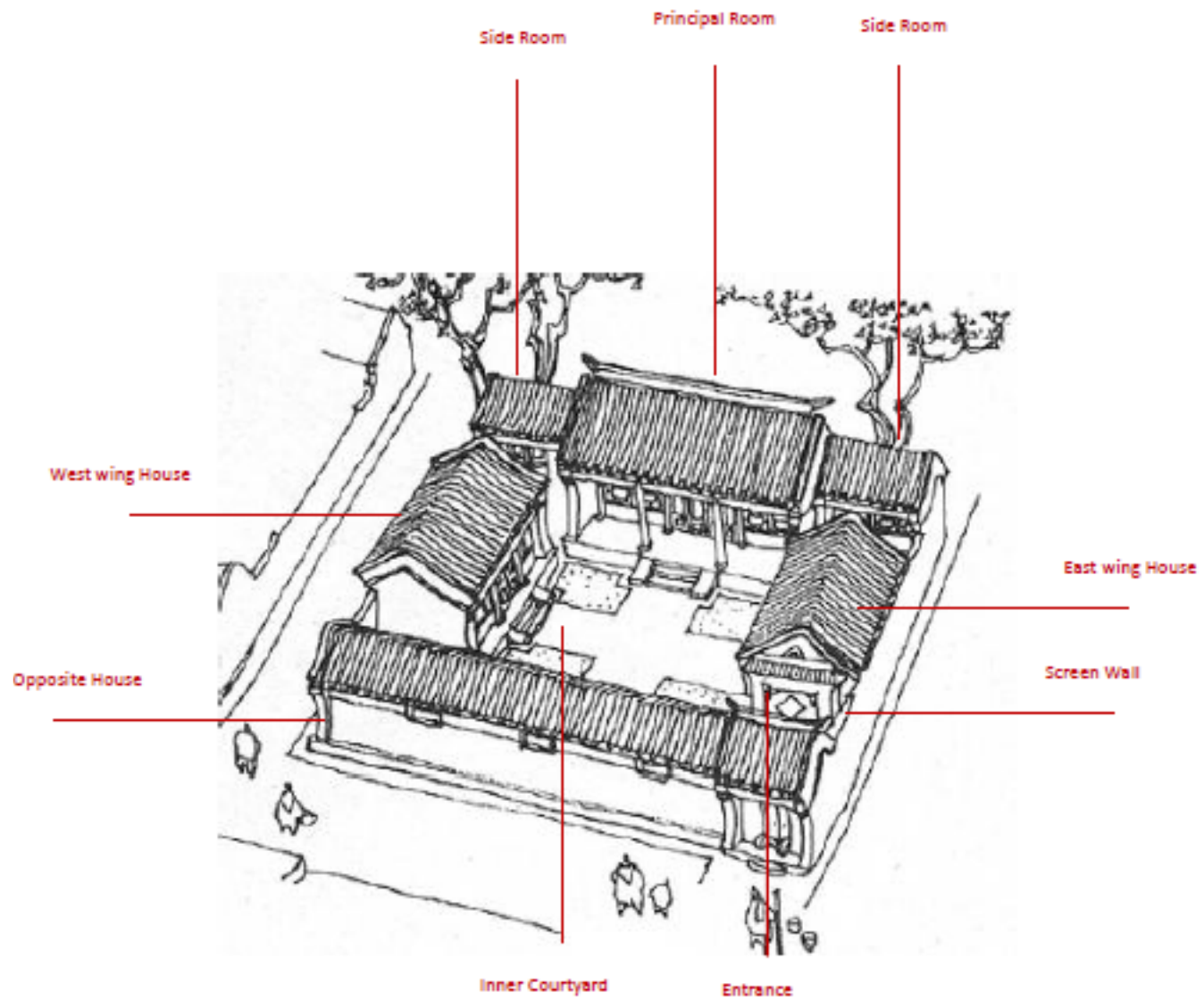
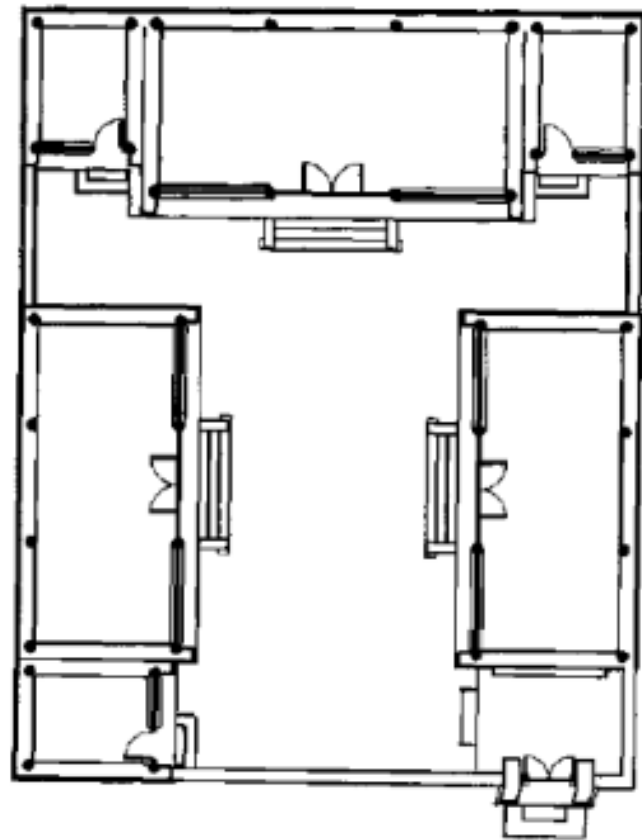
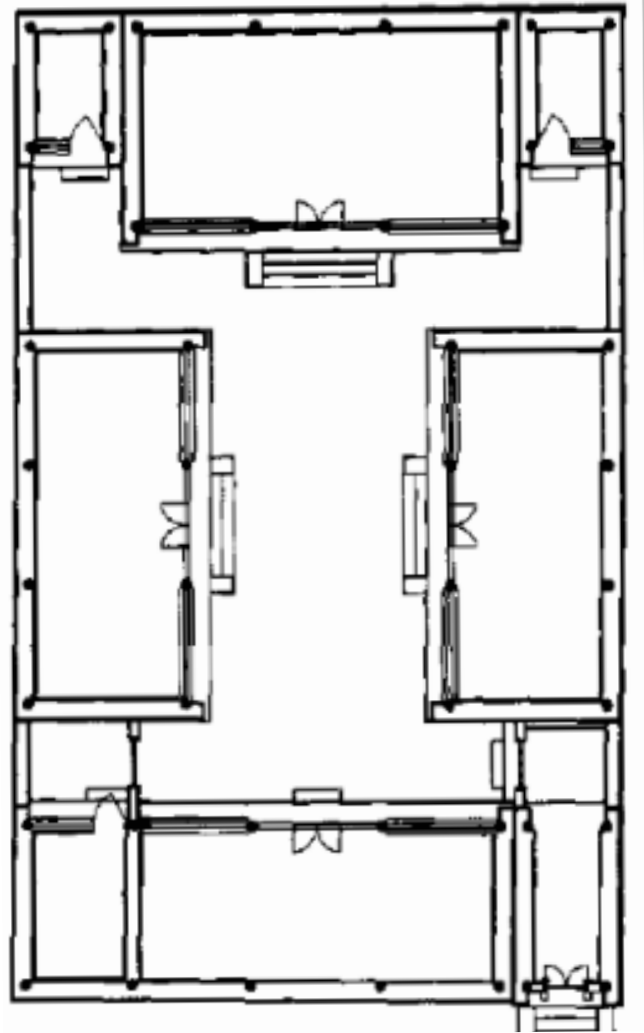


figure 2.2.2 Configuration of single courtyard
THE BEIJING OF THE QUADRANGLE IN BEIJING, 1999



4 Rooms courtyard

figure 2.2.3 Configuration of 4 rooms single courtyard
THE BEIJING OF THE QUADRANGLE IN BEIJING, 1999



3 Rooms courtyard

figure 2.2.4 Configuration of 3 rooms single courtyard
THE BEIJING OF THE QUADRANGLE IN BEIJING, 1999

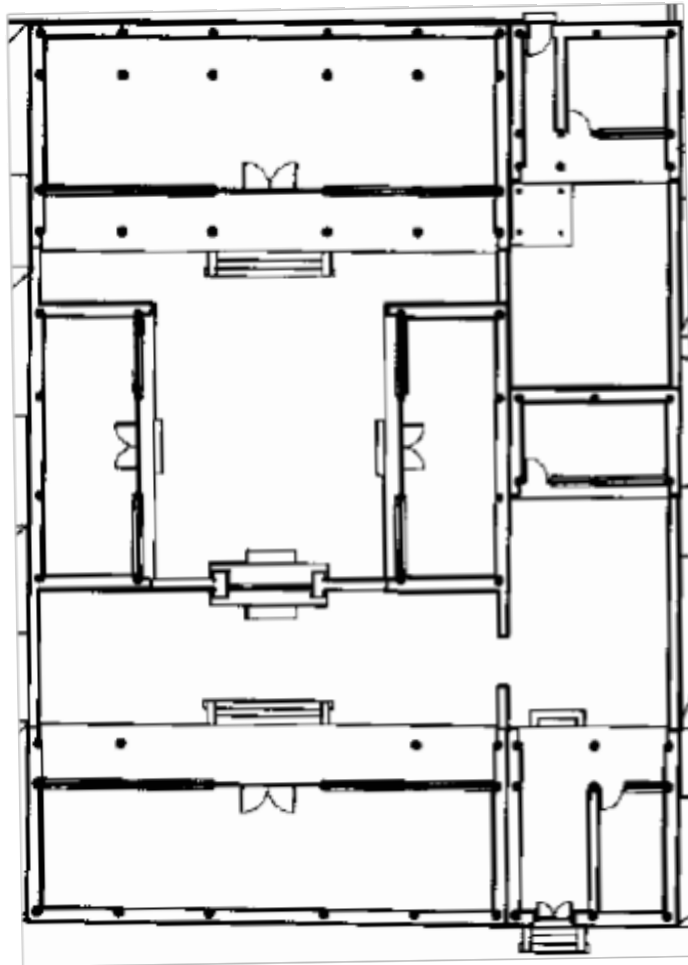
2.3 Two Depth Courtyard



The two depth courtyard is based on single courtyard with the enlarge in lengthways direction. The courtyard is divided into a front yard and a back yard, and the back yard is also called an inner house. The front yard is composed of a gatehouse and an inverted house. The front and back yards are generally decorated with hanging flowers. Some relatively simple houses use moon gates. The backyard is composed of east and west rooms, main rooms and verandas. There are also two entrances and four courtyards, such as the former residence of Mao Dun, Beijing. There is no vertical door to separate the front yard. Instead, the backyard is added to the main house to build a rear cover for the girls.

Also as the example plan below, the main entrance is located the south part of east side walk instead of the middle south overall architecture.

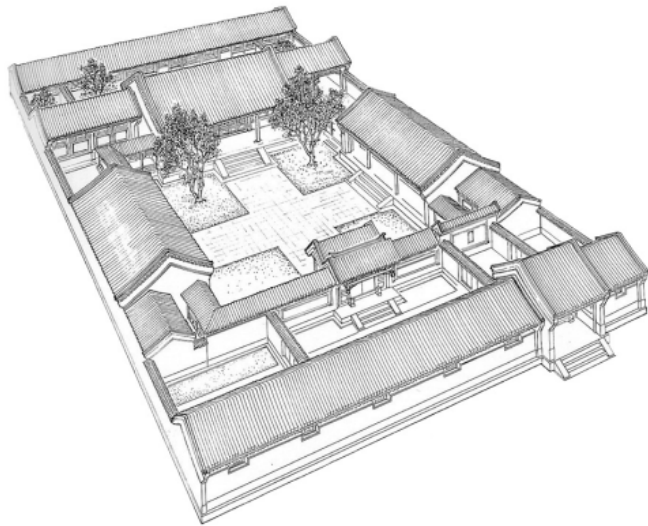
figure 2.3.1 Photo of two depth courtyard
THE BEIJING OF THE QUADRANGLE IN BEIJING, 1999



example plan of two depth courtyard

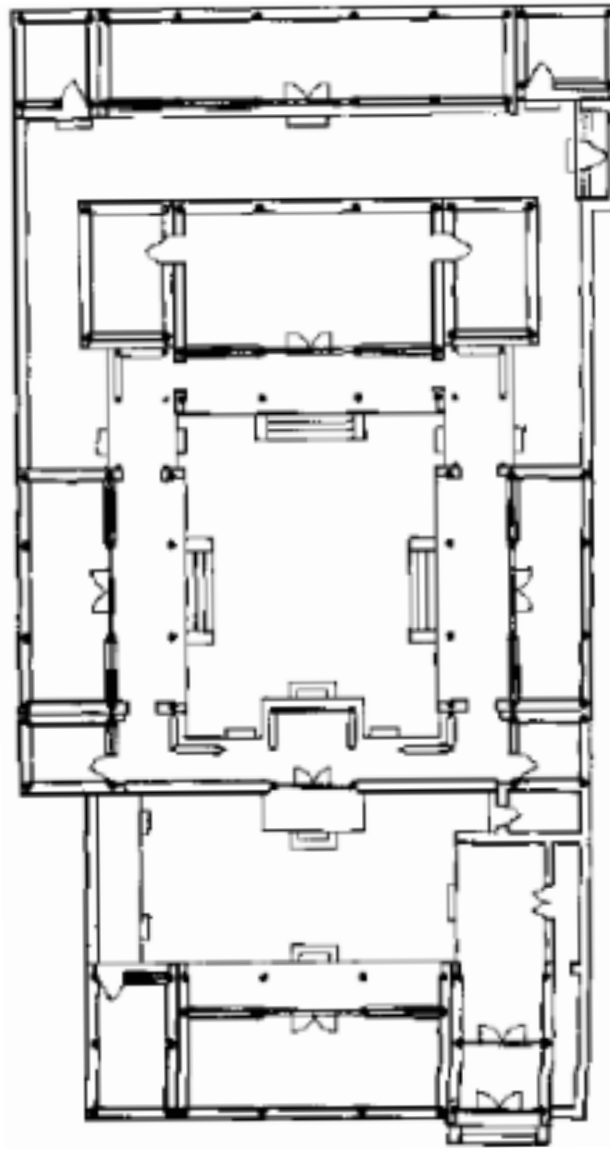
figure 2.3.2 Configuration of two depth courtyard
THE BEIJING OF THE QUADRANGLE IN BEIJING, 1999

2.4 Three Depth Courtyard



Three depths courtyard is enlarged base on two depths courtyard, which is adding a row of back room. The space between the back room and the principal house become to the backyard. This place is designed for girls, connects with the corridor on the east side of the side room. Three depths courtyard is claimed as the "typical" or "classic" Siheyuan, anyway, it's already a quite big scale courtyard that not so many people can afford it. Considered as the great enough size of architecture that time , has many examples remained till now.

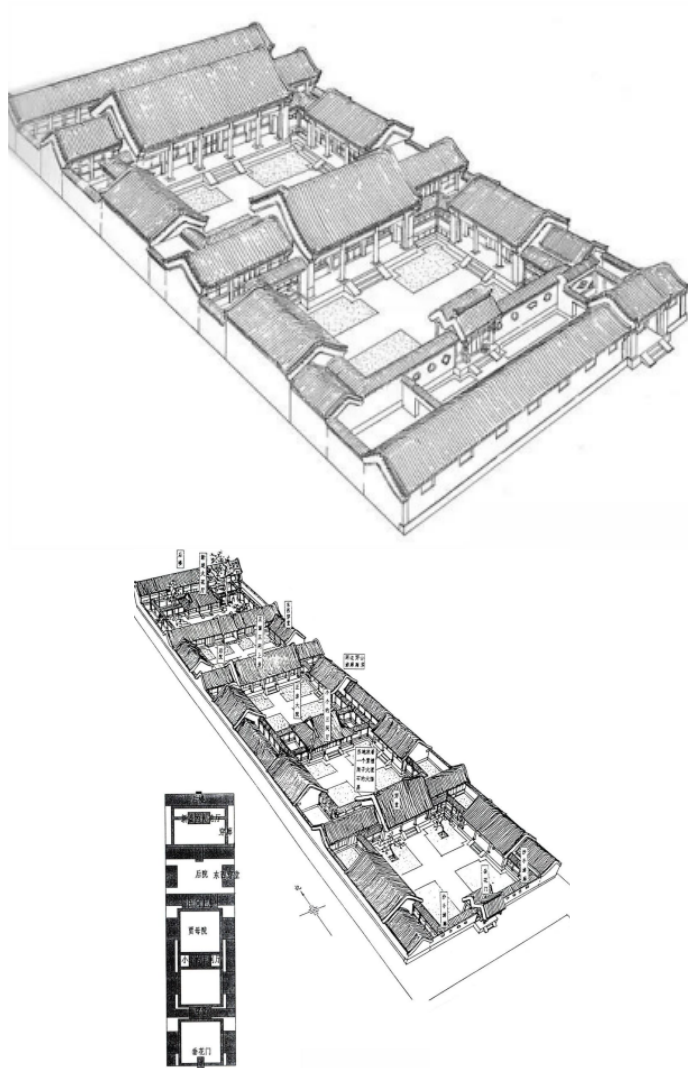
figure 2.4.1 Diagram of three depth courtyard
THE BEIJING OF THE QUADRANGLE IN BEIJING, 1999



example plan of three depth courtyard

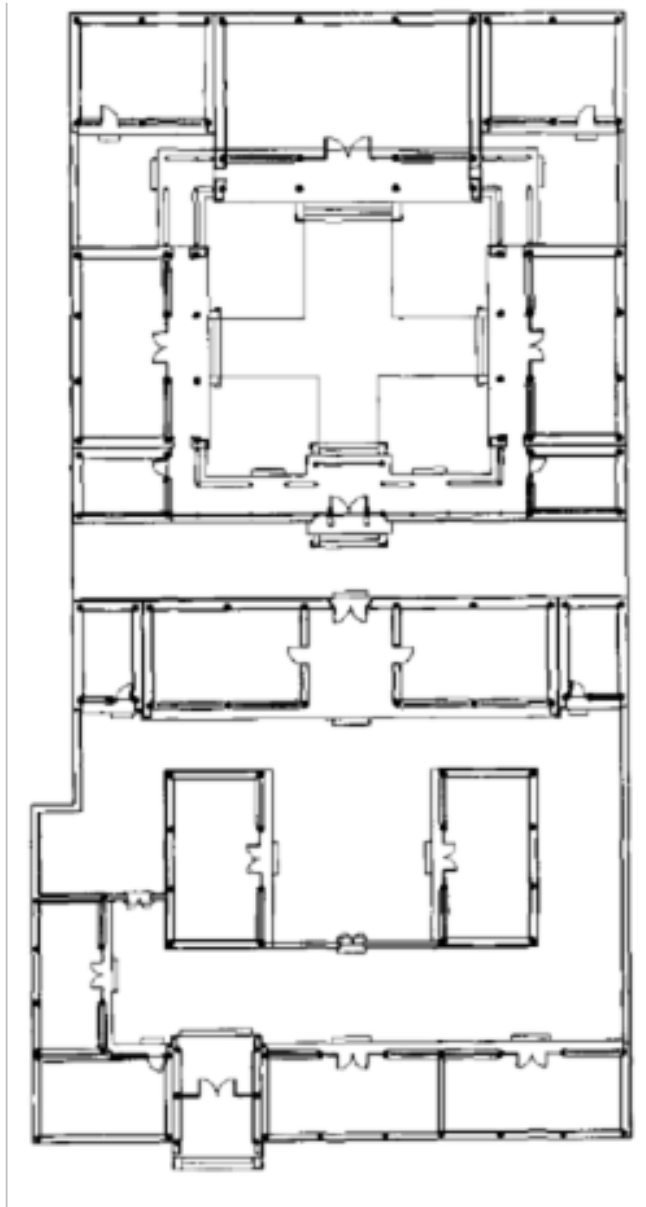
figure 2.4.2 Configuration of three depth courtyard
THE BEIJING OF THE QUADRANGLE IN BEIJING, 1999

2.5 Four/Five depth Courtyard

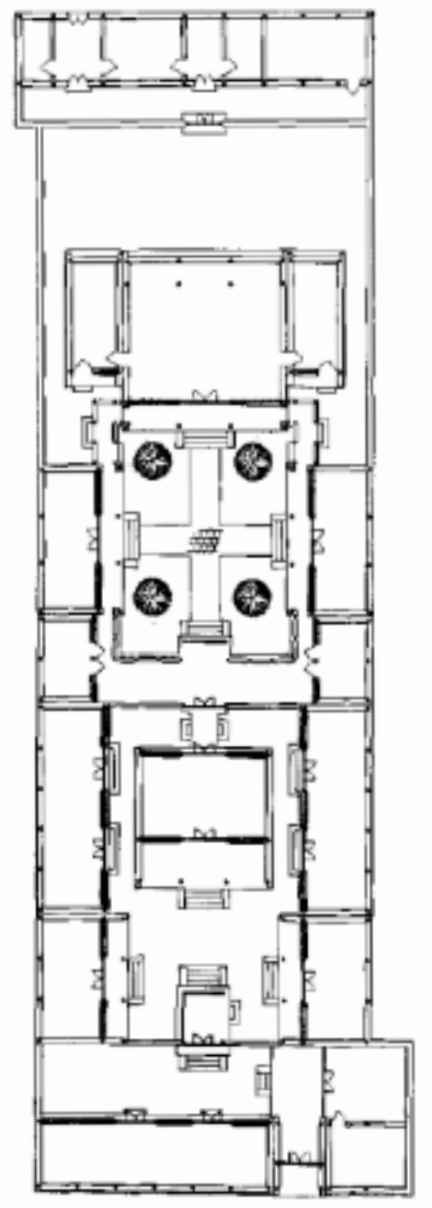


There are many combinations of four or five depth courtyards, which are usually “before and after bed”. The first entrance is the same as the three depth courtyard. The second entrance is the external use room and the east-west room. Then there is a hanging flower door. The third entrance is formed between the hall and the hanging flower door. The main room and the wing are behind the hanging flower door. The fourth yard where he is located is the main hospital. If there is a back cover behind, it constitutes the fifth yard. There is also a row of south houses on the north side of the inverted house, which is composed of four or five courtyards.

figure 2.5.1 Diagram of four/five depth courtyard
THE BEIJING OF THE QUADRANGLE IN BEIJING, 1999



example plan of four depth courtyard



example plan of five depth courtyard

figure 2.5.2 Configuration of four/five depth courtyard
THE BEIJING OF THE QUADRANGLE IN BEIJING, 1999

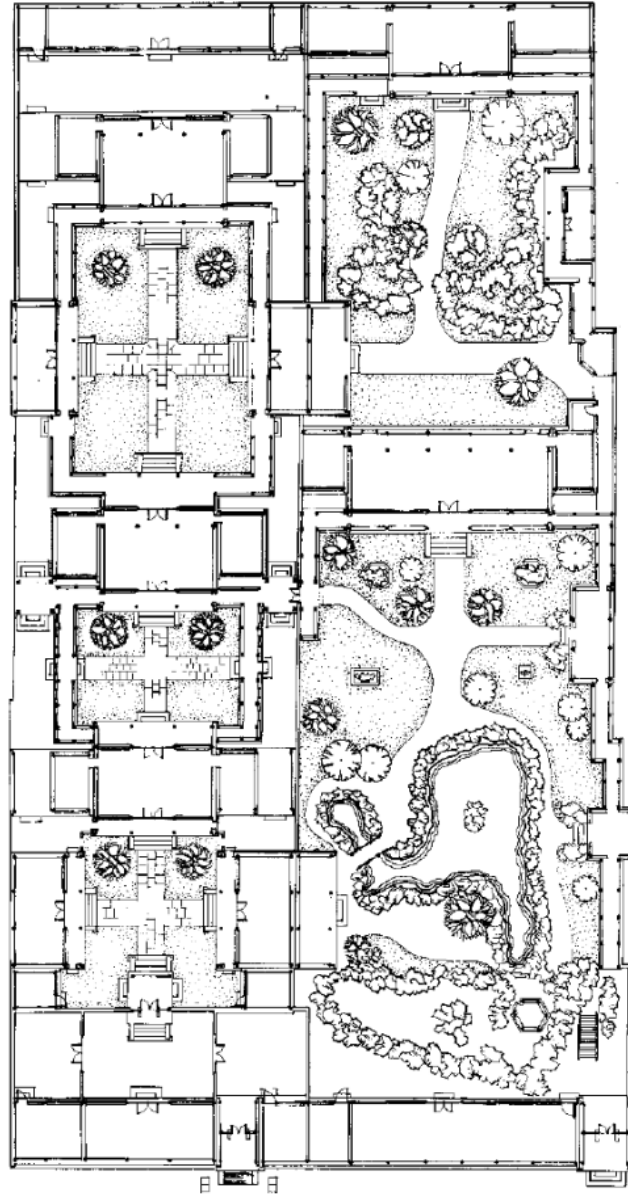
2.6 Green Area or Garden of Courtyard

There are also some gardens or green along with the big or middle size traditional courtyards in Beijing . In Qing dynasty , it was very popular to build the garden at house which learned from the royal family . The most famous ones are all built by the top officers that time . With the large area of garden , lake also gazebos in it , has became the unique scenery of that time until now.

With the rich decoration of details of every corner of the courtyard , it created a magnificent space for a big and rich family that time , can be compared with the palace and also with different views when you move to even a bit step. One of the biggest courtyard is around 4000 sqm and became the architecture and culture treasure to the human nowadays.

Conclusion:

Overall the biggest depth of the Beijing Siheyuan is the distance between the two hutongs, about 77 meters, some of the more luxurious courtyards even have gardens and rockeries. The higher-standard courtyards also have toilets. These built-in toilets are generally arranged in the southwest corner. According to Feng Shui, the southwest is the “five ghost land”. The toilet can be used to store the white tiger with the stolen goods. From a practical point of view, the toilet is built in the southwest to adapt to the northwest-southeast wind direction, and can prevent odor from spreading in the hospital. However, most residents use the "official toilet" in the hutong, which is now the public WC.



example plan of garden courtyard

figure 2.6.1 Configuration of garden courtyard
THE BEIJING OF THE QUADRANGLE IN BEIJING, 1999



官門口五

**Beijing
Traditional Alley
(Hutong)**

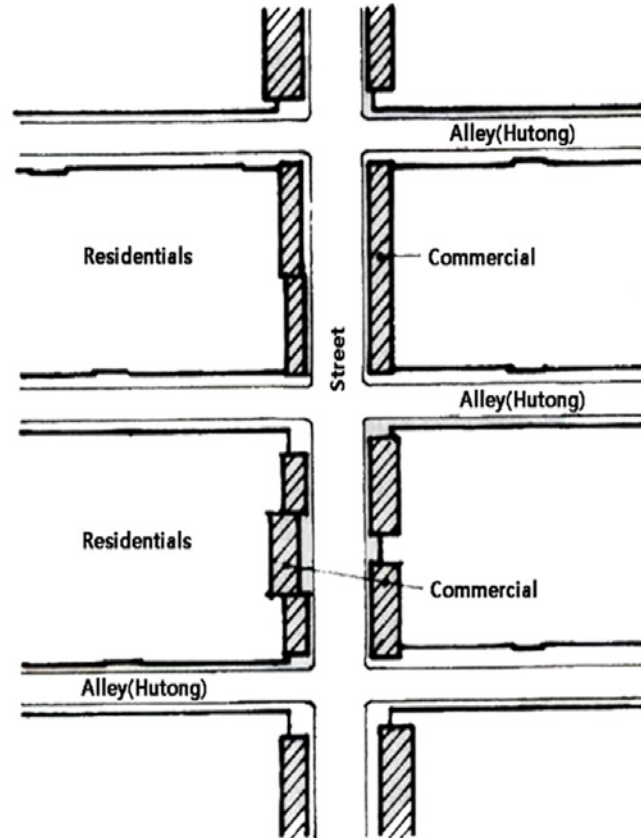
3.1 History and Description

As we know courtyards laid the double sides of the alley. Therefore, the direction of hutong is depend on the placement of siheyuan. It origins from the time of courtyard.

It is a type of narrow street or alley commonly associated with northern Chinese cities, especially Beijing. Many neighborhoods were formed by joining one siheyuan to another to form a hutong, and then joining one hutong to another. The word hutong is also used to refer to such neighborhoods.

Hutong, named from Mongolian “gudum”, means the water well. In 1206, Genghis Khan united many of the nomadic tribes of Northeast Asia and established the empire “Mongol Empire”. In 1260, Kublai Khan became the fifth emperor of Mongol Empire, and in 1271 capital in Han’s Dadu (now Beijing), established Yuan dynasty.

The Beijing Hutong’s culture is much more than the context of the city and the road for traffic. It is also a place where ordinary citizens live in Beijing and an important stage for the development of the history and culture of Beijing. It notes the changes in history. At first glance, Beijing's alleys are gray walls and grey tiles. Actually, as long as you are willing to work on it and walking through a few hutongs, and talk to some old residents for a while, you will find that each Hutong has its own story. The experience, the joy, the timelines, and the rich cultural atmosphere are like a museum full of folk customs, which has imprinted people's stamps on various social lives. Among them, there are places of interest everywhere. In the Hutongs, you can find a lot of bricks have hundreds of years of history. From the courtyards, you can see the lives of Beijing residents, their lifestyles, interests and neighborhood relationships.



Arrangement of Hutong in Yuan Dynasty



figure 3.1.2 Photo of Hutong



figure 3.1.3 Photo of Hutong in Nanluoguxiang

3.2 Morphology

Since the mid-20th century, a large number of Beijing hutongs were demolished to make way for new roads and buildings. More recently, however, many hutongs have been designated as protected, in an attempt to preserve this aspect of Chinese cultural history. Hutongs were first established in the Yuan dynasty (1206–1341) and then expanded in the Ming (1368–1628) and Qing (1644–1908) dynasties.



figure 3.2.1 Photo of Hutong Nowadays



the morphology of hutong East old city of Beijing, 1990s

figure 3.2.2 Morphology of hutong in 1990s
THE BEIJING OF THE QUADRANGLE IN BEIJING, 1999



the morphology of hutong West old city of Beijing, 1990s

figure 3.2.3 Morphology of hutong in 1990s
THE BEIJING OF THE QUADRANGLE IN BEIJING, 1999



Architectural Materials

4.1 Design Material - Feng Shui

4.1.1 Origin and Principles

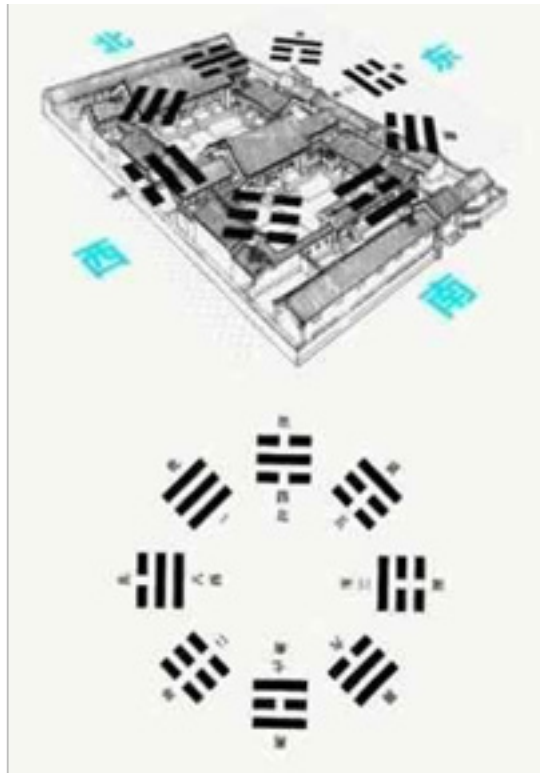
Feng Shui, one of the traditional techniques, the method of on-site examination of geography, is used to select the palace site, the village site, the construction of cemetery as principles. The original idea is to choose a suitable place for living. The history of feng shui is quite old. In ancient times, feng shui was prevalent in the Chinese culture and was a very important factor in clothing, food, housing, and transportation.

The door of the courtyard is generally in the southeast of the position. From the perspective of feng shui, it is because the northern architecture pays attention to the "can-door", the "can" is the north, the five elements are the water, and the main building is built on the water level. Avoid fires; "yi" is the southeast, the wind, the place where the wind is permeable, just like the windows of a house, you can pass the heavens and the earth. Therefore, the main house is built in

North, and the door is in the southeast, in order to take out the auspicious meaning of peace.

For the siheyuan case: the geographical location and climatic condition, the best direction to build houses is to make it located in North and openings facing the South. The secondary solution is located in West and openings facing East, the East and South houses are not considered as a good place to live. As Pekingese said, "don't live in the East or South houses if you are wealthy, they are not warm in the winter nor cool in the summer". So when people building the houses, they will try to place the main building at the north and then build the other building in order.

4.1.2 Three Main principles applied in our case



Useful Examples of the Principles Of Feng Shui Being Suitable and Appropriate to the Restriction and Limitation of the Site (因地制宜原则)

The principle of local conditions

Adapting to local conditions means adopting a lifestyle suitable for nature according to the objectivity of the environment. "Zhou Yi" proposed: "Conformity and stop."

China has a vast territory, huge climate and soil quality difference, so the construction form is also quite different. The north-west region is drought and rare to see the rain, so people use burrow cave dwellings. The caves are mostly south-facing, it's easy to construct, and not take place on the land, it saves materials, it can prevent the fire and also protect people from cold, cool in winter and summer, people are longevity, and chickens lay more eggs. The southwest is wet and rainy, with many insects and

figure 4.1.1 Fengshui

beasts, and people live in elevated bamboo buildings. "Old Tang Dynasty Manchu Biography" says: The mountains have poisonous grasses and snakes, people live in the high buildings, climb up the ladder, it called Ganlan (elevated bamboo building). "The ground floor is empty or feeding the animals, and people live upstairs. The air circulation of the bamboo building is cool and moisture-proof. Most of them are built in the mountains and rivers. In addition, the herdsmen in the grasslands use the yurts as houses to facilitate migration along with aquatic plants. The people of Guizhou and Dali (a city in the south of China, surrounded by mountains) built houses using rocks, and the people living in the flatland built houses using the dirt. These architectural forms were all based on the specific conditions of the time.

China is a pragmatic country. Local conditions are the embodiment of practical ideas. According to the actual situation, we must adopt effective and effective methods to make people and buildings suitable for nature, return to nature, and unite nature and humanity. This is exactly what Feng Shui has to offer.

Take Advantage of the Atmosphere(顺成风气原

则)

The principle of facing the south

China is located in the northern hemisphere of the Earth, east of Eurasia, and most of the land lies north of the Tropic of Cancer. The sunlight throughout the year is injected from the south. South-facing houses make it easy to take in the sun. Sunshine has many benefits for people: First, it can be warmed. In winter, the temperature of southern rooms is 1-2 degrees higher than that of northern rooms. Second, it is involved in the synthesis of vitamin D in the human body. Children often suffer from sunburn and can prevent rickets. Third, the ultraviolet rays in sunlight have The bactericidal effect; the fourth is to enhance the body's immune function.

Located north and facing south, not only for lighting but also to avoid the wind from the north. China's topography determines its climate is the monsoon. In winter, there is a cold winter in Siberia, and in the summer there is a cool breeze in the Pacific Ocean, the wind direction changes throughout the year. There is a record of the wind in the bones of Oracle. "Historical Law Book" says: "Wind from the

northwest, it is in October. The wind is from the north, it's November. The wind is from the northeast, it's January. The wind is from the east, it's February." There is also a difference of yin and yang between the wind. The wind from the south and the east, they are smooth and warm, so it called YANG wind, so it's no harm. But the wind from the north and west, they are cold and freeze, it called YIN wind" It mentioned avoiding the northwest wind.

In a nutshell, the principle located in the north and facing the south is a recognition of natural phenomena, follow the natural to maintain the body and to uplift the mind and the spirit.

Suitably Located in the Middle and Residing in the Middle (居中适用原则)

Moderate Centering Principle

Moderately, it is just right, unbiased, neither big nor small, neither high nor low, optimized as much as possible, and approaching perfection. The "Guan's Geography guidebook" claimed that: It's high but not dangerous, It's low but not sink, it's distinct but not the exaggeration, It's quiet but not feel like

imprisoned, it's special but not strange, it's delicate but not inferior. ”

Moderate feng shui principles have already been produced during the pre-Qin period. In "Lü's Chunqiu" has pointed out: "The bigger room, the more yin. The higher building, the more yang. Too much yin will cause the depression, too much yang will cause the restless. Unbalanced yin and yang are all suffering the discomfort. " Overall, yin and yang balance is moderate.

The principle of moderateness also requires that the center should be prominent and the layout should be neat, with additional facilities closely surrounding the axis. In a typical feng shui landscape, there is a central axis that runs parallel to the earth's meridian and extends north-south. The northern end of the central axis is preferably a high building (as a mountain), forming a T-shaped combination. On the southern end, there is a spacious bright room (as a plain), axis lined with buildings on both sides and curved rivers (water). The mausoleums of the Ming and Qing Dynasties and the gardens of the Qing Dynasty were constructed in accordance with this principle.

4.1.3 Yin Yang

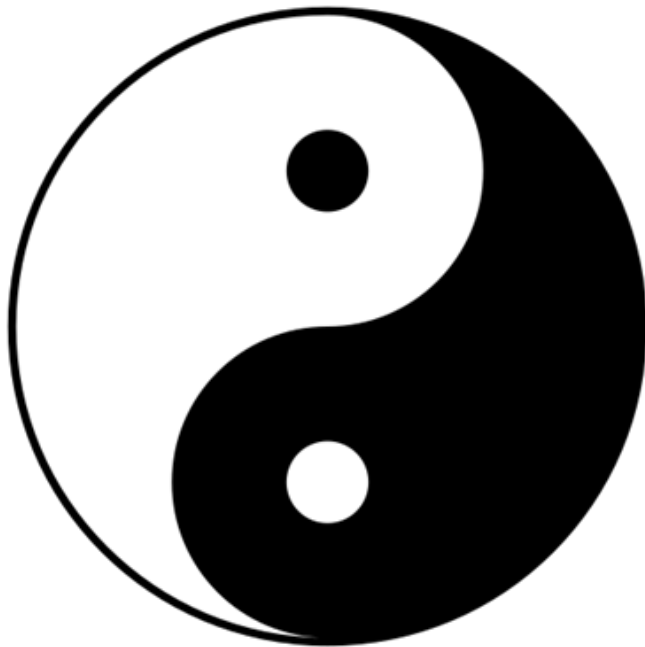


figure 4.1.2 Yinyang

Chinese traditional architecture is no exception. The traditional "geomantic omen" takes "Yin and Yang" and "five elements" and other concepts as the philosophical foundation, elaborating the spiritual influence of concrete operation methods and guiding principles on architecture, which are the most profound, the most unique part of Chinese traditional architecture.

One of the characteristics of Chinese traditional architecture is the tendency of "colorization", that is to say, all buildings are largely multi-colored, and single-colored buildings are exceptional. However, the multi-colored composition causes no confusion in color, because a dominant tone exists no matter it is a single building, building group or a town to control the overall color appearance. If the main color covering the largest area is "Yang", then the auxiliary colors in small area creating a live atmosphere is "Yin".

The Forbidden City, notable as the highest level of building group in feudal society, is painted in the bright golden yellow and saturated red as its main color. Its auxiliary colors can be seen from the blue-and-green colored painting under the eaves, which relieves and smoothes the pressing and solemn vision of the Forbidden City.

Although the main color of northern dwellings are mostly gray owing to the use of blue bricks and terra cotta tiles, the wooden beams, columns, doors, windows and other components are painted in dark red or revealing the original color of wood, and the local woodcarving is painted in splendid color, which add vitality to the stillness...; the dwellings in Huizhou, Suzhou, eastern Zhejiang and other places are constructed of grayish black terra cotta tiles and pure white wall, which is an unmistakable contrast between Yin and Yang.

Traditional Chinese buildings are mostly low-rise building and developed in crawling form. Its area expansion depends on the replication and composition of a single building, and it is a “graphic art” similar to seal engraving, calligraphy and painting and indicates the concept of Yin and

Yang and aesthetic taste in the same way. It can be described as the magnified seal engraving, calligraphy and painting, but the medium for creation is the earth rather than seal stone, paper or silk, and both parties of Yin and Yang are no longer the characters or images in black ink and the space on the paper but the physical walls, corridors, windows, doors and other architectural vocabularies and the courtyard surrounded and limited by them.

The square dwelling, mansion, palace and even the whole city are arranged in a way similar to that of a seal: the external boundary limited by walls likes the frame of the seal, the building, corridor and partition which divide the internal space work like the red lines of the seal, and the courtyards in different sizes and structure like the space of the seal surface. Both the physical components and the “empty” courtyard are an integral part of the building. The landscape architecture in regions south of the Yangtze River has a picture-like overall layout and indicates the concept of “Yin and Yang” best: the buildings in residence part are intense, even well-organized, acting like the ink in painting, and the buildings in garden part are sparse and decorate the walls, corridors, pavilions, rooms and so on, acting like the space in painting

4.2 Construction Materials

4.2.1 Main Part of Architecture

Beijing Siheyuan is relatively easy to design and construct. The materials used are very simple. Traditional ones are no steel and cement are used. They are all bricks and gray tiles, brick and wood, mixed buildings. Of course, the wooden structure is the main standard structure. It is light in weight. Good behavior in earthquake.

For the designers who want to rebuild them nowadays we had better respect the materials they used and add new modern or environmental friendly materials such as glasses and so on.

Traditional Chinese workers created a whole system to build courtyard , usually is wooden structure with columns as support, the roofs are made by tiles and with slope as other traditional Chinese buildings . The walls are made by rocks with rectangle shapes or bricks using cement for bonding.

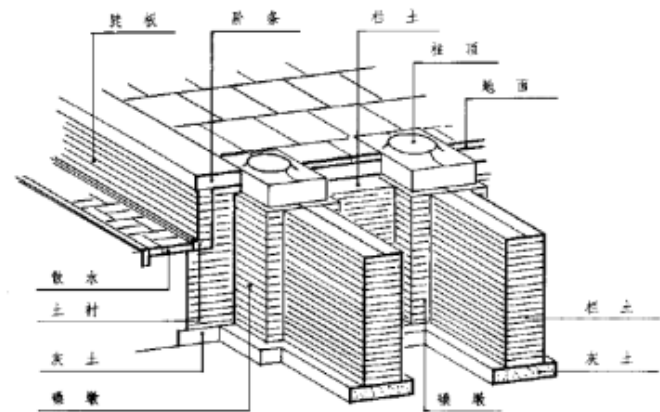
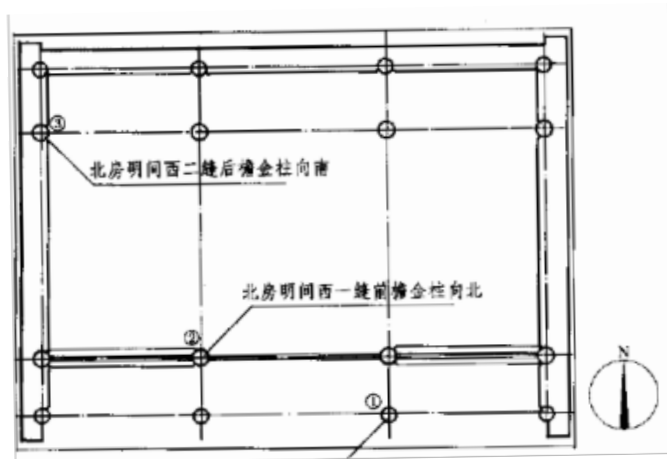


figure 4.2.1 Foundation construction
THE BEIJING OF THE QUADRANGLE IN BEIJING, 1999

First started with the basement or foundation work , refer to the drawings to place columns and confirm the dimensions or each wall or columns. Using lime and soil with some proportion to mix to fill in the gap.



Second step is usually to make the big timber pieces used to construct the building. Such as different beams, columns, and some special connection parts of wood. Including the whole system of standard of both making and checking of the wood, people from past can make sure that they can have the best results of work.

Next step is usually processing the stone elements, the rock elements used for foundation, the edges of columns and other corner parts which need to be stronger during the time goes.

Then we go to the step of processing the brick elements and making mortar which considered to be one of the most important parts of the construction work.

There are many traditional ways to make sure the dimension of each brick, brick is always baked in kiln and made by hands. So they have rough appearances but workers place them cautiously with different techniques in order to make the looking of the final wall elegant and delicate enough.

The mortar part is also with a lot kinds, we decided

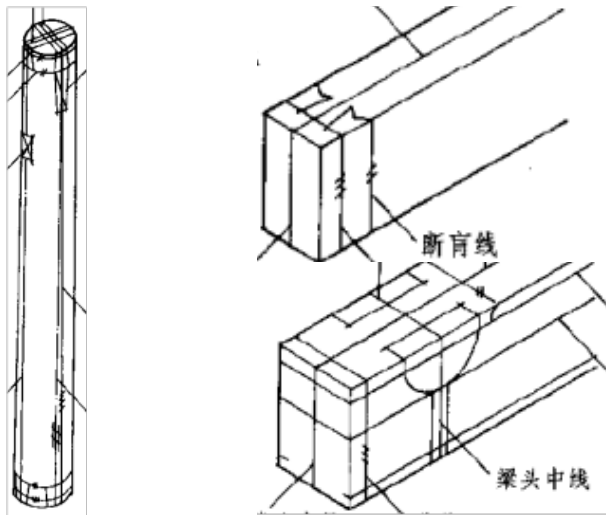


figure 4.2.2 Foundation construction elements
THE BEIJING OF THE QUADRANGLE IN BEIJING,1999

our proportion to mix lime and clay. Also depend on different kinds of construction work , workers created different kinds of mortars to apply on them and make it in advanced.

After all the steps with basic it goes to the step of install of big parts, always made of timber. Then start to place the walls , definitely there are many different types of walls like mountain wall, sill wall or the decoration wall. Depends on walls we use different techniques to install them, the gap between the bricks is usually 2-4mm.

For the external construction of architecture of courtyard the last step is to install the roof with tiles and pavement. To be simplified , we place the tiles layer by layer from down to up . And also place the pavement with rock materials in the yard illustrate it into different functions of outdoor areas.

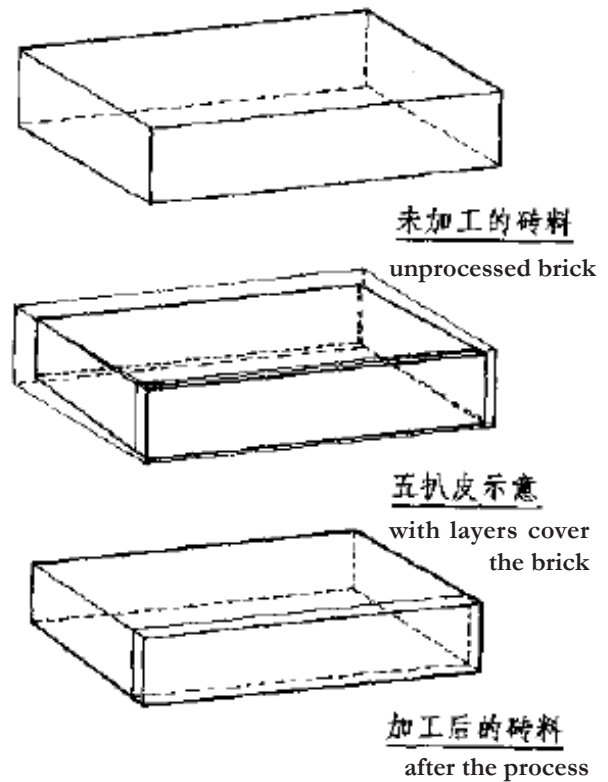


figure 4.2.3 Foundation construction elements
THE BEIJING OF THE QUADRANGLE IN BEIJING, 1999

4.2.2 Typical and Important Ornaments

Multiform Window

Multiform windows are mainly used in garden architecture and Beijing Siheyuan residences. They have strong decorative effects and various shapes. All kinds of patterns are collected from beautiful utensils, flowers, fruits and vegetables and geometric figures. Such as jade pot, fan noodles, birthday peach, five parties, six parties and so on.

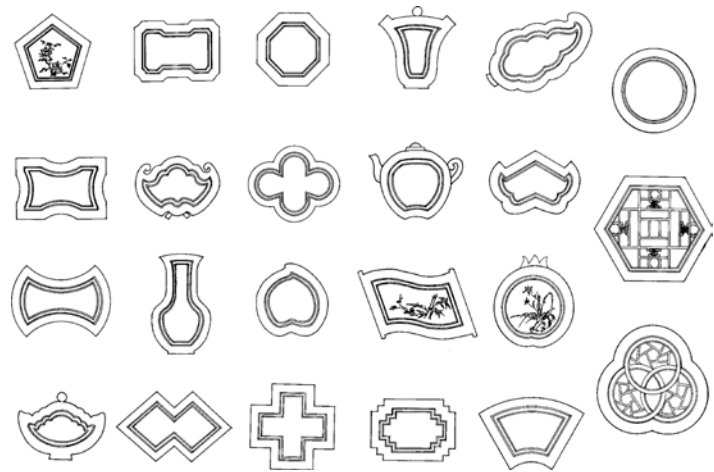


figure 4.2.4 Multiform window
THE BEIJING OF THE QUADRANGLE IN BEIJING, 1999

Function and position in ancient time

Function: decoration



**Private courtyard
on Gulou East
Street, Beijing**

Position

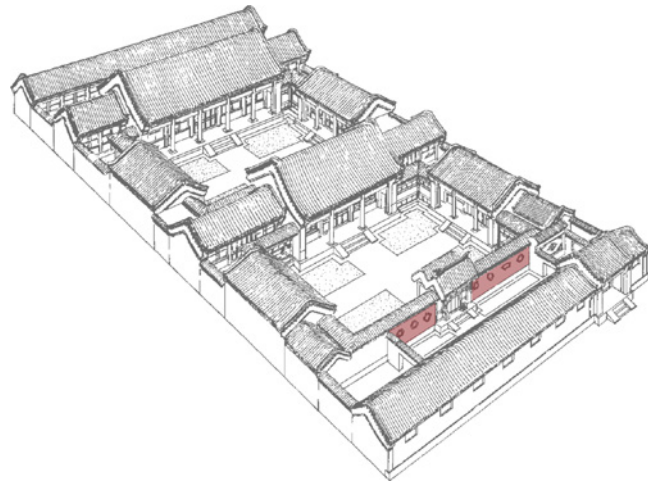


figure 4.2.5 Analysis of multiform windows
THE BEIJING OF THE QUADRANGLE IN BEIJING, 1999

Function: decoration, communication space

Before entering a courtyard, this is very common a wall with the multiform windows partially obstruct people's eyesight.



**Private courtyard
on Gulou East
Street, Beijing**

Position

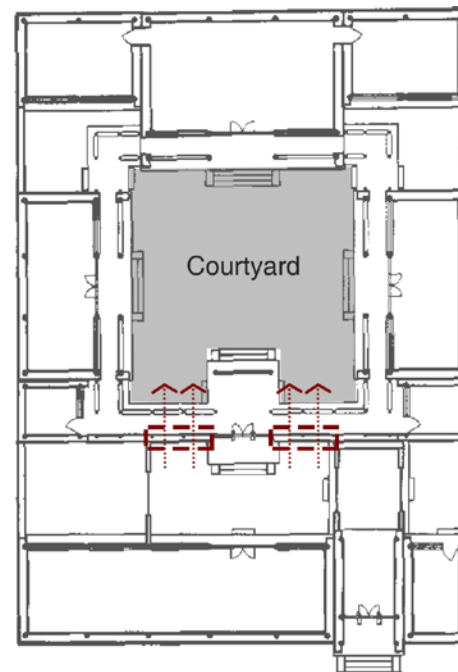
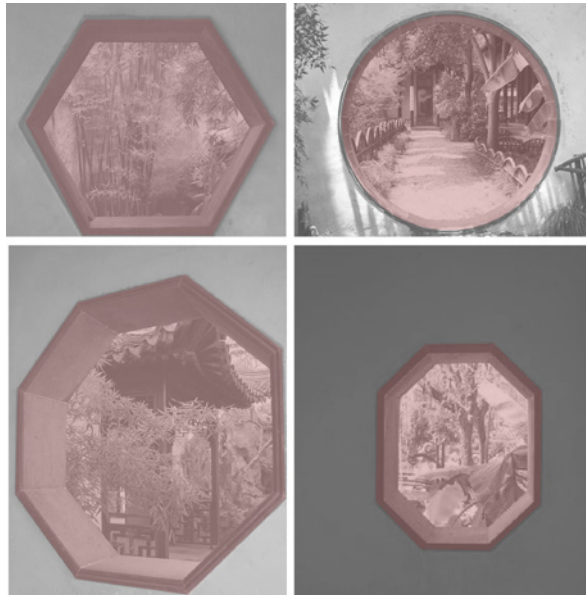


figure 4.2.6 Analysis of multiform windows
THE BEIJING OF THE QUADRANGLE IN BEIJING, 1999

Function: enframed scenery



Keyuan Garden,
Beijing

Position

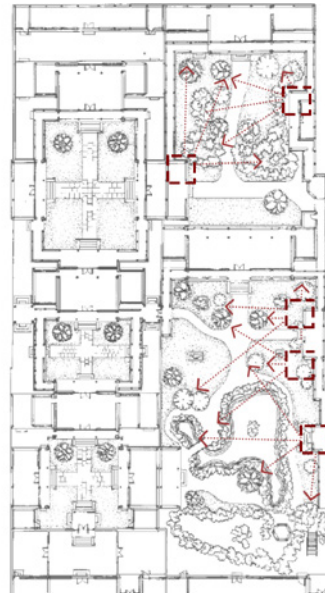


figure 4.2.7 Analysis of multiform windows
THE BEIJING OF THE QUADRANGLE IN BEIJING, 1999

Usage on Nowadays

The formation of Multiform Windows has been simplified although the functions such as communicating spaces and enframed scenery still have been retained and been used frequently.



Suzhou museum,
Jiangsu

figure 4.2.8 Photo of Suzhou museum

Screen Wall

Screen wall is used to shield an entrance gate in traditional Chinese architecture. Screen wall can be positioned either on the outside or the inside of the gate they are protecting. The Chinese term "yingbi" is used to refer to screens on the outside as well as on the inside. Screen wall can be either solitary structures or could be attached to a neighboring wall. They can be constructed from a variety of materials such as brick, wood, stone, or glazed tile. Outer screen wall were often status symbols and could be richly decorated. Common decorations include symbols of good luck, such as the character for good fortune. Particularly ornate screen wall featuring a dragon motif are the Nine-Dragon Walls that can be found in imperial palaces and gardens.

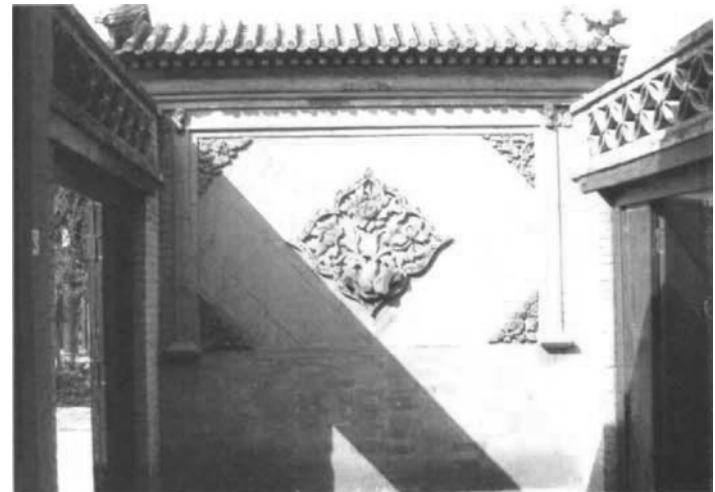


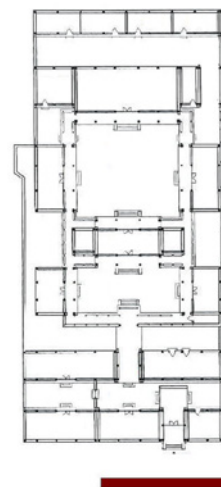
figure 4.2.8 Photo of Screen wall

Outer screen wall



figure 4.2.9 Photo of Outer Screen wall

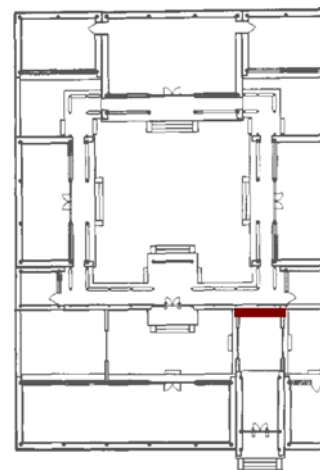
Position



Inner screen wall



figure 4.3.0 Photo of Inner Screen wall



Inner independent screen wall



figure 4.3.1 Inner independent wall
<https://zhuannlan.zhibu.com/p/66327427>

Position:

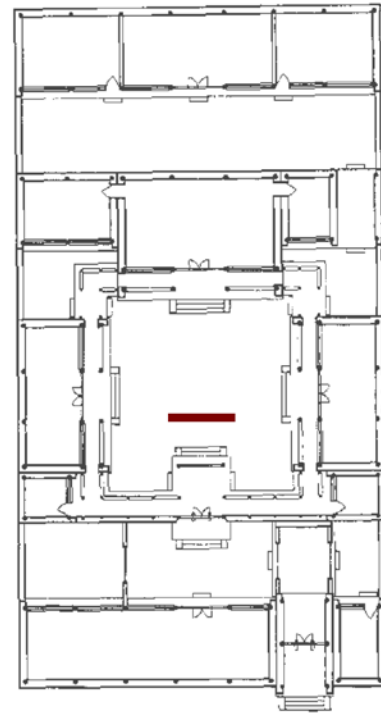


figure 4.3.2 Plan of typical courtyard
THE BEIJING OF THE QUADRANGLE IN BEIJING, 1999

Functions in ancient time

1. Blocking eyesight and the sands blown by the wind to protect the private space

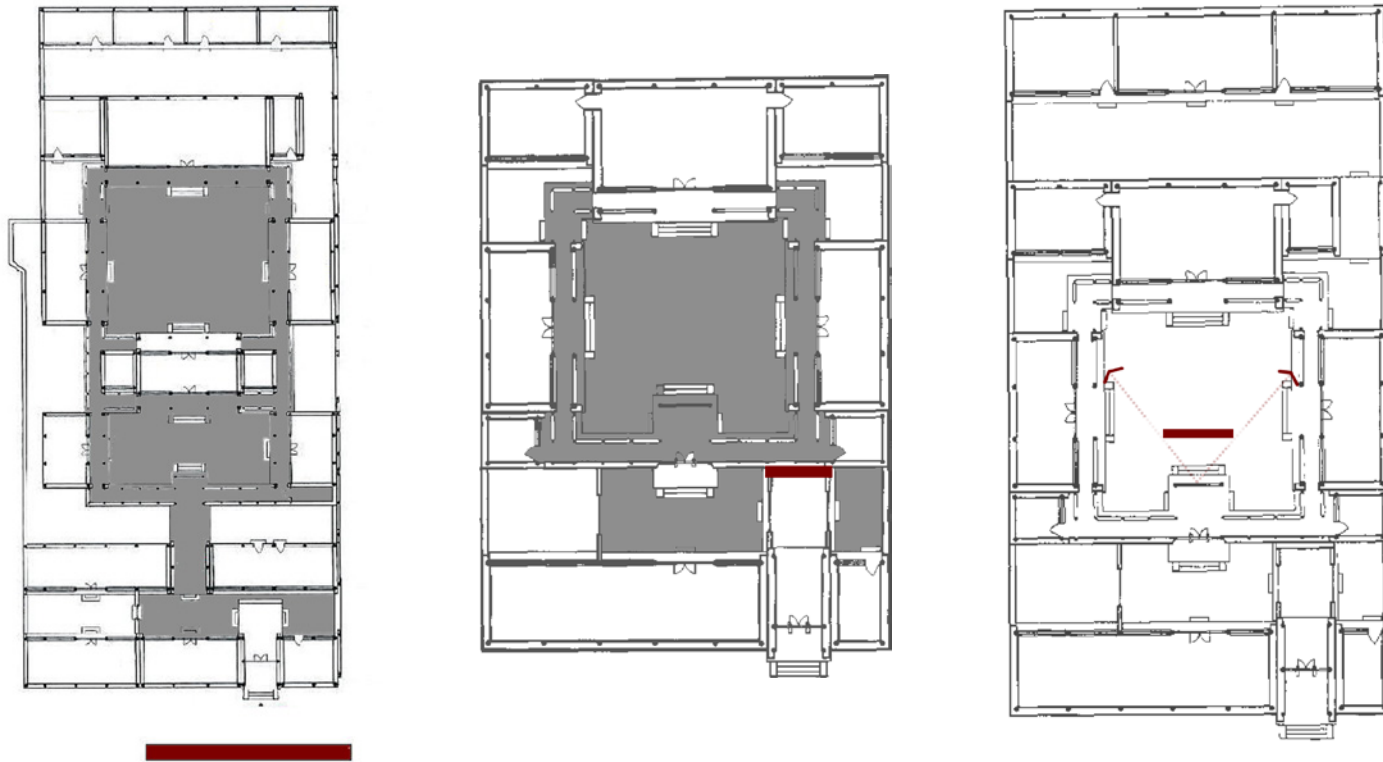


figure 4.3.3 Functional analysis

2. Trust for beautiful wishes

People believe that beautiful brick sculpture can bring them wealth and fortune.



figure 4.3.4 Patterns on the wall
THE BEIJING OF THE QUADRANGLE IN BEIJING, 1999

3. Drive the ghosts away

The screen wall of the courtyard allows the ghosts to see their shadows and be scared away. They are not allowed to enter the house.



figure 4.3.5 Ghost means bad luck in China

Usage on Nowadays

Function: Blocking the eyesight

The outer screen wall is disappeared nowadays although the inner one was well kept, and the independent one was sometimes used in the garden.

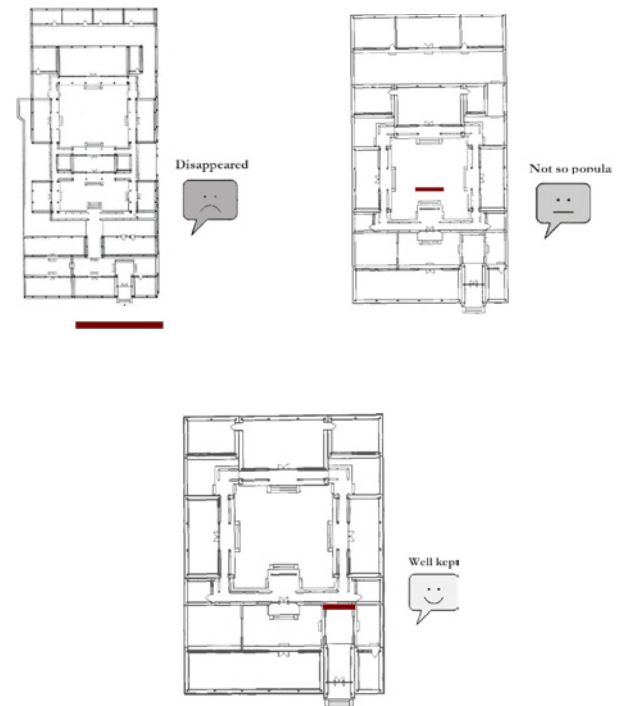


figure 4.3.6 Analysis usage nowadays

The brick sculpture was simplified or just removed, just keep the wall's most important function: Blocking the eyesight.

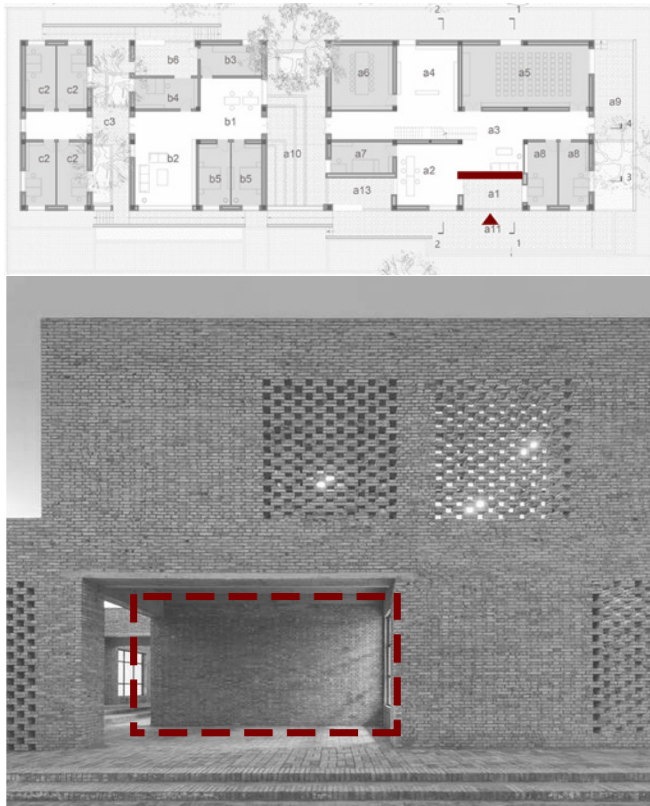


figure 4.3.7 Community center in Sanhe Village, Shanxi

The screen wall used in the garden nowadays is always combined with some other elements like multiform windows.



figure 4.3.8 Photo of screen wall

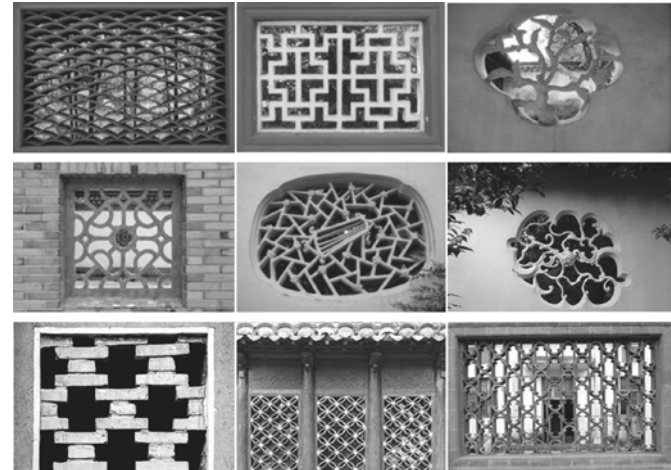
Functions in ancient time

Function: Communicating space, neither fully exposed nor completely obstructed, decoration

Position: The inner wall of garden

Fancy Hollow Wall

The Fancy Hollow Wall is frequently used in gardens. Suzhou and Shanghai are called 'Fancy Hole Wall', and the north is called 'Fancy Brick Wall' or 'Fancy Hollow Wall'. The fancy hollow wall is a kind of fancy brick wall, which is made of bricks in the wall hole, or made of tiles or bamboo carvings.



Various kinds of the hollow walls used in garden

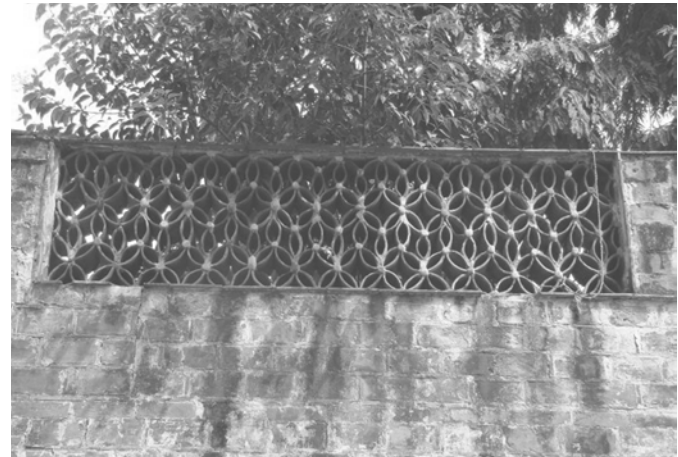
The fancy hollow wall was used in the garden originally, then was adopted by Siheyuan.

Position: The head of the door



Function: Decoration and loosen weight

Position: The parapet wall



Fancy Hollow Wall in the block in Kongmenkou 5th Alley, Beijing

figure 4.4.0 Photo of hollow wall
THE BEIJING OF THE QUADRANGLE IN BEIJING, 1999

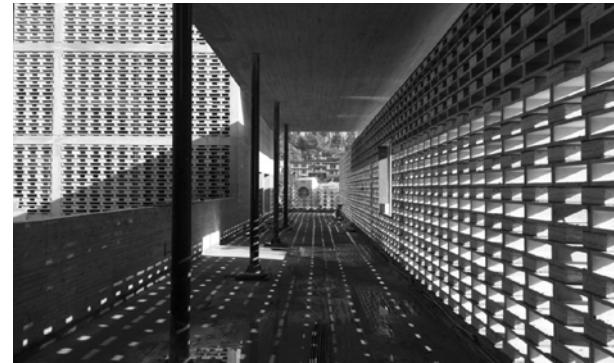
Usage on Nowadays

Simplify the fancy formation but enlarge the size and keep its functions: good ventilation, communicating space partially, creat beautiful light and shadows.



**Red Brick Museum,
Beijing**

figure 4.4.1 Photo of red brick museum
<https://www.archdaily.com/tag/red-brick-art-museum>



Alila Yangshuo, Guangxi

figure 4.4.2 Photo of Alila
<https://www.dezeen.com/2017/12/06/vector-architects-alila-yangshuo-hotel-disused-sugar-mill-architecture-china/>

4.2.3 Other Interesting Ornaments

One of the most important and splendid points of Beijing courtyard is the ornament and details of many small parts of the architecture. Just considering Chinese traditional courtyard, it is one of the most simply and plain form of architecture in China--the gray color of the main area of the bricks , the form of mountains and a little drawings or decoration with color compare to the great Chinese palaces it cannot count as a treasure that much , but with the people's wisdom from old days , it also came out with something unique and beautiful.

Firstly it is important to be mentioned is that the sculpture of the bricks at different areas of architecture. Most popular ones are the sculpture on the top of pliers beside the each gate. From my perspective it is more like the capital of Greek columns as the Chinese version and with thousands of patterns. Below of the page are some typical examples of it , tradition ideas of the content of the patterns usually could be some elements which

considered good luck by Chinese people such as swallows or magpies , otherwise are some plants or natural elements symbolize harmonious like bamboo or chrysanthemum.

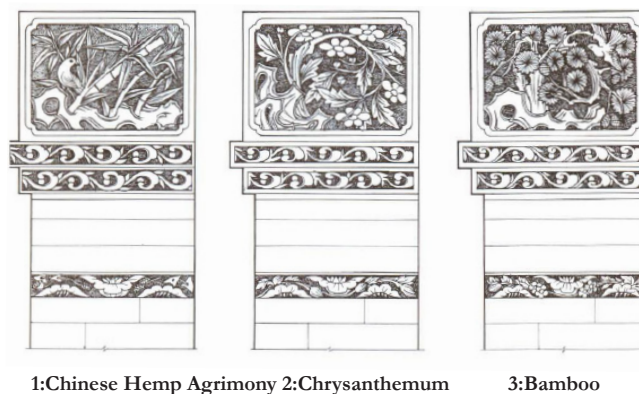


figure 4.4.3 Ornaments

THE BEIJING OF THE QUADRANGLE IN BEIJING, 1999



1:Symbol of many generations of descendant



2:Squirrel and Grapes

figure 4.4.4 Ornaments
THE BEIJING OF THE QUADRANGLE IN BEIJING, 1999



Chinese word: Long life

Compare with the columns capitals Greek or Roman style, Chinese ones have various types and without a main principle except good meaning of life. Animals , natural elements or Chinese can all be used .

It somehow shows the religion believes might not big that time and people concerned about family and own space more. Also demonstrates that the diversity of Chinese culture and symbols.

figure 4.4.5 Ornaments
THE BEIJING OF THE QUADRANGLE IN BEIJING, 1999

The sculpture in the middle of the screen wall is also very common and interesting to observe in many cases . Beside the type of content of pattern we analysis above , the screen wall is also an important element of the whole structure , not only the location of it is always at the front of the entrance after the visitors come , it is like the first view of anyone who comes in to the courtyard but also it represents a traditional culture of implicit and humble. The function of the screen wall as like a wall which can divide the courtyard into two parts , one is toward to the public the other one is for the residents . It tells the people they will never know what they will get after the wall and also wants to give a good imagination or impression to them.

The patterns of screen walls usually are very rich , especially inside of the gate, the shapes could be

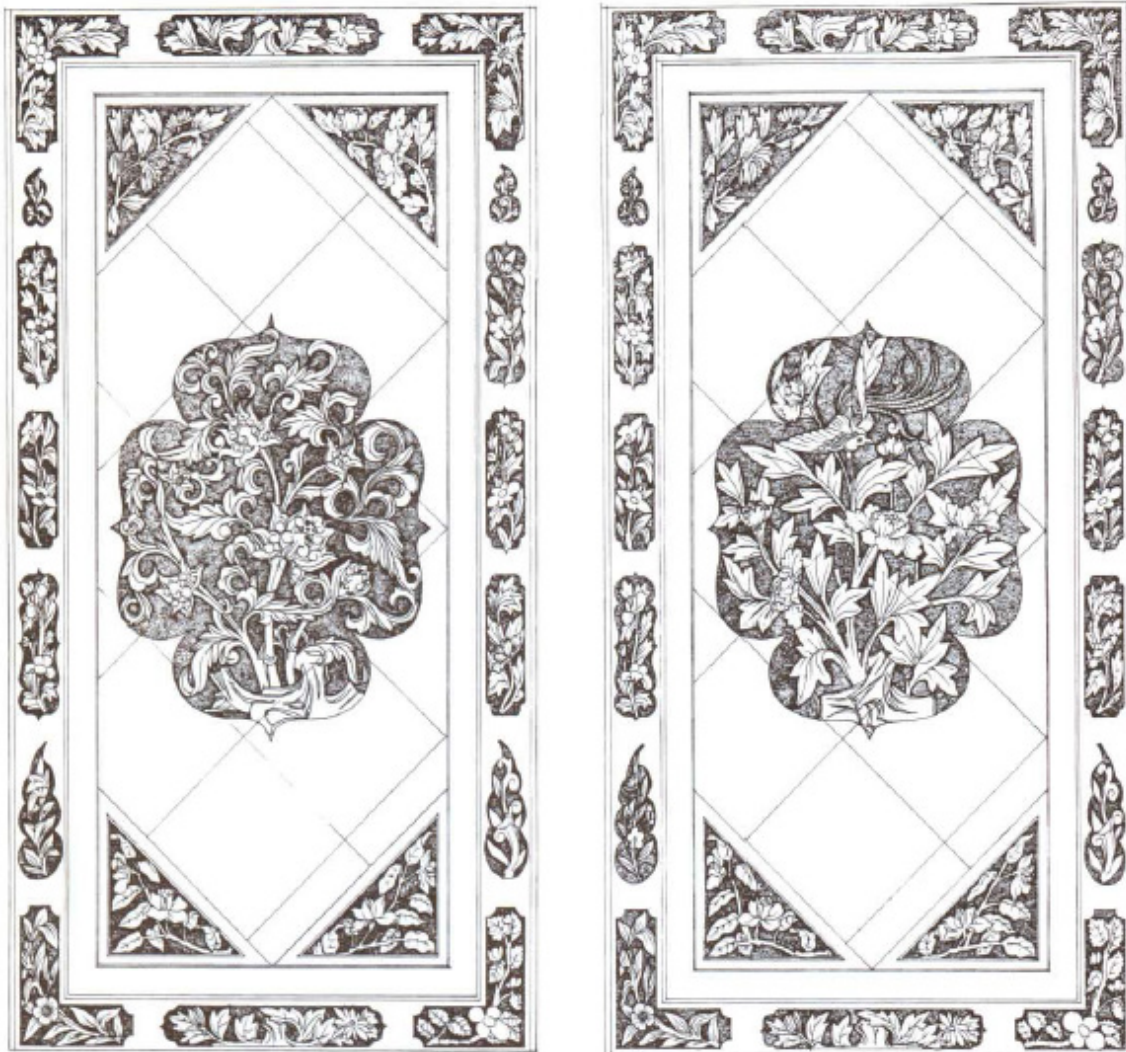
square, rectangle and also like base of column.

As the example , there are also delicate sculpture on the top usually is the grass or weed pattern. The edges are all cover with solid sculptures like pliers in order make people feel safe.



Example picture of middle sculpture on a wall

figure 4.4.6 Photo of decoration on a wall
THE BEIJING OF THE QUADRANGLE IN BEIJING,1999



Other examples of middle sculpture on a wall from hall way

figure 4.4.7 Drawing of screen wall
THE BEIJING OF THE QUADRANGLE IN BEIJING, 1999

Equally importantly , the sculpture of rock materials , due to the peculiarity of the rock , Chinese people usually use it to become some single elements of courtyard, one of the most characteristic example is the stone sculpture at both sides the gate called drum-shaped bearing stone. It is no significant function for this kind of stone but only like some solid part of decoration that might represent the safe living of the residents of building and corresponding some light parts like wooden frame of windows and curtain.

The most popular pattern of middle of the drum is lotus and the whole structure is divided into two parts , the base and the main drum . Also two little drums are needed to support the big one in the middle , three drums are usually occupied two third of the whole structure.



Examples of drum-shaped bearing stone

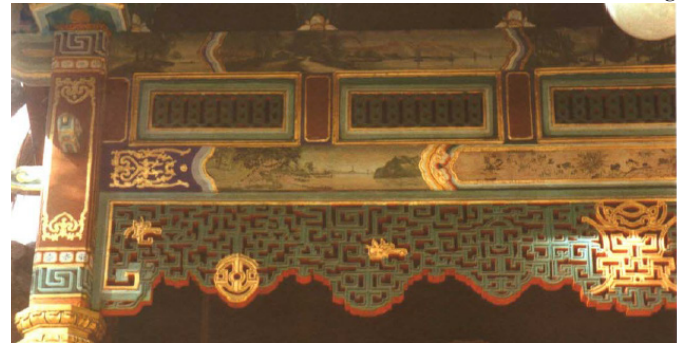
figure 4.4.9 Drum-shaped bearing stone
THE BEIJING OF THE QUADRANGLE IN BEIJING, 1999

Last but not the least technique need to be mentioned is wooden sculpture. As a lighter ornament and softer solution compared with the above two, it is widely to apply on the doors and windows . And due to the character that easily to add color on it , the people from past created many ideas based on that.

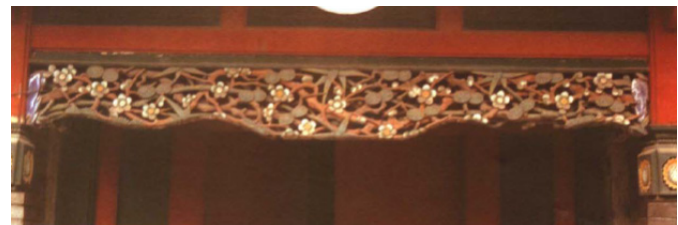
The common pattern themes are flowers , grass, and Chinese words. Also with some creations of pattern by the intelligent craftsman that time . With the elegant works , designers wanted to create a harmonious atmosphere which can represent the Chinese character.



Flower cover statue of ceiling

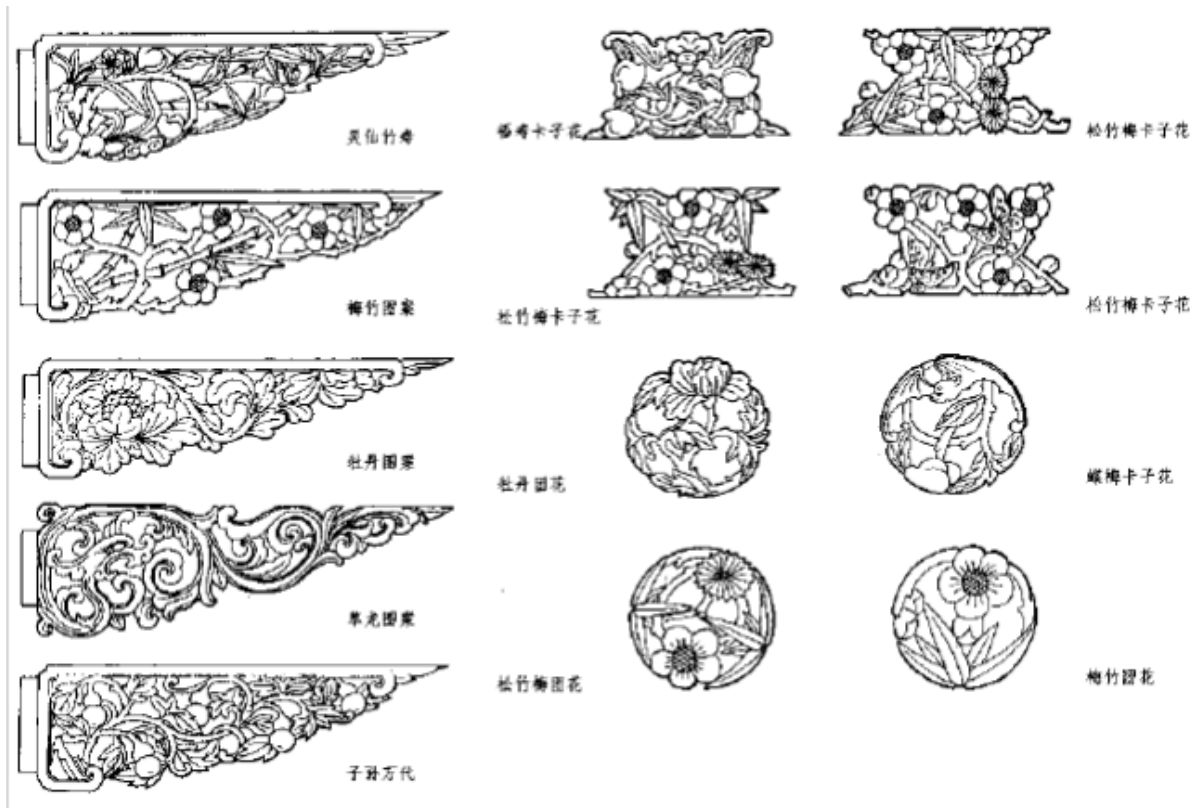


Flower beam and cover



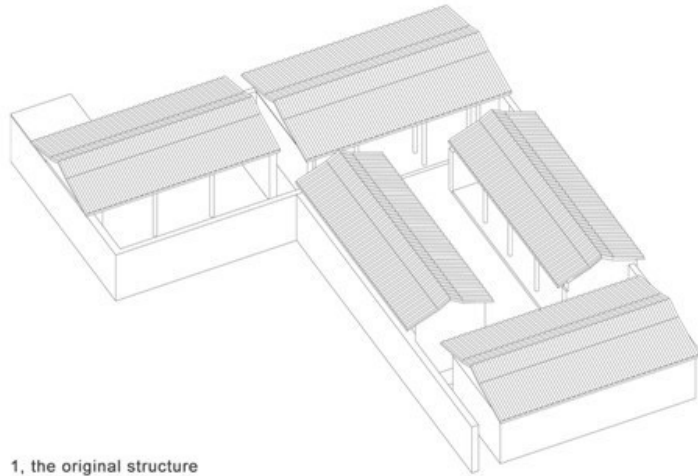
Flower cover statue of ceiling

figure 4.5.0 Decoration of beam
THE BEIJING OF THE QUADRANGLE IN BEIJING, 1999

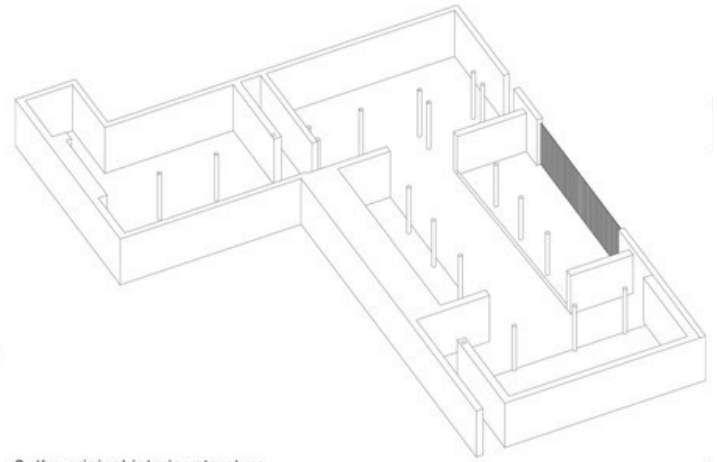


Some drawings of pattern

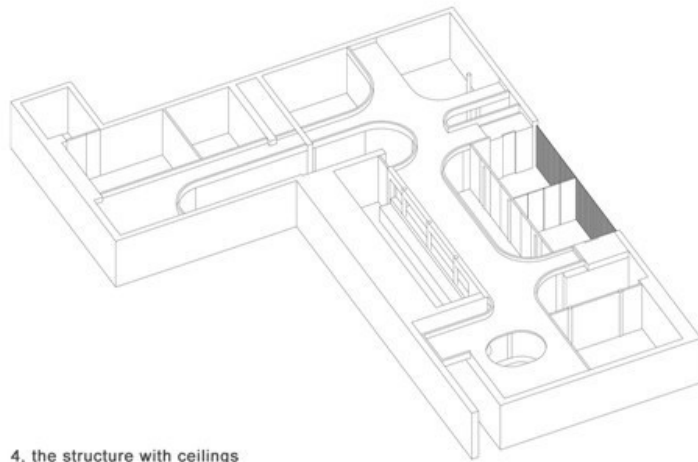
figure 4.5.1 Dearing of decoration of beam
THE BEIJING OF THE QUADRANGLE IN BEIJING, 1999



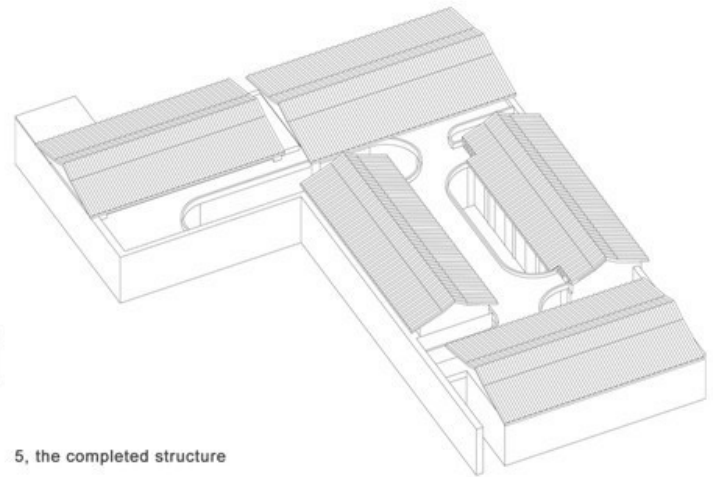
1, the original structure



2, the original interior structure



4, the structure with ceilings



5, the completed structure

Case Studies

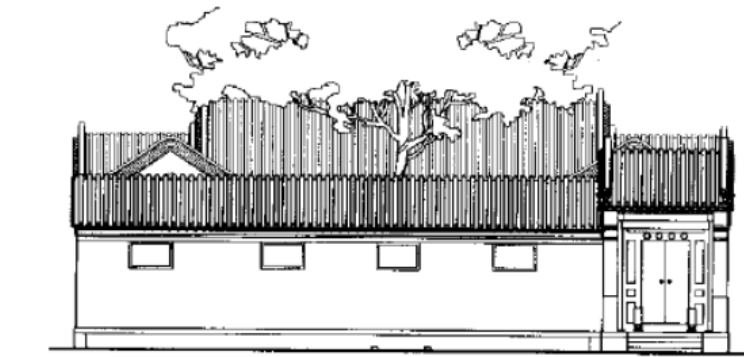
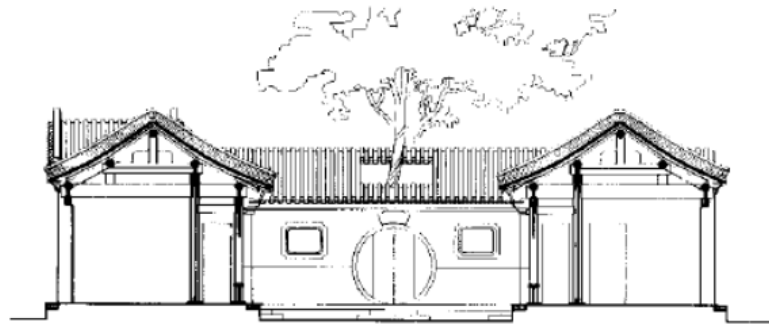
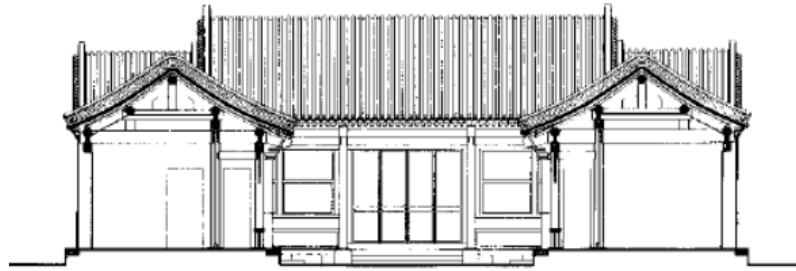
5.1 Traditional Case

Case 1

Dongsi No.8 courtyard
Tianjing University
Area 271.5m²
Project Year 1990s

After the war , some cases of rebuilt the traditional Beijing courtyard have done with some new and simplified ideas and principles. According to different use of the courtyard , architects also applied different principles. As the example showed , the owner wanted to rebuild it into a office area with roughly 9 rooms , it was a bit different for the designers to realize with the narrow size , so they made some special decisions like shrink the occupied area of the main gate to 2.8m which compare with old traditional ones like 5-6m is a little narrow. In the meantime , the owner asked to keep one old tree in the middle of the yard , in this case the construction group used special approach to keep it can be seen in the new elevation also. And added a new door in the yard in order to obverse the tree by tradition looking of it.

Regarding to old plan designing core ideas , new one kept it as developing the plan in a horizontal direction , giving up of over decoration we kept the idea of one type with various styles. Also with good size not to be extravagant. And also remain the useable elements to keep the history value and add some obvious part as the new built print.



New elevation of Dongsi No.8 courtyard, Beijing

figure 5.1.1 Drawing of Dongsi No.8 courtyard
THE BEIJING OF THE QUADRANGLE IN BEIJING, 1999



View of east room from northwest corner



View of west room from northeast corner



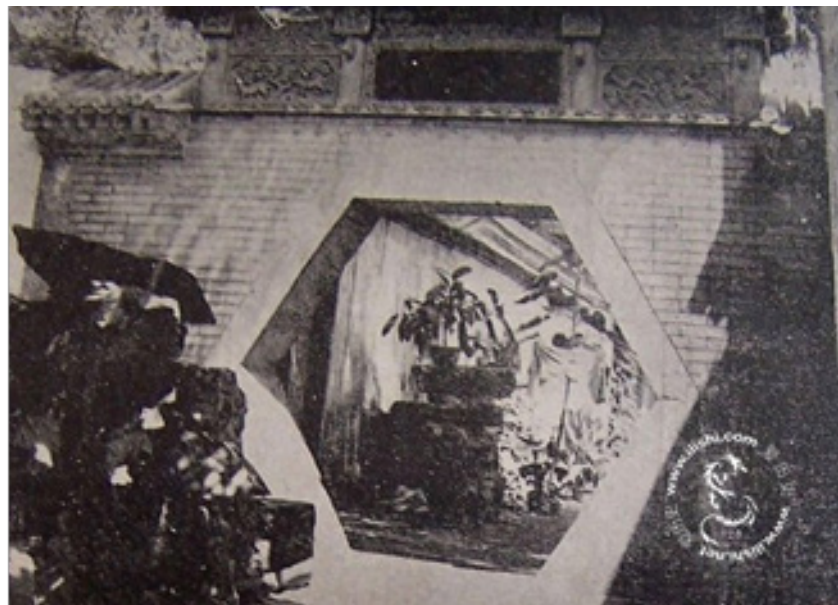


View of north room from west room



View of west and north room from southeast corner

figure 5.1.2 Photo of Dongsi No.8 courtyard
THE BEIJING OF THE QUADRANGLE IN BEIJING, 1999



Old pictures of the courtyard



Old pictures of the courtyard

figure 5.1.3 Old photo of Dongsi No.8 courtyard
THE BEIJING OF THE QUADRANGLE IN BEIJING, 1999

Case 2

Guozijian No.43 courtyard
Tianjing University
Project Year 1990s

For the shaping aspect of the courtyard, the trend is to be described like one style with many forms. Because of the different kinds of house owners with their different levels in the society they prefer different details with their areas. For example , businessmen prefer gold decorations and so on. Also craftsman from different areas of China has their own habits . That leads to what we need to keep their own forms and some small details.

In the new time , the designers used to make a theme for each courtyard and adjust details to it. Not just adding green or decoration randomly but make the theme obvious and let visitors feel the culture.

However, main aspects are like similar: keep the traditional external and make new solution for inside; keep the details which have valuable meanings ; distinguish the levels of applying the painting with different colors..

What is interesting to point out is that generally modern people decided to make something simplified like the letters on the gate. A good way to show the different periods on the architecture.



Example of old Chinese Letters decorations

figure 5.1.3 Old photo of Chinese letters
www.ilisbi.com



Example of adding simplified Chinese Letters

figure 5.1.4 Simplified Chinese letters
THE BEIJING OF THE QUADRANGLE IN BEIJING, 1999



Details of old time



Condition of new

figure 5.1.5 Old photo of courtyard
www.ilishi.com

figure 5.1.6 Old photo of courtyard
THE BEIJING OF THE QUADRANGLE IN BEIJING, 1999

In conclusion, it is a good idea and decision to make different rebuild different depend on different periods , the principles should be constantly applied in the future work also . In the meantime , in responding to the New Chinese culture some of the simplified of some details is good solution also.

5.2 Modern Rebuilt Case

Case 1

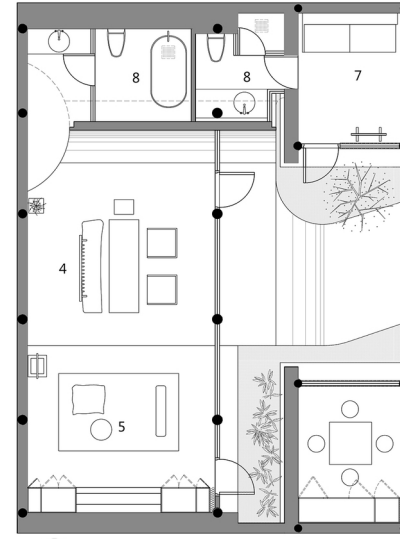
Twisting Courtyard
ARCHSTUDIO
Area: 161.5 m²
Project Year: 2017

The design aims at getting rid of the solemn and stereotyped impression given by Siheyuan, and creating an open and active living atmosphere. Based on the existing layout of the courtyard, the undulated floor is used to connect indoor and outdoor spaces of different height. And it is extended to the inside of the house, twisting into walls and roof, thus creating dynamic connection between inside and outside space. What's hidden within the curved wall is necessary auxiliary spaces such as kitchen, toilet and warehouse; while reception and dining spaces are shown outside the curved wall and connect to the courtyard as a whole. Both indoor and outdoor floors are paved with gray brick. A hawthorn tree in the courtyard is kept and being part of the twisting landscape.

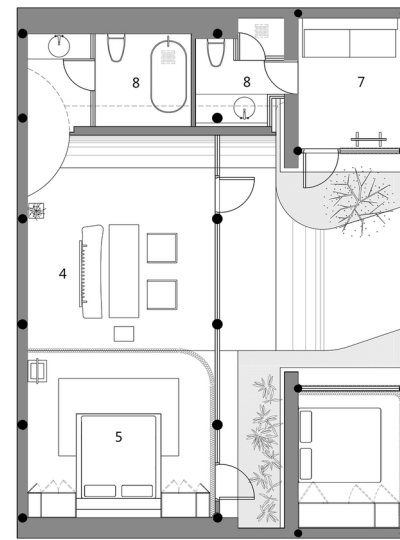
Analysis: It is good to see that designer used traditional material -- wood for the redesign of the internal it combine with the concept of human and nature well also keep the basically layout of the main part of courtyard and add the new idea of space.



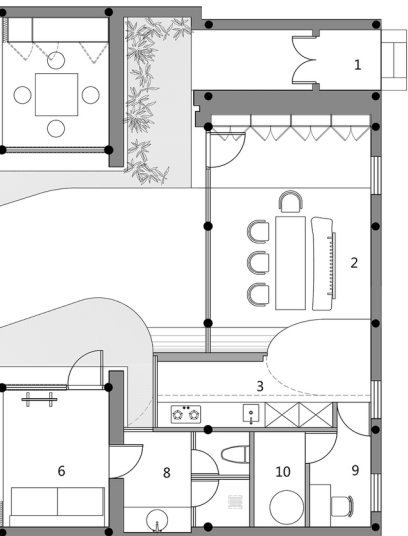
figure 5.2.1 Twisting courtyard
<https://www.archdaily.com/873630/twisting-courtyard-archstudio>



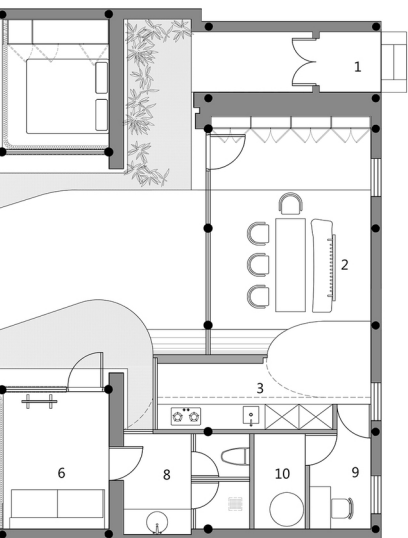
0 0.5 1.5
公共活动模式
MODE OF PUBLIC ACTIVITY



0 0.5 1.5
居住模式
MODE OF LIVING



- | | | | |
|-------|----------------|--------|-----------|
| 1 入口 | Entrance | 6 房间一 | Room 1 |
| 2 餐厅 | Dining | 7 房间二 | Room 2 |
| 3 厨房 | Kitchen | 8 卫生间 | Restroom |
| 4 接待区 | Reception Area | 9 办公室 | Office |
| 5 休闲区 | Leisure Area | 10 设备间 | Equipment |



- | | | | |
|-------|-----------|--------|-----------|
| 1 入口 | Entrance | 6 卧室二 | Bedroom 2 |
| 2 餐厅 | Dining | 7 卧室三 | Bedroom 3 |
| 3 厨房 | Kitchen | 8 卫生间 | Restroom |
| 4 茶室 | Tea Area | 9 办公室 | Office |
| 5 卧室一 | Bedroom 1 | 10 设备间 | Equipment |

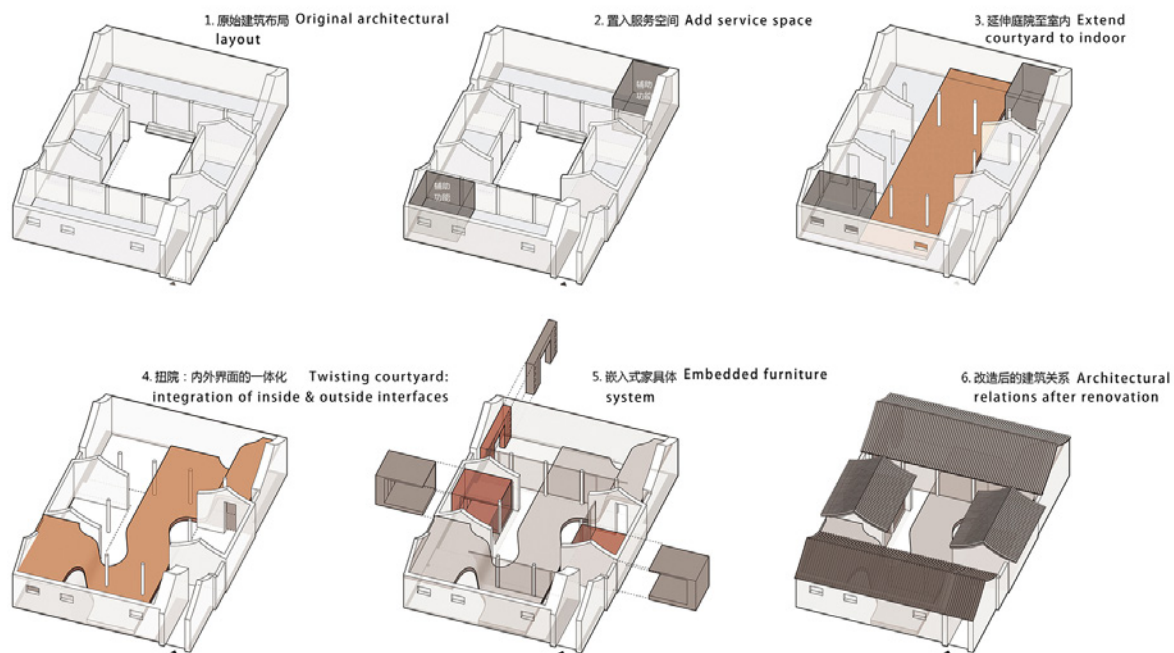


figure 5.2.2 Twisting courtyard
<https://www.archdaily.com/873630/twisting-courtyard-archstudio>

Case 2

Teahouse in Hutong
Architects ARCHSTUDIO
Location: Dongcheng, Beijing, China
Area: 450.0 sqm
Year: 2015

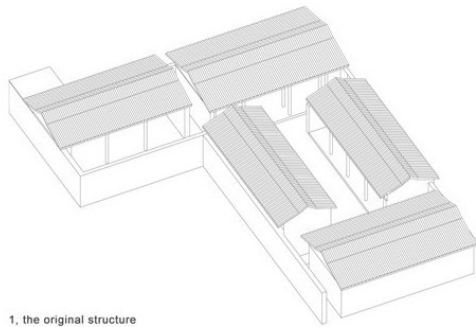
The old city is not only historically rich but also has a complex reality. While historical value only sustains the city's value by income through exploration, the unlimited usage of the facility transforms the city into an art pattern. The transformation leaves the residents of the old city with the responsibility of maintaining the balance between the historical and art values. The richness of the environments solemnly depends on how flexible the residents are able to balance the two values. The new life and format can be seen as a catalyst to use history to enhance the usage of the facility.

Analysis: Function of space is quite a common but unique decision , teahouse is a kind of space which represents the traditional Chinese culture well also as a beginner project as a junior architect in Chinese University. Single function is easier to control and the corners deal with plants is a strength , stressed the close between users and natural also means tea is from the nature.

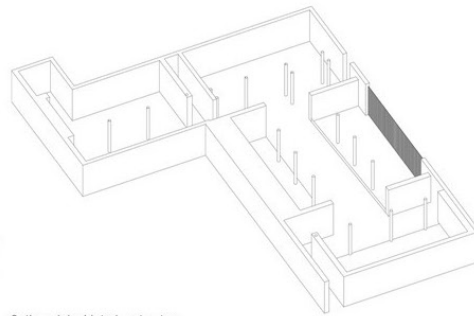


figure 5.2.3 Teahous in Hutong
<http://www.ideamsg.com/2015/08/tea-bouse-in-butong/>

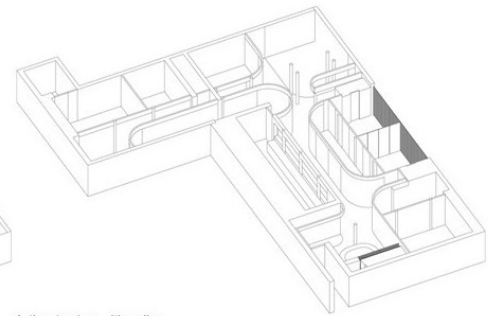




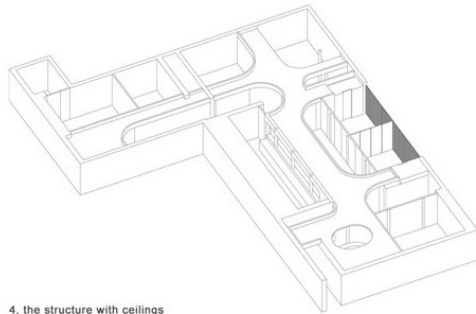
1, the original structure



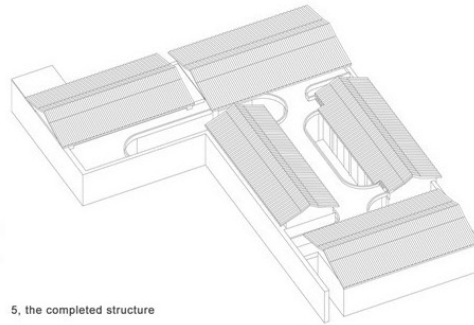
2, the original interior structure



4, the structure with walls



4, the structure with ceilings



5, the completed structure

figure 5.2.4 Teahous in Hutong
<http://www.ideamsg.com/2015/08/tea-house-in-hutong/>

Case3

Courtyard Renovation at the White Pagoda Temple
Architects: Tsinghua University School of
Architecture, maison h
Location: 171 Fuchengmen Inner St, Xicheng Qu,
Beijing Shi, China
Area: 300.0 sqm

The new structure creates a very direct connection with the renovated courtyard house, and opens up never-before seen perspectives. This has allowed visitor to interact with the traditional architecture very close-up, including a skywalk and tea-drinking platform offering amazing sunset views of the temple. An elevated view of the Buddhist, white pagoda that been standing quietly above the neighborhood since the 13th century, or Yuan Dynasty. Aims to provide urban and architectural proposals to emerging concept of sharing, and responds to the idea of public space sharing and sustainable urban development from social, economic and humanitarian perspectives. The studio emphasizes a holistic and collaborative approach and the project is a physical example of this abstract idea. After the urban design studio, the students worked within the tutor's architecture practice to combine their research and ideas into a singular design intervention for the courtyard, build together with a local contractor.

Analysis: Good example for connecting the external and internal spaces , also as a case nearby tower , created a good vision of the view and emphasized the importance of traditional culture , having a delight environment with the white plaster selecting.



figure 5.2.5 Courtyard Renovation at the White Pagoda Temple
<https://www.archdaily.cn/cn/890228/bai-ta-si-yuan-luo-geng-xin-qing-hua-da-xue-jian-zhu-xue-yuan-plus-yi-be-she-ji>





figure 5.2.6 Courtyard Renovation at the White Pagoda Temple
<https://www.archdaily.cn/cn/890228/bai-ta-si-yan-luo-geng-xin-qing-hua-da-xue-jian-zhu-xue-yuan-plus-yi-be-she-ji>

Index of case studies:

	Kept Elements	Changed Elements
Traditional Case 1	Distribution of yard & Old Tree	Function & Main gate
Traditional Case 2	External arrangement	Decoration details
Modern Case 1	Distribution of Rooms	Function & Internal Design
Modern Case 2	Overall External Walls	Internal Design & Gate
Modern Case 3	Overall distribution of courtyard	Add Facility in the yard

5.3 Conclusion

Overall , by researching the composition of Beijing courtyard and around areas and the space we have a knowledge of traditional architecture now , it sparked us the motivation to keep our culture by doing something about the old and beautiful area of our capital Beijing to protect and make the traditional architecture language not disappear as the time pass by.

-Strength and Weakness

Some of the Hutongs are in a quite good condition. For example the Hutong around "DongJiaoMinXiang" area, they have a beautiful environment, quiet and clean, well preserved the heritage of ancient culture. The per capita living area is large, Hutongs are wide enough to pass the cars, most of the inhabitants here are satisfied with the living condition here and they don't want to move to apartments.

5.3.1 Advantages

The advantages of traditional Hutong is obvious :

First, it holds a very close relationship with the neighbors. The crucial point causing them not moving is the relationship. Most of the residents in Hutong belong to the same social class and their living conditions are similar. And because the living space is small, it is easy for neighboring families to have close-knit emotions.

Second, it has a strong cultural atmosphere. Hutong starts from the Yuan dynasty in the 13th century, they passed more than eight hundred years. Hutongs surround the forbidden city and full of places of interest, they recorded the history of the city.

Thirdly, it can be considered as a coherence of Chinese culture and memories let the future generation to learn from. Although Beijing looks more developed these days with many skyscrapers these days , the tradition also needs to be adhere to. Refer to the historical buildings projection work in Europe .

5.3.2 Disadvantages

Disadvantages are clear too:

Firstly, narrow space is not good enough for the modern life .

Secondly , bad community administration caused many problems as illegal occupied the public space , illegally add a level of the original house , not clean alley and so on. Thirdly , due to the age of the architecture , the service of every quit is not completed like toilets and bathrooms .

Last but not the least, the space distribution is not fair enough anymore , with young people now prefer to living alone instead of in a big family, we still have many problems to solve.

6.3.3 Brief Project Ideas

Regarding to the site we chose like three separated locations in a same area with the dimensions roughly as 14*14m , 12*18m and 15*18m with each ground floor, we considering the function must corresponding to the site and the public area and path around , reference to the cases we studied , the first idea of the arrangement of our project might be tea house , community activity center and sample typology of residential .

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archstudio](https://www.archdaily.com/873630/twisting-courtyard-archstudio)

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[https://www.archdaily.cn/cn/890228/bai-ta-si-yuan-
luo-geng-xin-qing-hua-da-xue-jian-zhu-xue-yuan-plus-yi-he-she-ji](https://www.archdaily.cn/cn/890228/bai-ta-si-yuan-luo-geng-xin-qing-hua-da-xue-jian-zhu-xue-yuan-plus-yi-he-she-ji)





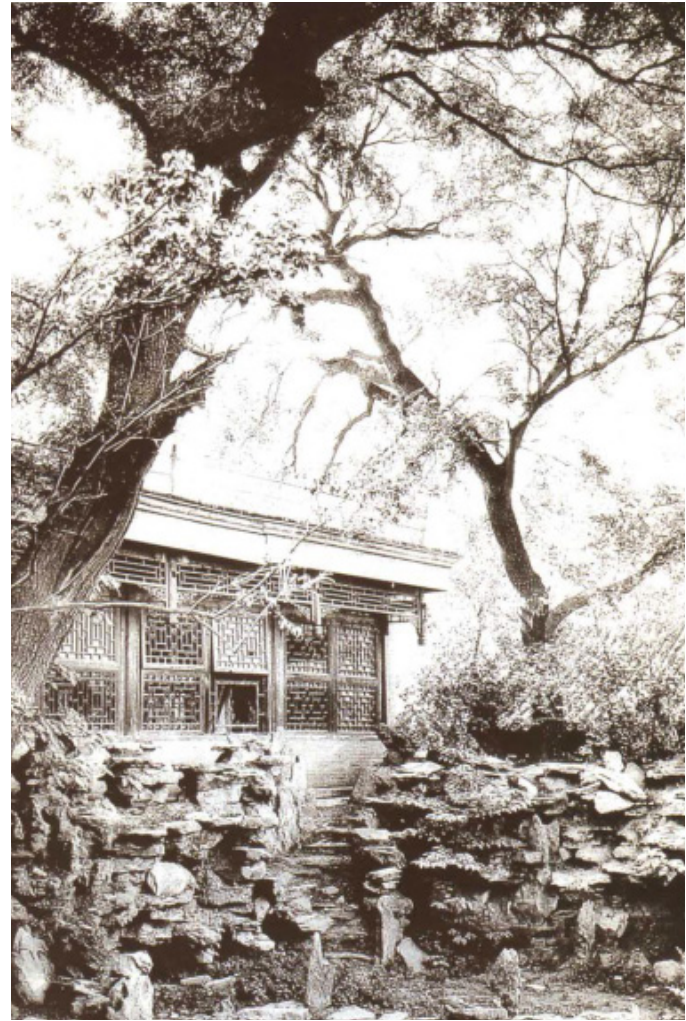
Landscape design in Courtyard

6. Landscape design in Courtyard

6.1 History and origin

Traditional Chinese classic landscape in courtyard including royal landscape, private landscape, temple landscape and government landscape, it was developed with the traditional Chinese architecture evolution. However, the earliest one is the royal ones. Started roughly in the Shang dynasty, from the 100% natural garden landscape to the imitating the nature but with the addition of human activities, something like rock hills or water which can be decoration of the architectural design.

Till the period to Ming and Qing dynasty, it arrived another highlight of the development of landscape garden in the traditional courtyard. Not only because the good condition in both economic and politics aspects, but also with the great artists and architects from that time with their amazing creatures.



Shot in 1922, Garden of Prince Cheng

figure 7.1.1 Old photo of garden in courtyard
THE BEIJING OF THE QUADRANGLE IN BEIJING, 1999

6.2 Landscape in Beijing Courtyard

According to the historical materials recorded, Li Garden located in Haidian district, Shao Garden which is nearby Li's, Qi Garden located nearby Xizhi Gate and etc. are all famous and splendid ones. Also with many paintings and poems described the views of different gardens at that time.

There are many landscape gardens in Qing dynasty times but without many materials recording them, though many pictures were taken by the following generations because of the special period in history too.

Generally speaking, the courtyards with a landscape inside were usually owned by higher class level residents and used for more public activities like hosting visitors in order to create an environment of isolation from the outside and making the guests and hosts feel like in another world, which in the meantime can express the traditional Chinese culture like humble and indirect in many ways too. With the water and greenery also can inspire the creations of new works like music, paintings and so on.

6.3 General Method of Building Landscape in Beijing Courtyard

Regardless of the gardens mentioned above, because they are not typical ones since they are owned by the royal families. More typical ones in Beijing at that time are for rich families usually running business or some government workers, certainly the size will be smaller and not as incredible as royal ones.

However, from the ones more general we can generate an idea of how the design strategy and principles the designers did at that time and making concepts and inspiration our own.

Because of lacking the real mountains and rivers supported by the courtyards built in the city, with the rigid courtyard space organization of existing, they usually designed to have more interesting circulations for the users and adding the water elements and the rocks simultaneously. In order to express a spirit of seeing the grand world in this small area and using detailed elements to make different views by different steps.

Not only using the usual instruments like rocks or water, traditional methods also include planting different trees or flowers in order to correspond to the surroundings or raising birds and fish to make the scenery like the spring every moment of the year.

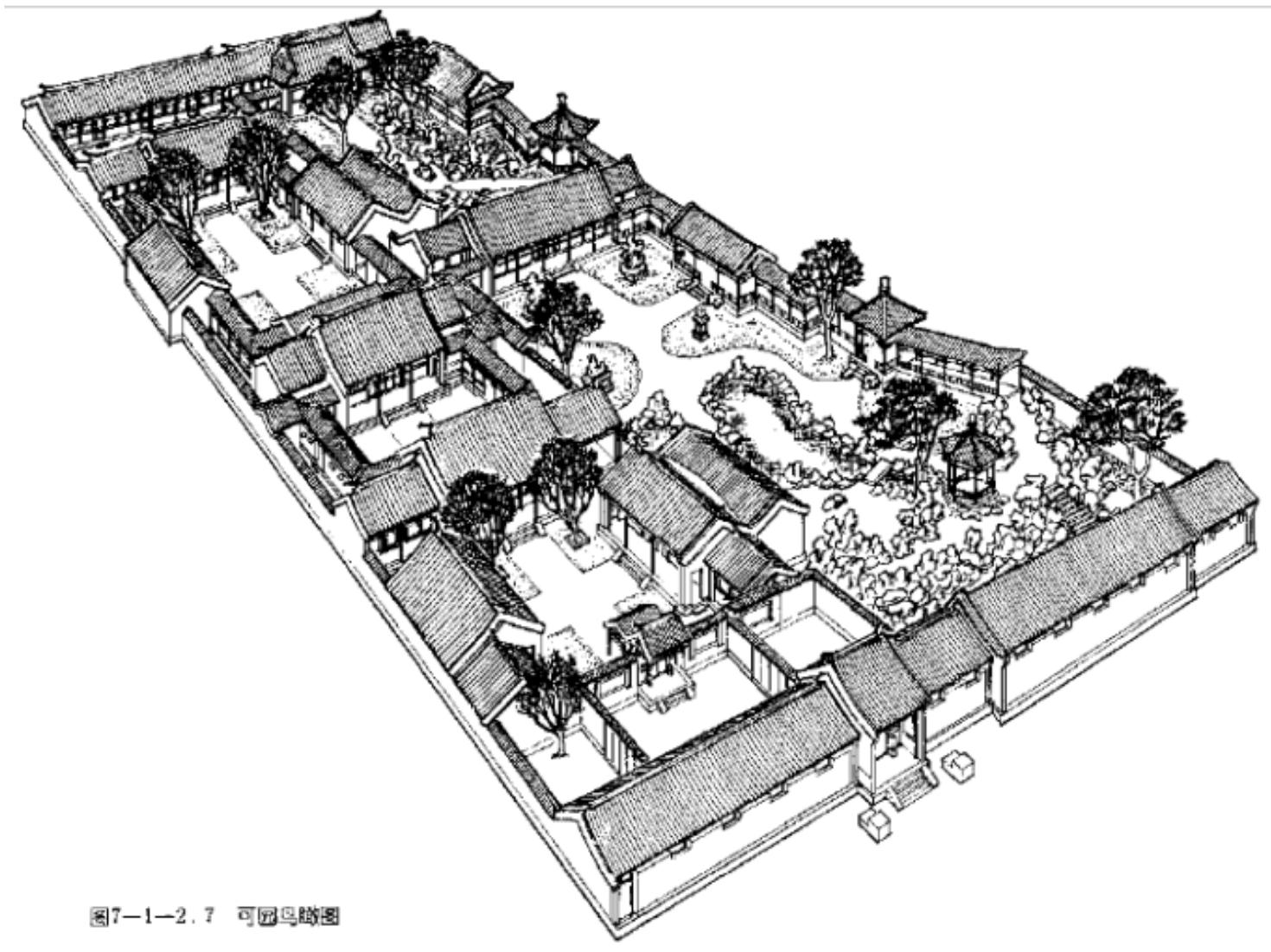
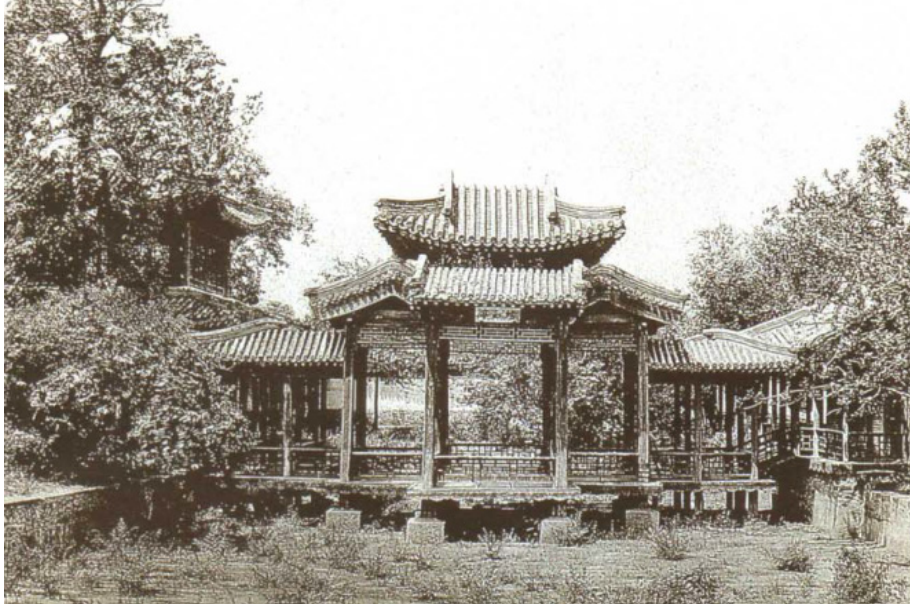


图7-1-2.7 可园马踏图

An example of the courtyard pool design

figure 7.2.1 Arrangement of garden in courtyard
THE BEIJING OF THE QUADRANGLE IN BEIJING, 1999



Garden of Prince Cheng



Garden of Prince

figure 7.2.2 Garden of courtyard in old time
THE BEIJING OF THE QUADRANGLE IN BEIJING, 1999

6.4 Corridor in Siheyuan and Garden

A traditional Chinese corridor, commonly seen in Siheyuan, connect with the second gate of Siheyuan.



Column

Wall

figure 7.3.1 Corridor in Garden of courtyard
THE BEIJING OF THE QUADRANGLE IN BEIJING, 1999

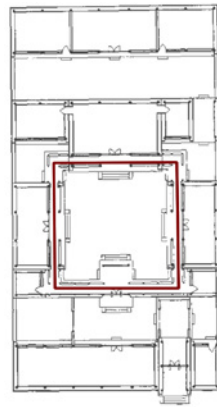
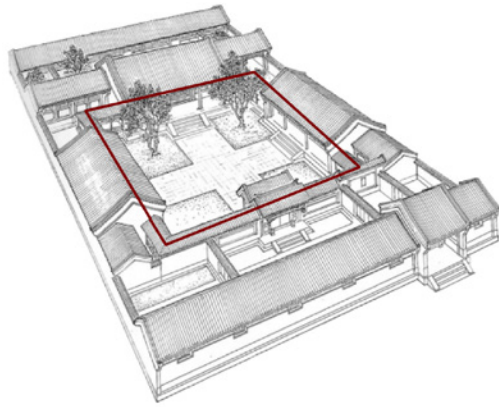


figure 7.3.2 Corridor in Garden of courtyard
THE BEIJING OF THE QUADRANGLE IN BEIJING, 1999

6.5 Some examples



Example of the courtyard pool of now



Example of the



Figure 7.4.2 Garden of courtyard in nowadays

Figure 7.4.2 Garden of courtyard in nowadays
 Source: *Plans-of-Beijing-Guantang-courtyard-garden-
 ing-the-courtyards-gardens-and_fig7_318926874*



Banyan Tree Hotel in Hangzhou



Uvence Art+Hotel

Figure 7.3.3 Example projects nowadays
<https://www.archdaily.com>

Reinvent Beijing courtyard Siheyuan

7.1 Reinvent Beijing Courtyard

7.1.1 Project Introduction

Different from the typically ordered Beijing courtyards, there are many tiny courtyards scattered in the old city of Beijing.

Courtyard, is the most essential element in the composition of the old town of Beijing. For a long time, the courtyard house contains all the possibilities of working, entertainment, leisure and dwelling for the local people. The space inside is usually very small, living in it can be hard but happy. It is part of Beijing's realistic life, and is a miniature of China's old cities.

After China's rapid urbanization and modernization in the past three decades, what can we do for these tiny courtyards? What can we do for the residents living in these areas?

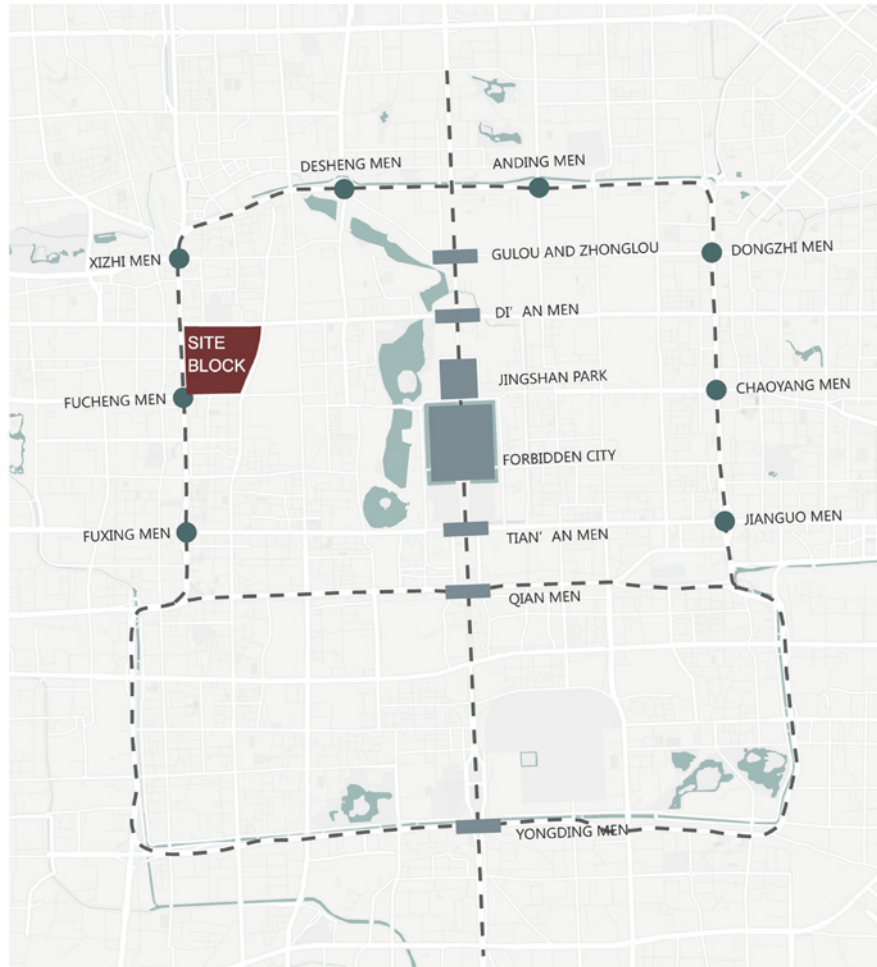
We selected the typical alley called Gonemenkou

No.5 which is not in a good and prosperity condition currently, with the chaotic transportation methods, narrow pathways and different kinds of residents who are living there, there are many things deserve us to do.

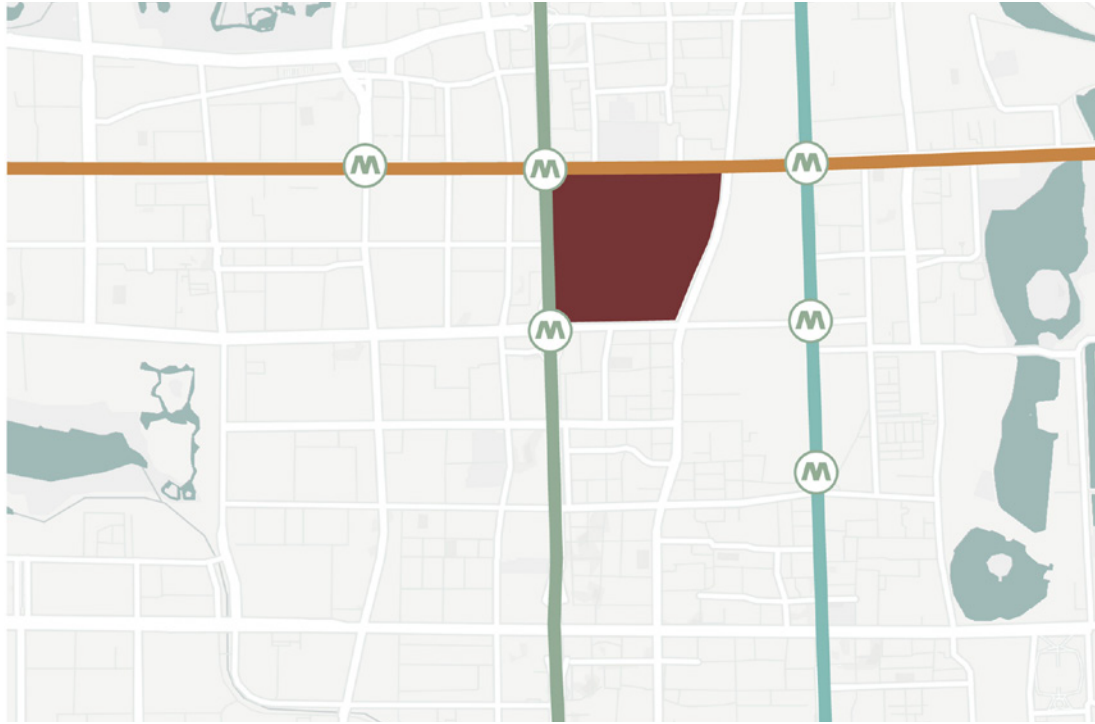
In the meantime, the important location of the alley which is kind of hidden among the buildings in the historical centre of Beijing, which respects the time past all those years both in cultural and historical aspects. Revival of the site is a key to the future too.

Therefore, how to make the area and the people there improve the self identity themselves and increase the culture pride is deserved to do as new generation of Chinese designers.

7.1.2 Site Location



Site Block Location



Metro Lines Near the Site

7.1.3 About Surrounding: the Forgotten Corner in the Valuable Site



Miaoyingsi (the Miaoying Pagoda Temple) is a historical and cultural preservation zone covering about 0.37 km² located just across Beijing's Financial Street in Xicheng district. To its north is the Xizhimen business district and to its west is the Fuchengmen commercial area and the Sanlihe administrative district. The Xidan and Xisi shopping areas border the temple to its east. Baitasi remains a peaceful cultural oasis for the public in the heart of new Beijing.

Miaoyingsi is a key historical area in Beijing's urban core; its history can be traced back to the Yuan dynasty. The area has well preserved the stylistic fabrics of the Hutong from that era. The Miaoying Baita is not only the symbol of the Yuan Dynasty's capital, Dadu, but also an architectural landmark on the 2nd Ring Road of modern Beijing. The area has already become the most stylistically unique district of Beijing and is one of Beijing's 33 Historical and Cultural Preservation Zones. It has deep historical significance and profound cultural connotations.



Fusuijing Building, also known as the “Socialist Building” was constructed in 1958. It is located in Gongmenkou in Xicheng District. It is an eight-storey building and was the earliest residential building with elevators in Beijing. After the Great Hall of the People was finished, the remaining materials were used its construction. The 25,000-square-meter "Z"-shaped building is so grand that it is difficult to get a complete picture from any angle when viewing it from the hutong community northwest of Baita Temple where it is situated. Its most prominent feature was the public cafeteria, which fully reflected the socialist characteristics of the times. Now, as a modern historical building in Beijing, the entire structure has been preserved.

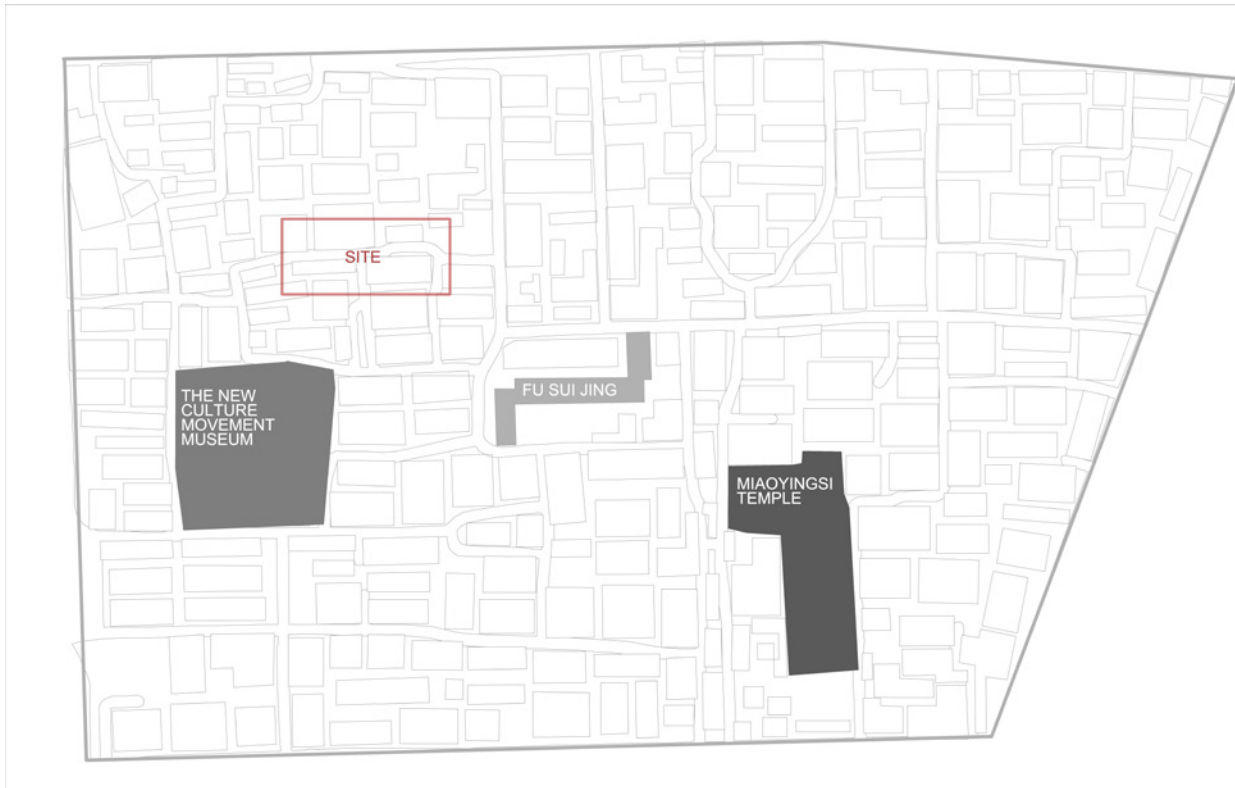
In the era of the “Great Leap Forward” , the public canteen is one of the most obvious features. It is the most popular and most advocated lifestyle for every household to eat a big pot of rice together.



New Culture Movement Museum

The Beijing Memorial Hall of the New Cultural Movement, a unit of the National Museum of China. The memorial hall is located on Wusi Street, Dongcheng District. Its original location is the red building of Peking University. The red building is the battalion for China's New Cultural Movement, and also the cradle for May 4th Movement in 1919.

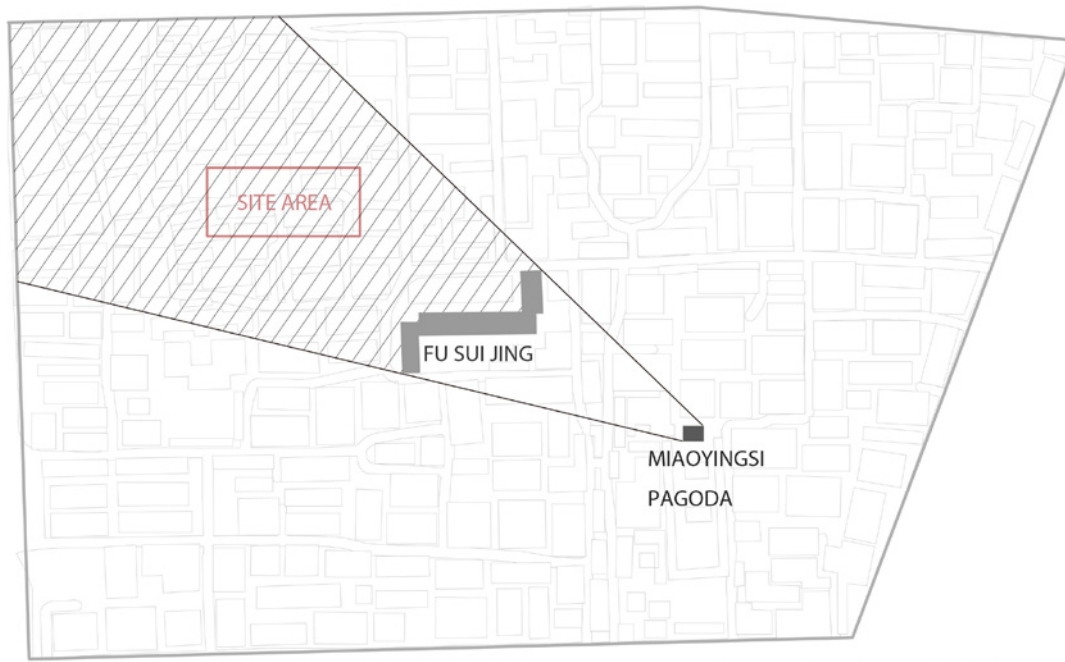
Beijing Memorial Hall of New Cultural Movement is founded on the red building. Through displays, recovered scenes, journals, videos, it exhibits the history of New Cultural Movement in an all-round way.



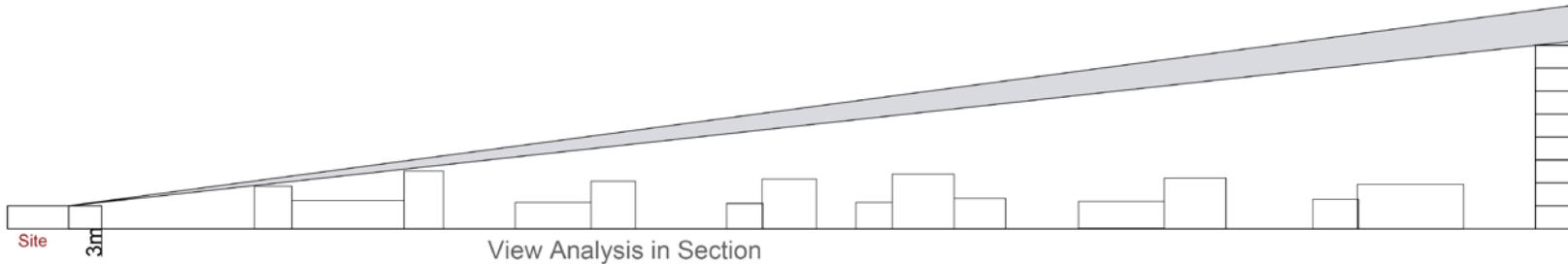
Culture value importance of the site

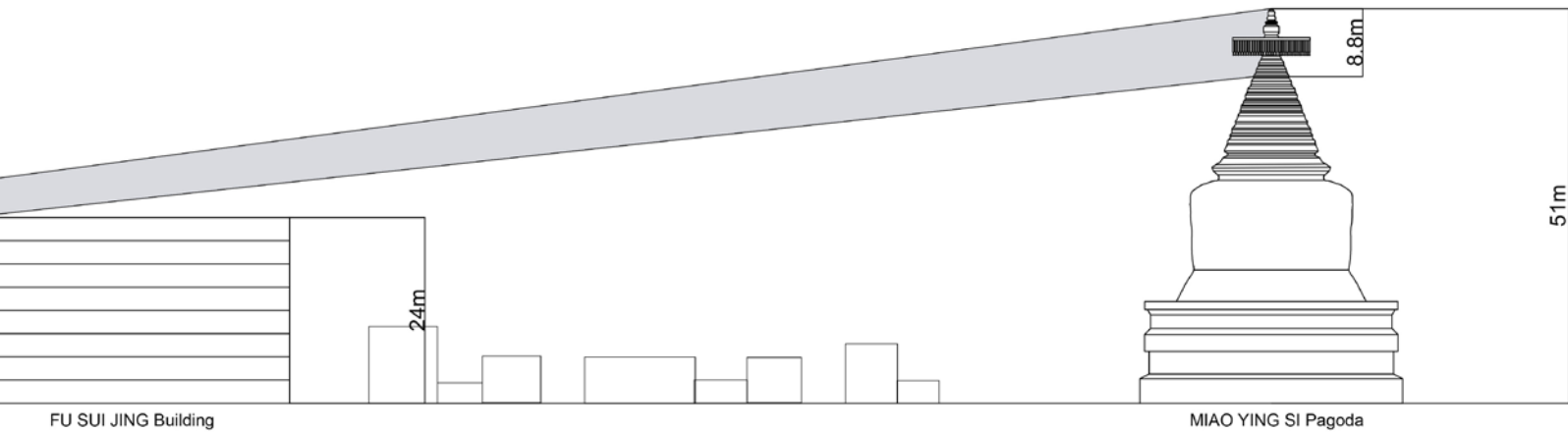
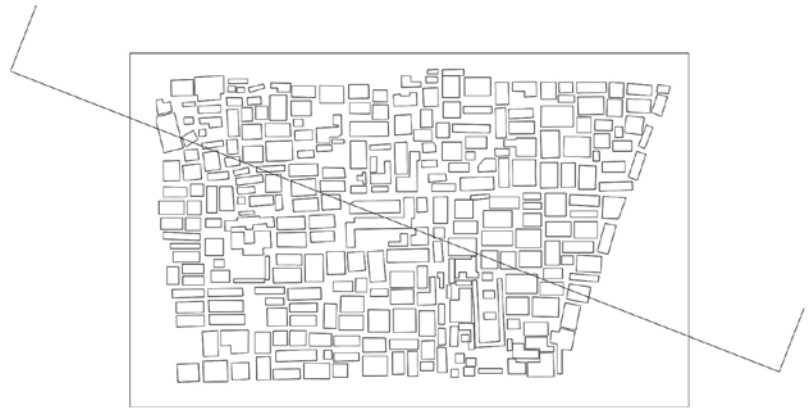


Height analysis of the site and surroundings



View analysis in Plan





Section of the Area

7.2 Photo Survey

7.2.1 Site Photos



Old sculptural element above the gate was replaced by overlapped bricks.



Old gate paintings were mostly repainted in brand new red.



The decorations on the wall facing the alley were mostly declined by the time.



We can tell that the new conversions by the time are trying to keep some important things.



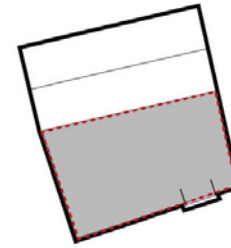
The Chinese letters are stressed as some icons for the entrance in every yard.



The detailed carved element on the roof means long life in Chinese and were kept.



7.2.2.1 Existing courtyard typology



Type 1:

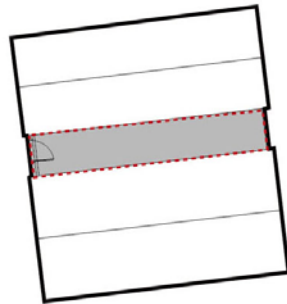
1 building, 1 courtyard

Position of building:

on the side

Position of courtyard:

on the side



Type 2:

2 buildings, 1 courtyard

Similar size of the volume for the two buildings.

Relationship of buildings:

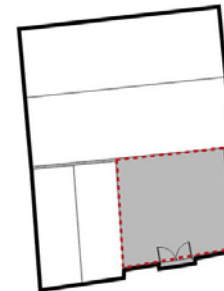
parallel

Position of buildings:

on the side

Position of courtyard:

in the middle



Type 3:

2 buildings, 1 courtyard

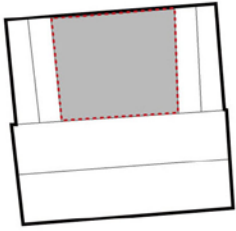
One main building and one assistant building.

Relationship of buildings:

vertical

Position of buildings:

on the side



Type 4:

3 buildings, 1 courtyard

One main building and two assistant buildings.

Relationship of buildings:

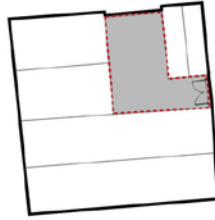
vertical / parallel

Position of buildings:

on the side

Position of courtyard:

in the middle



Type 5:

3 buildings, 1 courtyard

One main building and two assistant buildings.

Relationship of buildings:

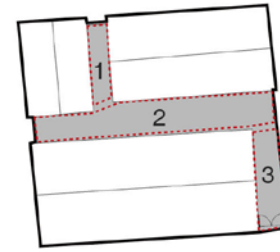
vertical / parallel

Position of buildings:

on the side

Position of courtyard:

partially on the side



Type 6:

3 buildings, 3 courtyards

One main building and two assistant buildings.

Three narrow courtyards.

Relationship of buildings:

vertical / parallel

Position of buildings:

on the side



Type 7:

4 buildings, 2 courtyards

two main buildings and two assistant buildings.

Two small courtyards

Relationship of buildings:

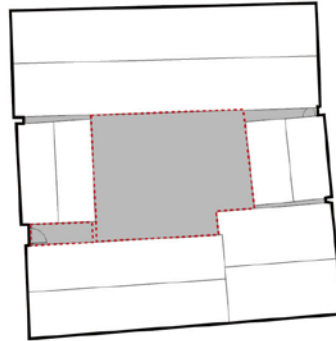
vertical / parallel

Position of buildings:

on the side

Position of courtyard:

on the side / in the middle



Type 8:

5 buildings, 1 courtyards

two main buildings and 3 assistant buildings.

One big courtyard

Relationship of buildings:

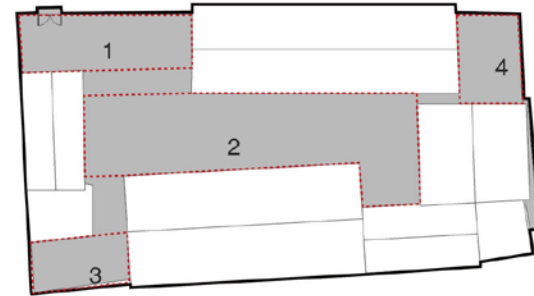
vertical / parallel

Position of buildings:

on the side

Position of courtyard:

in the middle



Type 9:

>5 buildings, >3 courtyards

one or more main buildings and several assistant buildings.

One big courtyard and several small courtyards

Relationship of buildings:

vertical / parallel

Position of buildings:

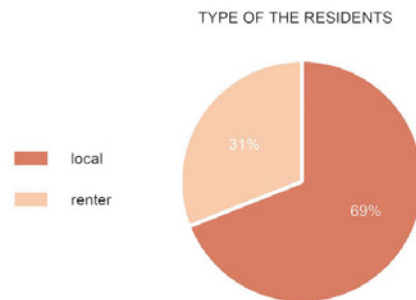
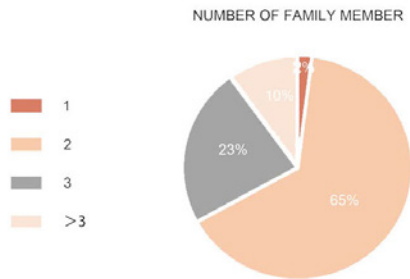
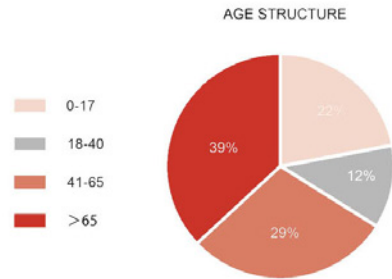
on the side

Position of courtyard:

on the side / in the middle

7.2.2.2 Existing environmental situation





TYPE OF THE FAMILY STRUCTURE

Big family
 consists of three generations of family members
 Type of residents
 Locals



Medium family
 consists of 3 family members (parents and the child)
 Type of residents
 Locals Renters



Medium family
 consists of 3 family members (grandparents and the child)
 Type of residents
 Locals



Small family
 consists of 2 family members (the elderly)
 Type of residents
 Locals



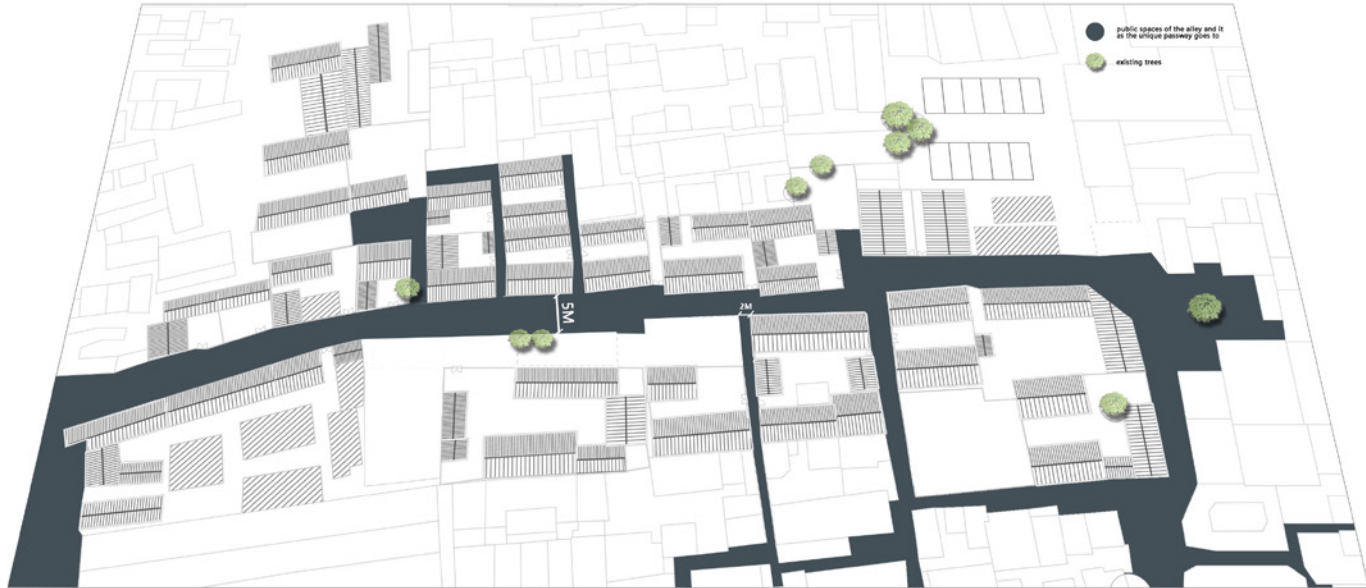
Small family
 consists of 2 family members
 Type of residents
 Renters



Small family
 consists of 1 family member
 Type of residents
 Locals

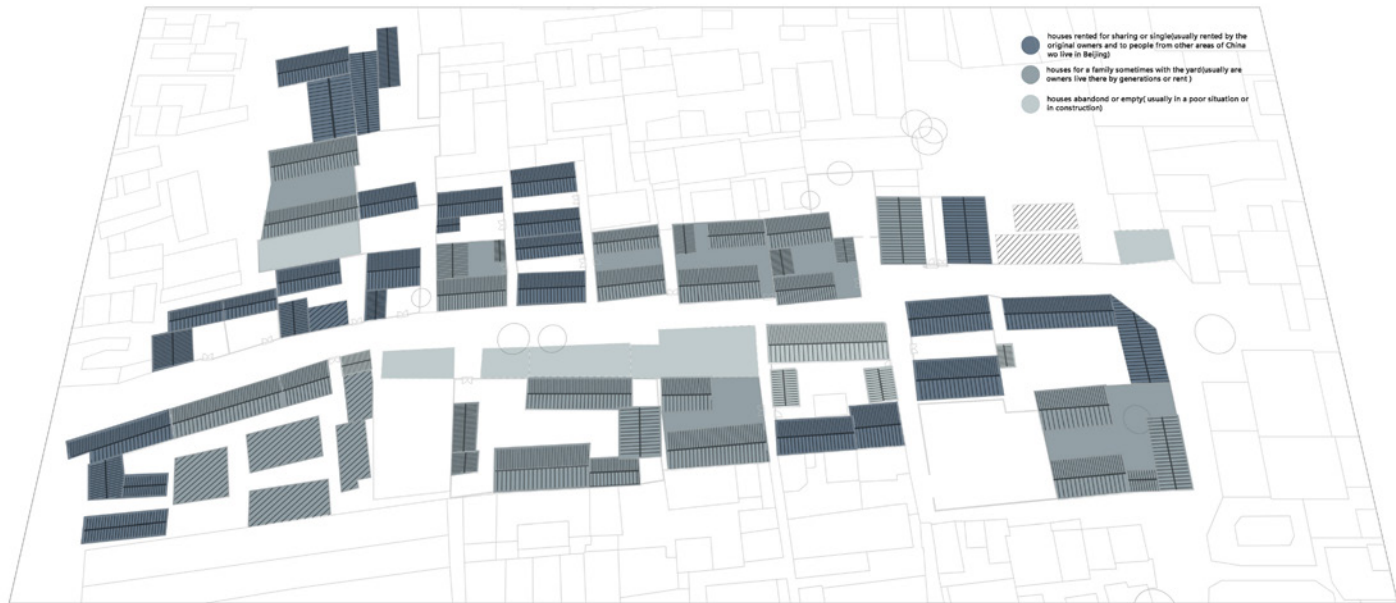


7.2.3 Problems of the site



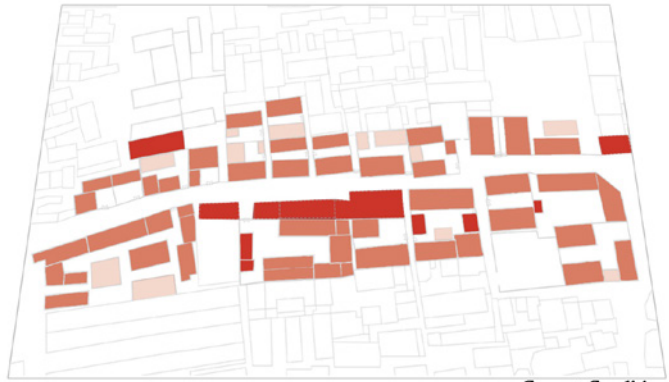
Problems by analysing the public space:

1. Limited dimension of width of alley cause that it is difficult to keep people stop by rather than passing by.
2. Poor condition of aged trees along the alley and in the neighborhood.
3. Disordered traffic situation (vehicles and pedestrian get through in this narrow space).
4. No public furniture exists (like benches, shading...)
5. Randomly parking along all the alley like motorcycles or bikes.



Problems by analysing the private space:

- 1.Lack of communication of each neighborhood as different ages and background of residents.
2. Big amount of abandoned houses without a appropriate use or construct.
3. Sharing yard with a rent condition without good communication.
- 4.Poor living condition without good service in most of the families(as the average economic level in the neighborhood is not very high) .
5. Some illegal construction by the owners cause the view of alley looks a mess and unsafe.
6. Residents lack of enthusiasm of becoming a part of community or awareness of the historical value of the area they are living.



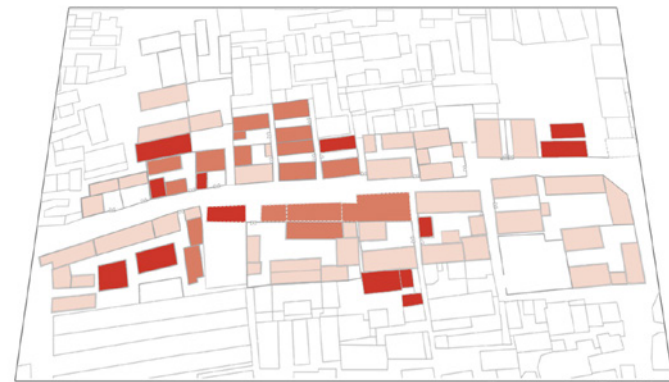
Current Condition

- Bad condition
- Medium condition
- Good condition



Functional Analysis

- Public service or commercial
- Residential



Conservation Condition

- New constructed
- Reconstructed based on old structure
- Original construction



Accessibility Analysis

- Vehicles and pedestrian
- Vehicles
- Pedestrian

Proposal

8.1 Project Concept

Overall, after all the reasearch between history of Beijing and typology of the traditional courtyard, between the current condition of the site and the overall accessibility we were trying to define the concept and some strategies not only apply in the 3 abandoned sites but also over all the alley, which considering the history and future in the same time.

From the alley space reorganization aspect, we are going to reasearch the condition of current buildings and reuse or intervention on some bad ones make them into more public use in order to improve the life quality and communciation of the residents.

From the three selected sites aspect, we are going to insert the necessary functions after the research which could be a teahouse, a community center and an atelier house difined by the area and location of the different sites.

Stragety

1. Improve the quality of living environment



2. Increase community vitality



3. Improve the cultural awareness of all citizens



Action





Writing



Pingpang



Walking birds



Reading books



Chess and cards



Chatting

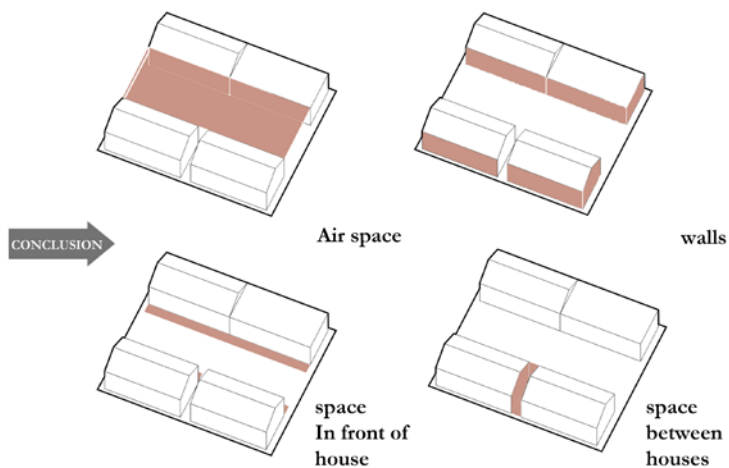


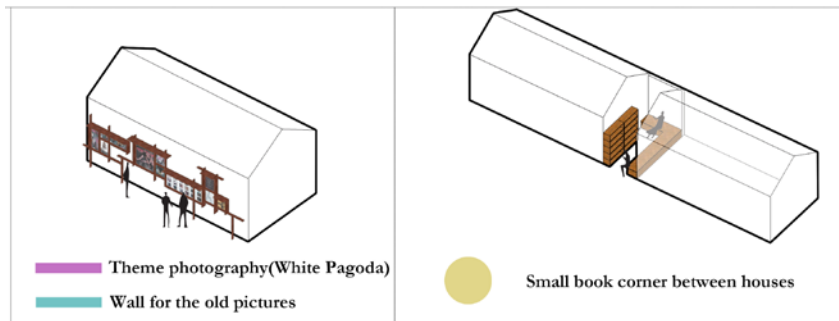
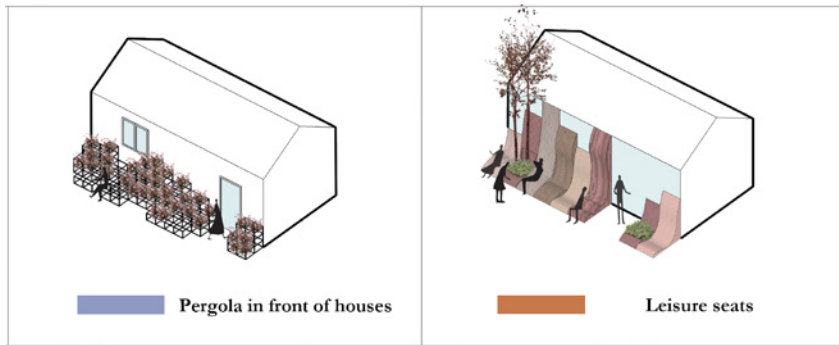
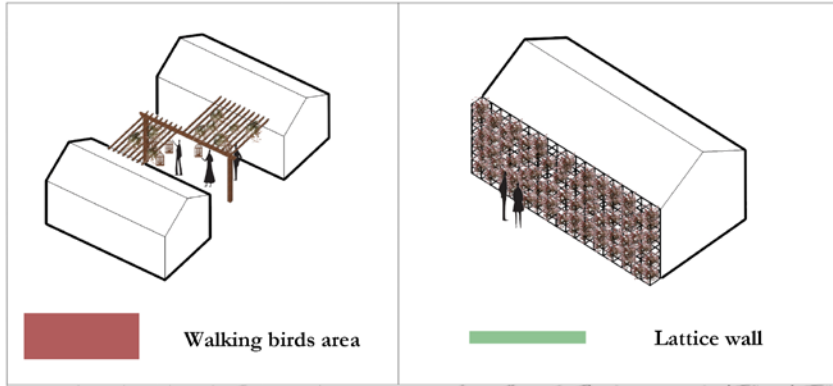
Children recreation

Hobbies and behaviours of residents



Space where needs intervention

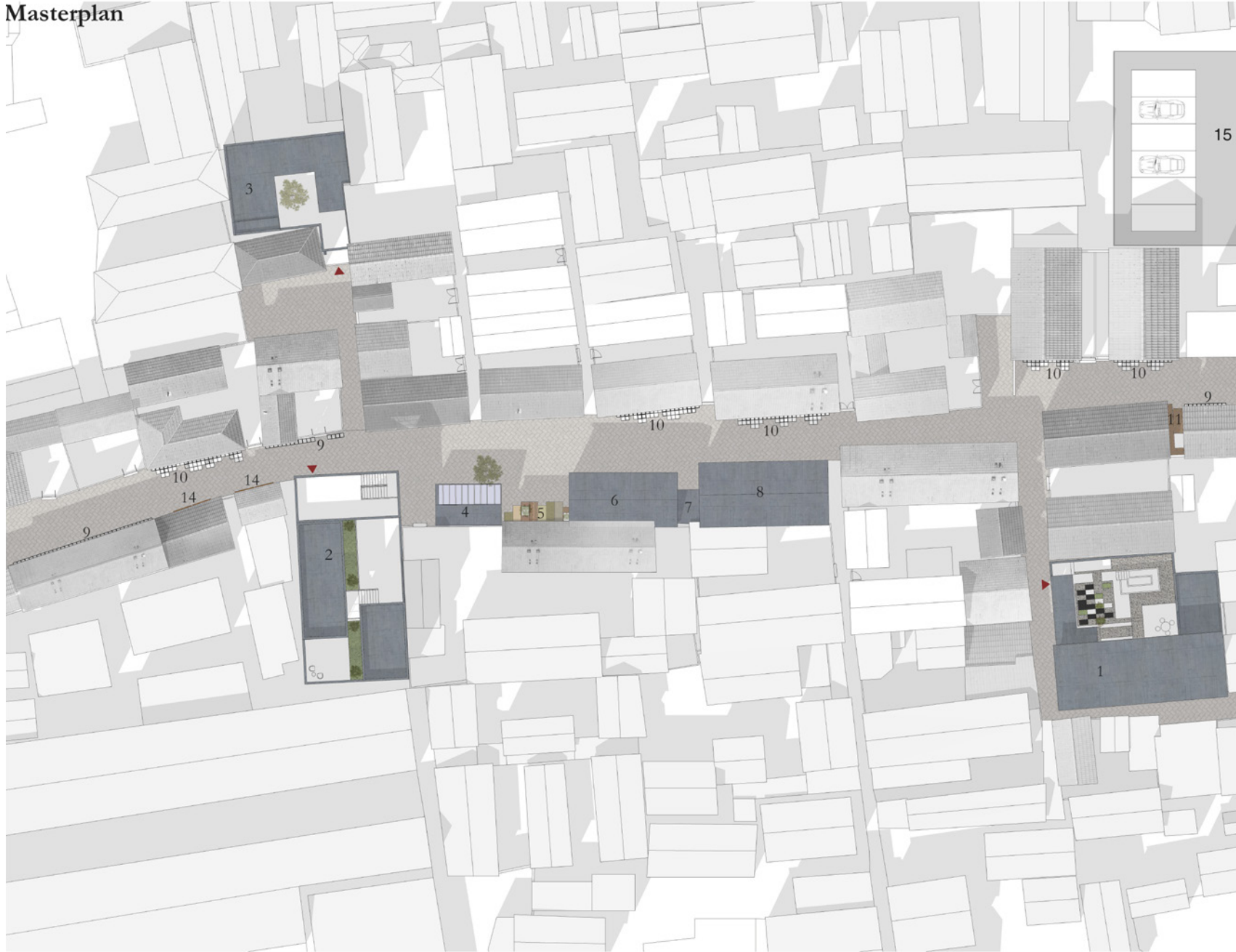


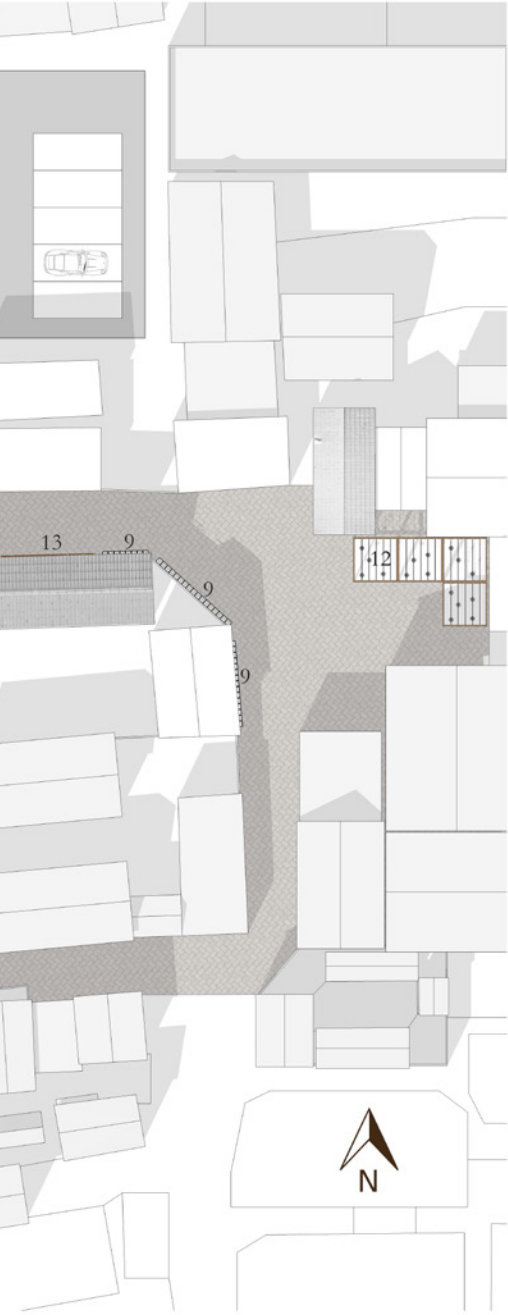




8.2 Masterplan and interventions along the alley

Masterplan





1. Tea house

2. Community center

3. Altier house

4. Book house for children

5. Recreation seats

6. Pingpang room

7. Public washroom

8. Chess and card room

9. Lattice wall

10. Pergola in front of houses

11. Book corner

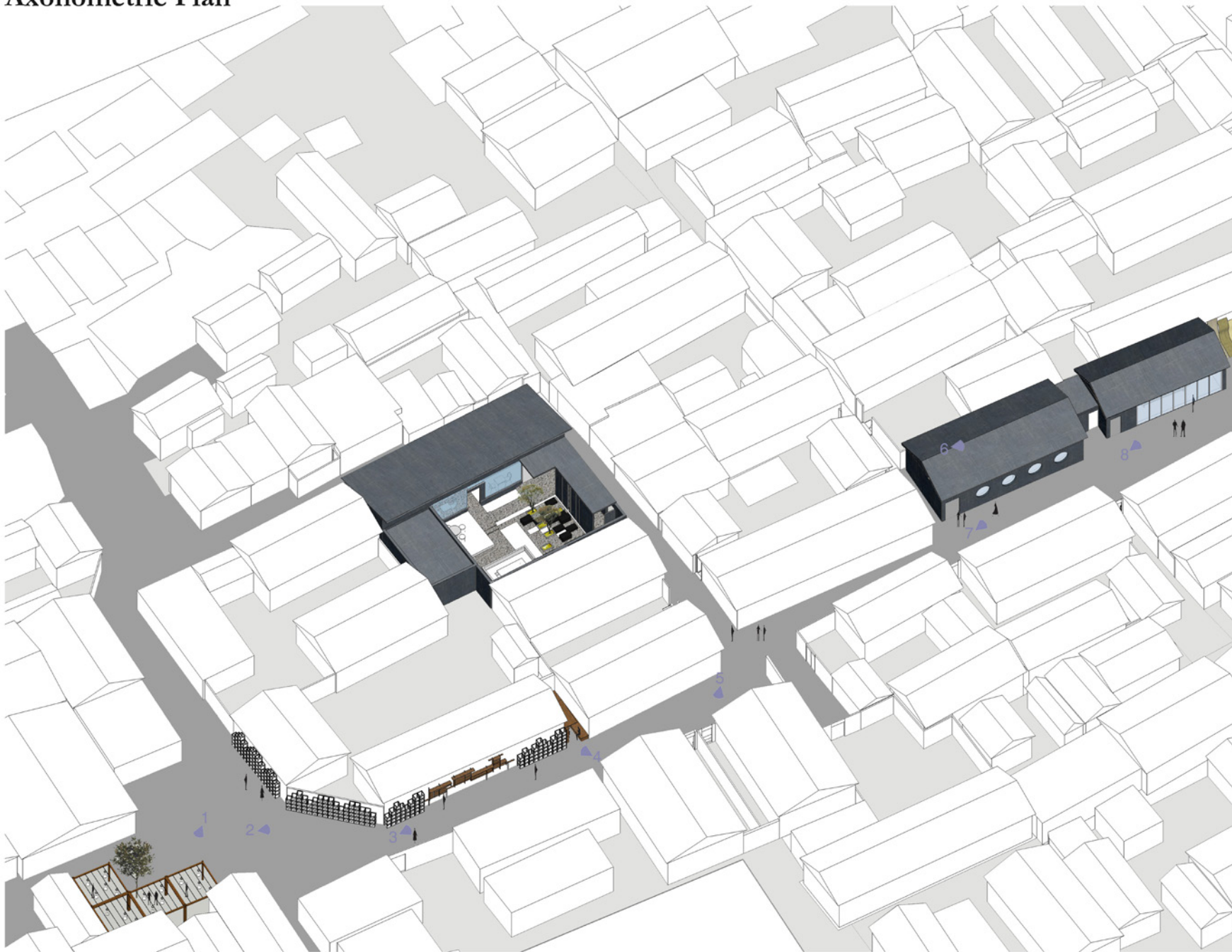
12. Walking birds area

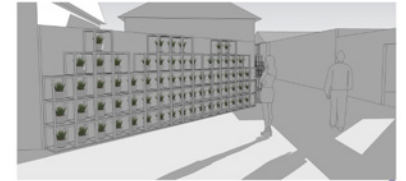
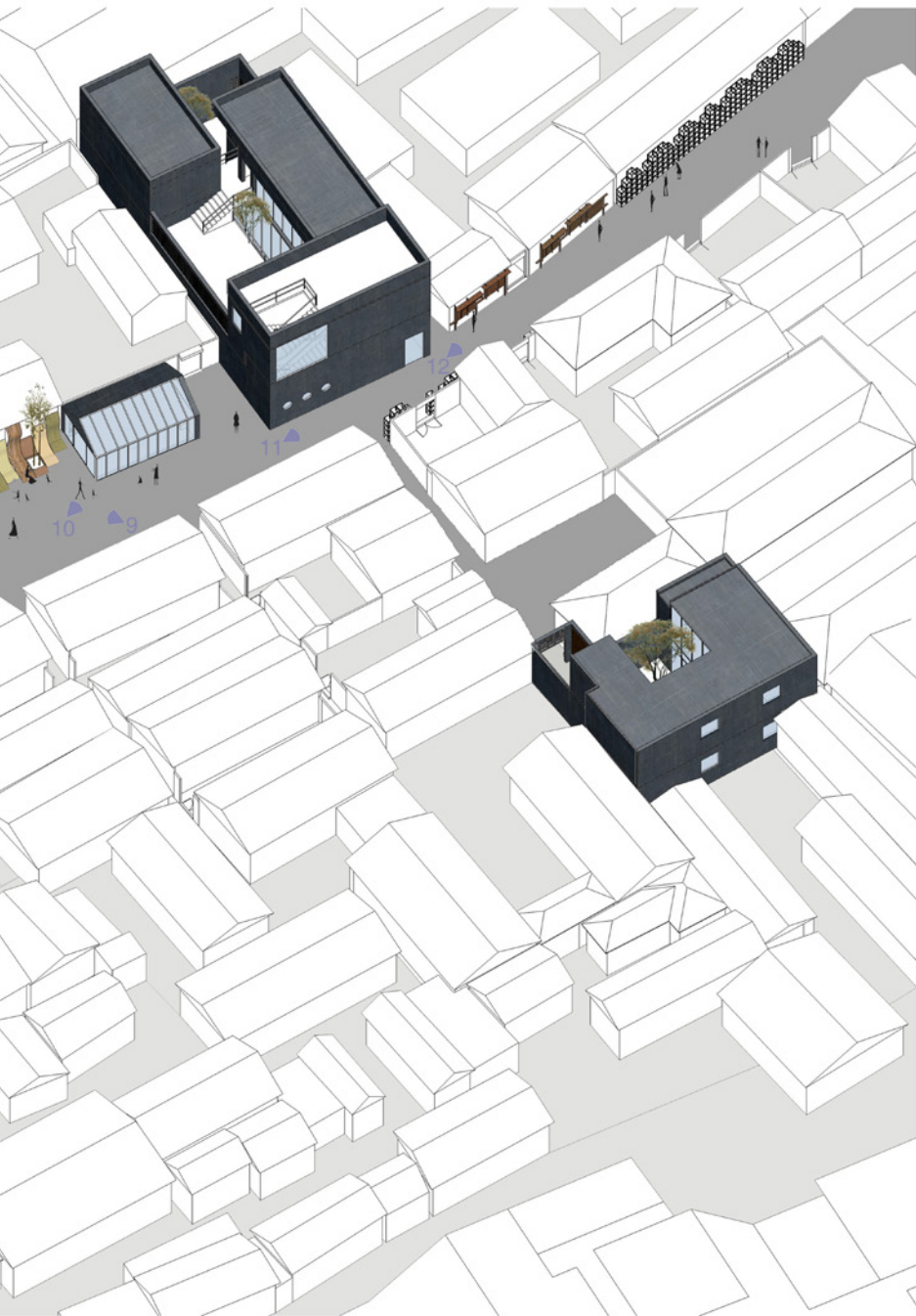
13. Theme photography

14. Walls for old pictures

15. Parking lots

Axonometric Plan

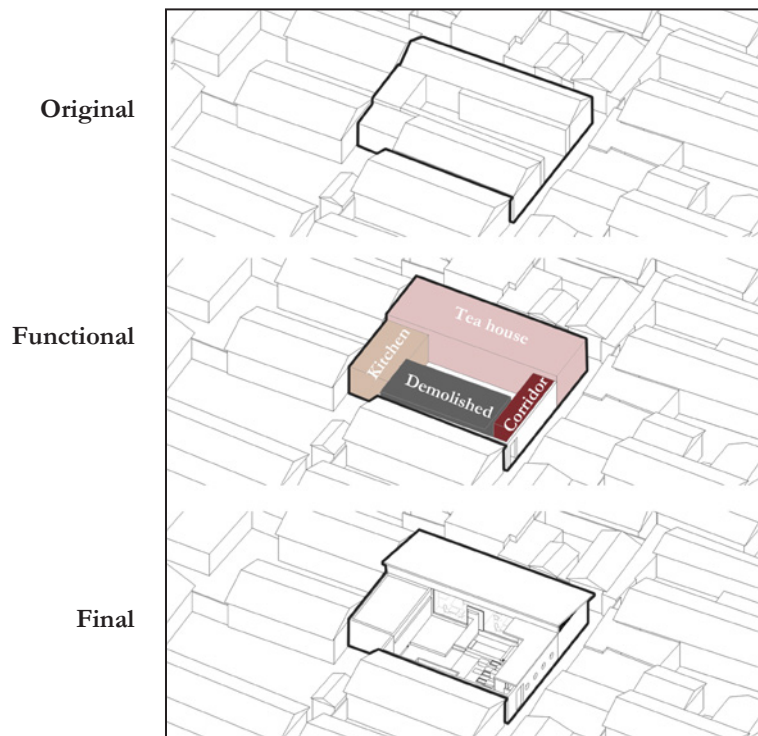




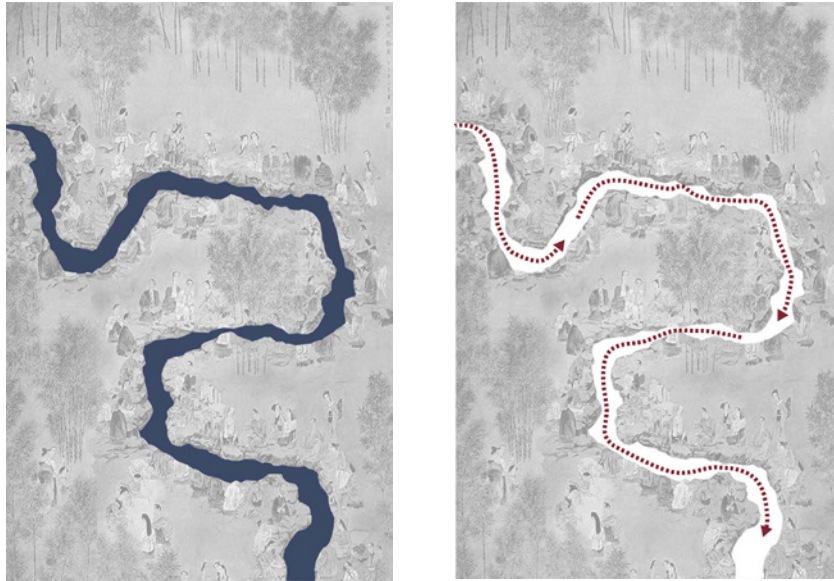
8.3 Tea House



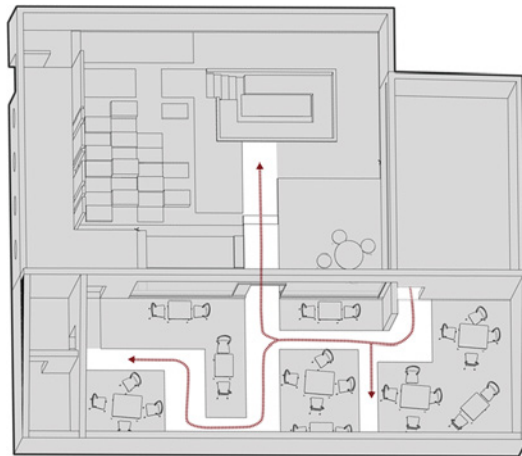
Current Situation



Design Theme No.1: Concept



The flowing cup is a game originating in China. After the rituals were held in March of the summer calendar, everyone sat on both sides of the canal, placing wine cup in the upper stream, and the wine cup went down the river, stopping in front of anyone, who would take a cup of drink.

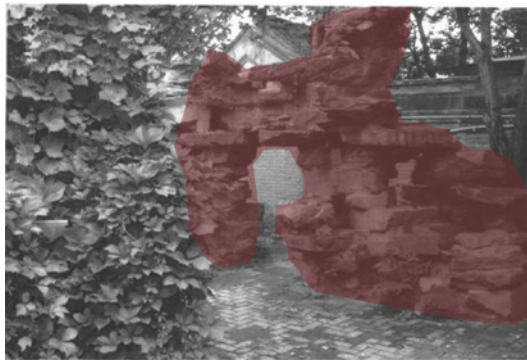


In the tea house, the cups are not delivered by the water but by the waiter, so the route of the waiter can be assimilated with the canal in the ancient game 'The Flowing Cup'.

Design Theme No.2: Elements



Water



Rocks



Vegetation



- Water
- Rocks
- Vegetation



- Rocks
- Water
- Vegetation



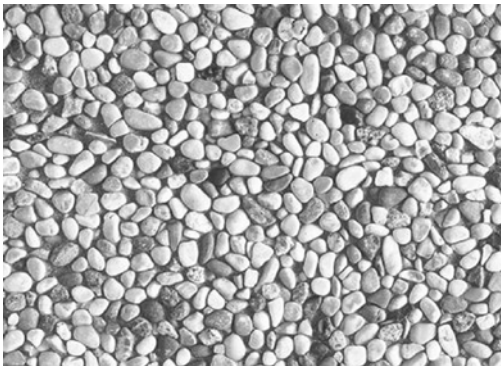
- Area of moving
- Area of staying

Choose three basic elements in traditional garden, respectively: water, rocks and vegetation.

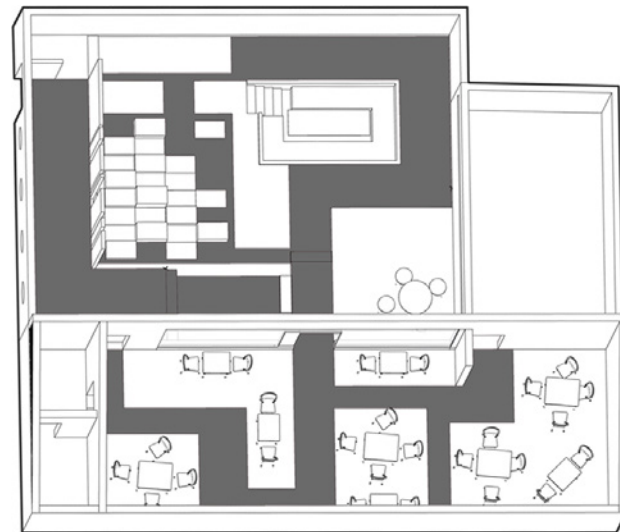
Design Theme No.3: Material



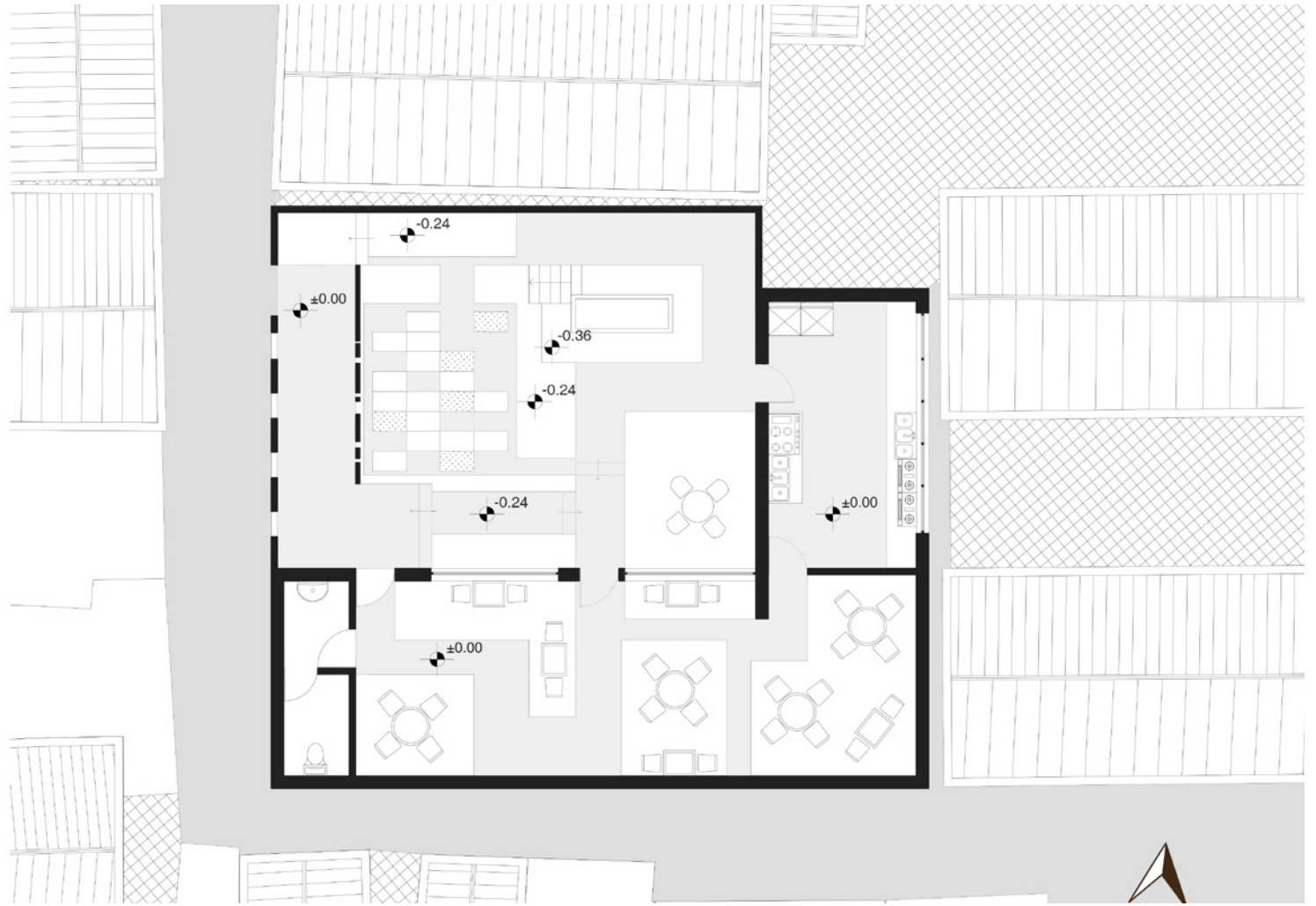
There is no water in Traditional Japanese rock garden, they use sands and tinny stones to symbolize the water.



Because the path which is made of sands and tinny stones is very difficult to clean, we choose a another material to substitute it, which is Lastra Ghiaino Lavato.



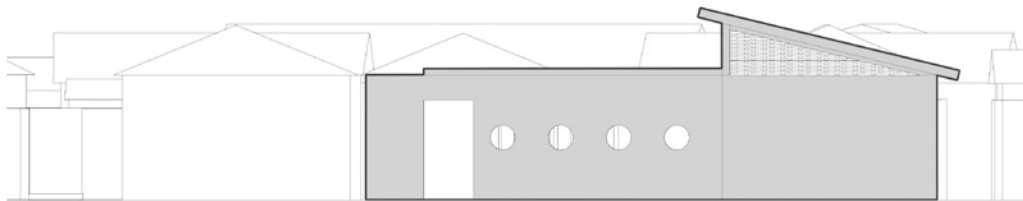
Lastra Ghiaino Lavato



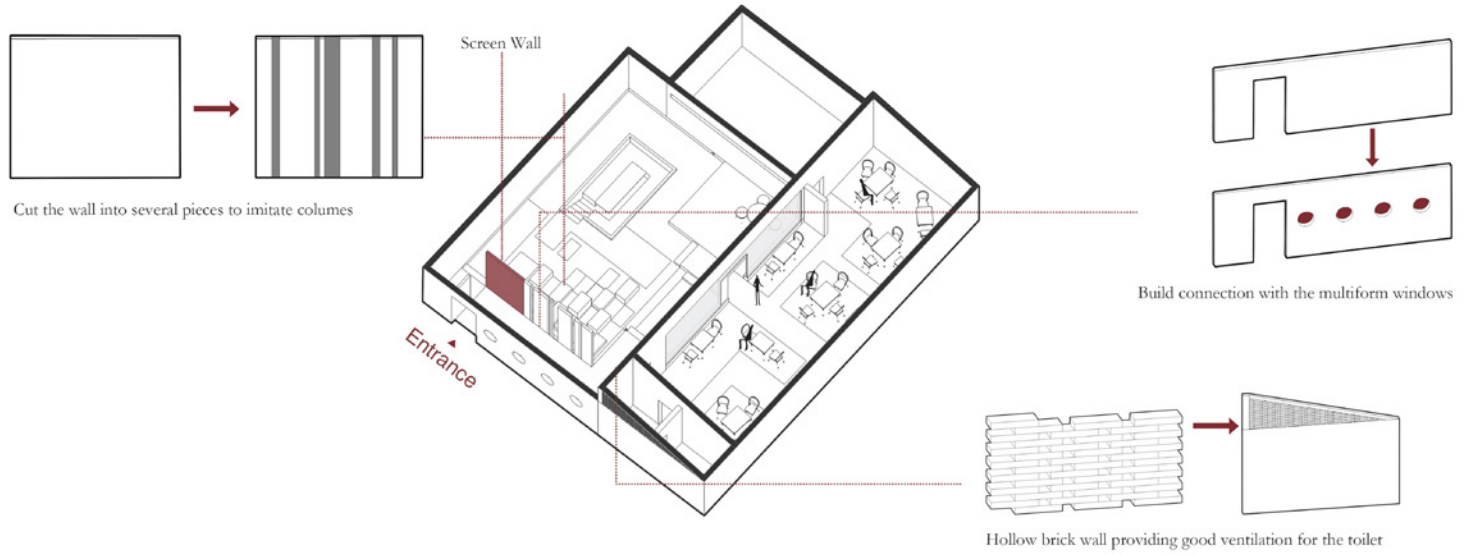
Ground Floor Plan



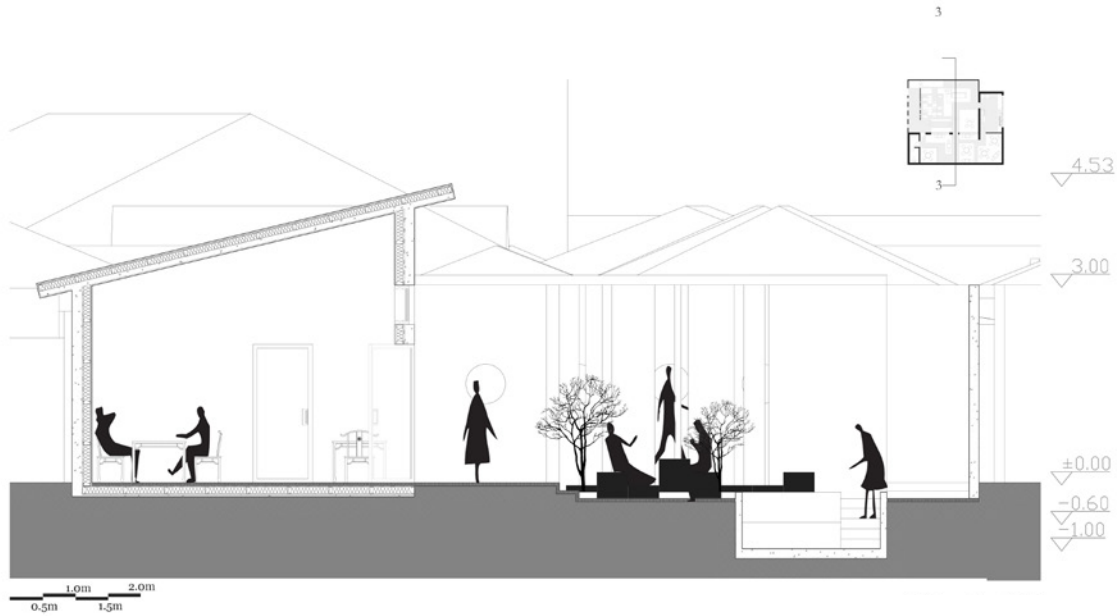
3-3 Section



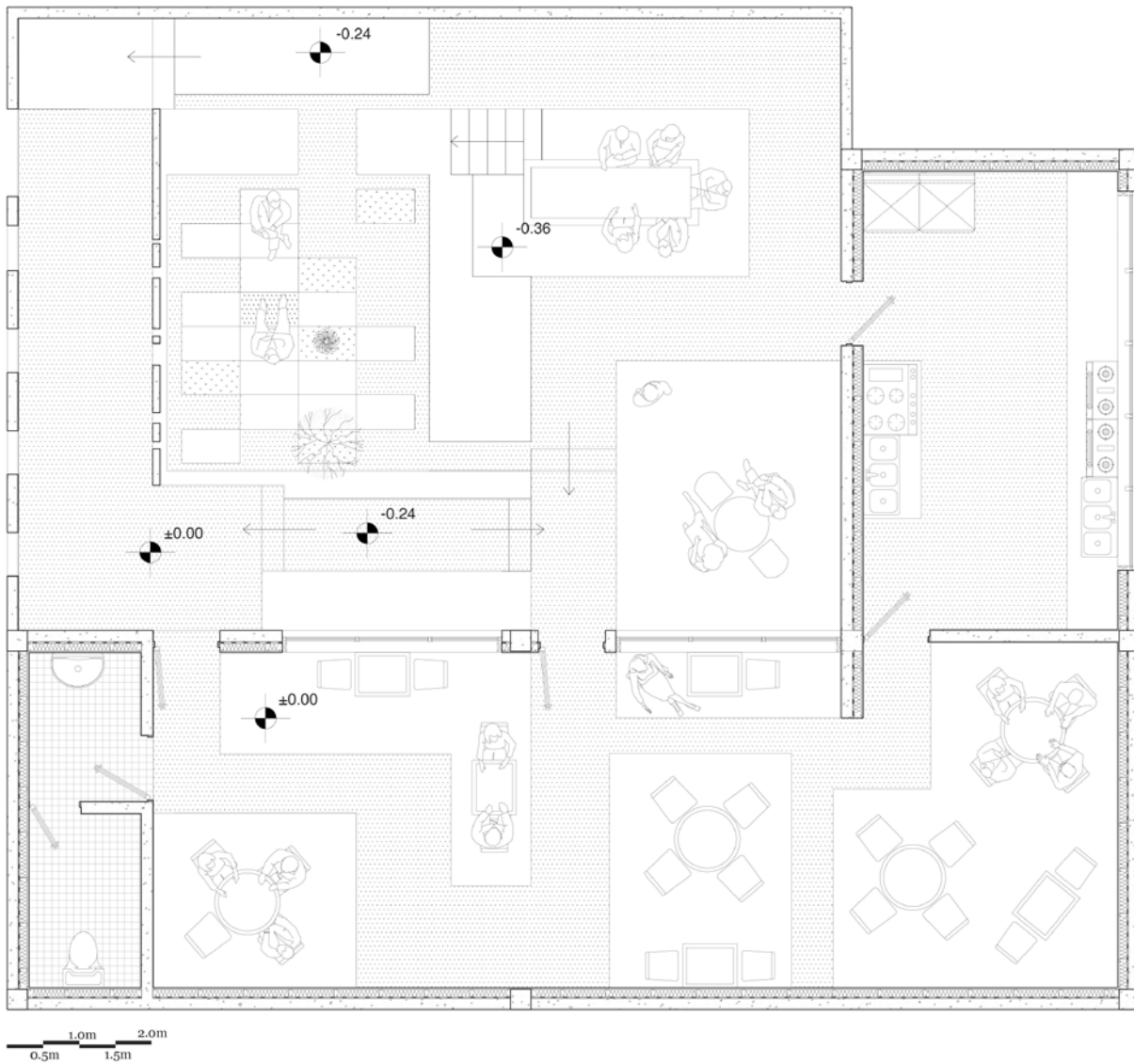
Elevation



Axonometric Diagram



3-3 Section with details

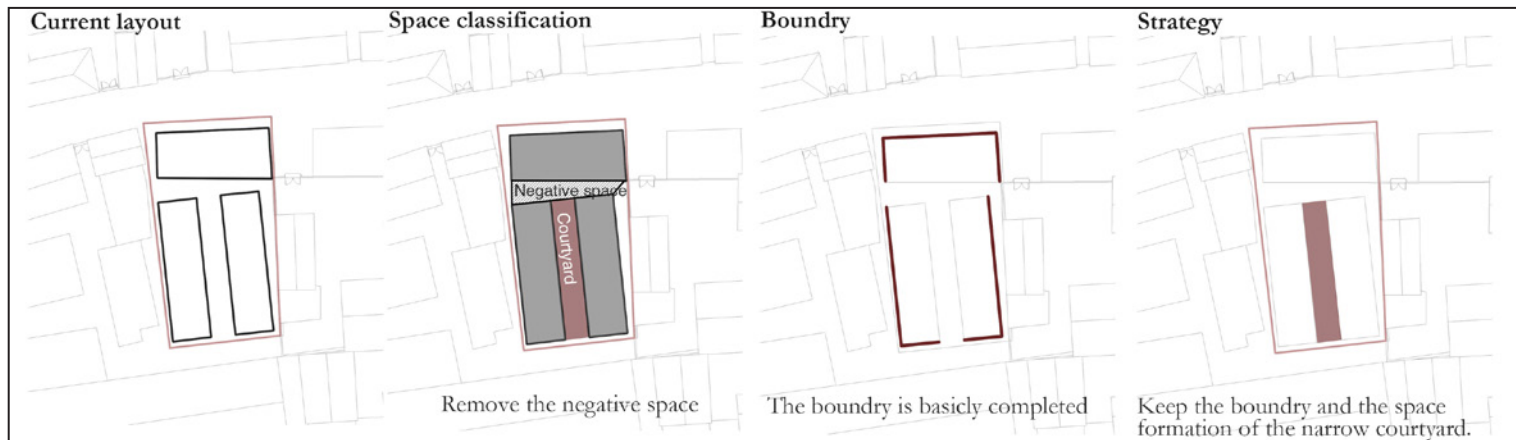


Ground Floor Plan with details

8.4 Community Center

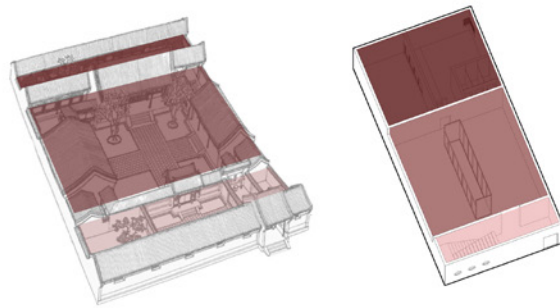


Current Situation

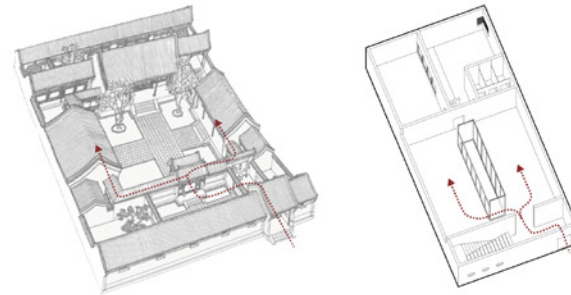


Strategy

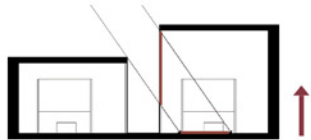
Space connection with traditional siheyuan



Circulation connection with traditional siheyuan

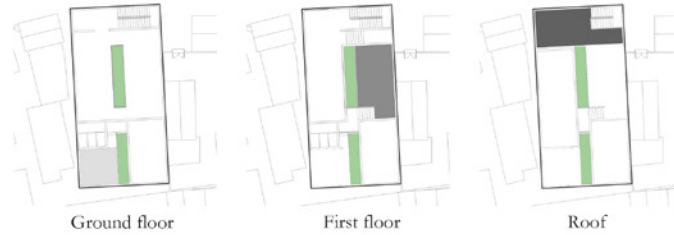


Light Analysis



Rise one side up of ground floor to bring more light in.

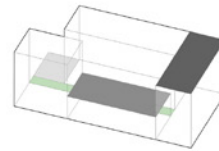
Open Space



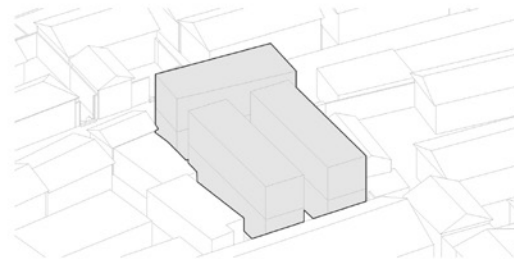
Ground floor

First floor

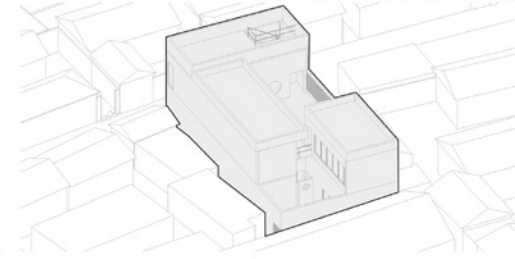
Roof



Connection with White Pogada

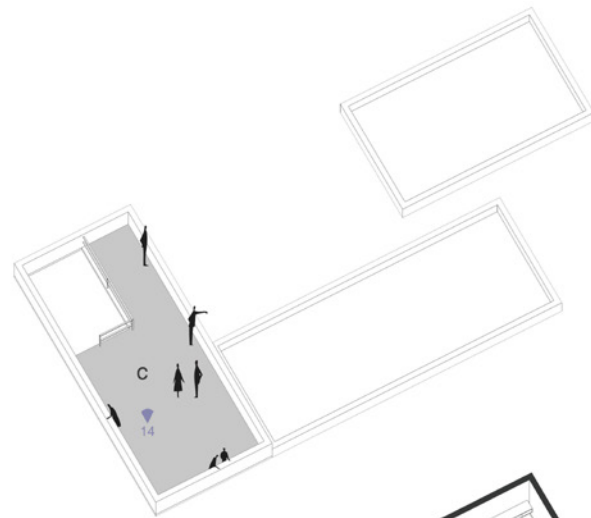


Original



Now

Strategy



Function

- Open space
 - a. Leisure backyard
 - b. Main courtyard
 - c. Sightseeing terrace
- Exhibition
- Handwriting room
- Washroom
- Greenbelt courtyard
- Reading room
- Office

History



'Fancy Hollow Wall' at the main courtyard



'Multiform Window' at the entrance of the main courtyard



'Fancy Hollow Wall' at the backyard



'Independent Screen Wall combined with Multiform Window' at the entrance of the backyard



'Multiform Windows' on the outer wall



'Screen Wall' at the entrance



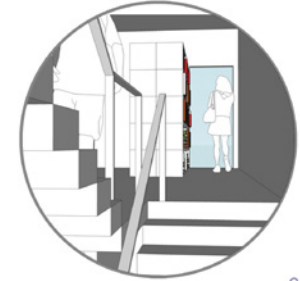
13



14



5



6



11



12



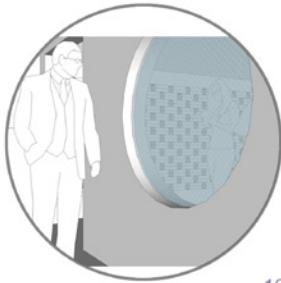
3



4



9



10



1



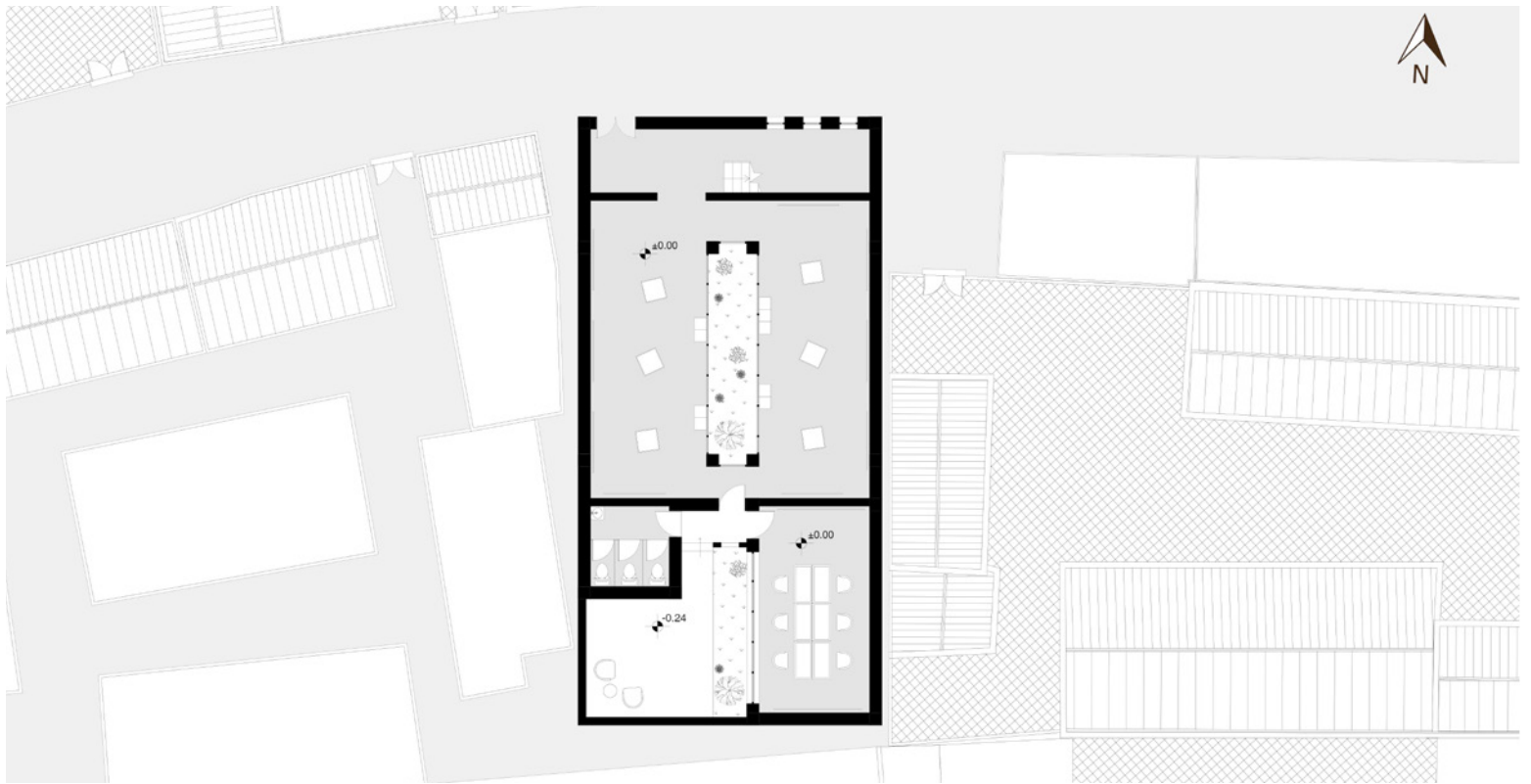
2



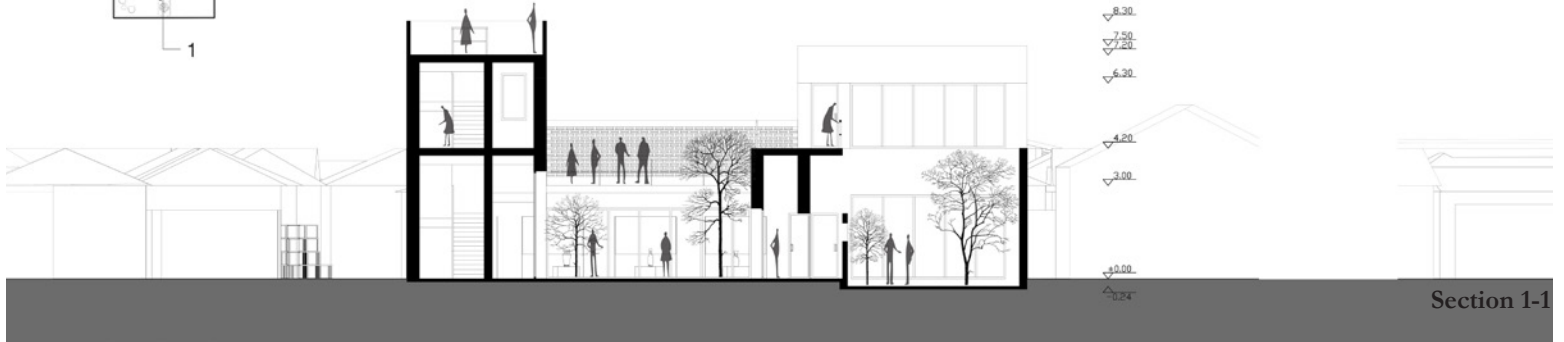
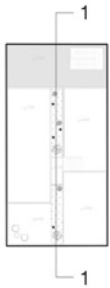
7



8



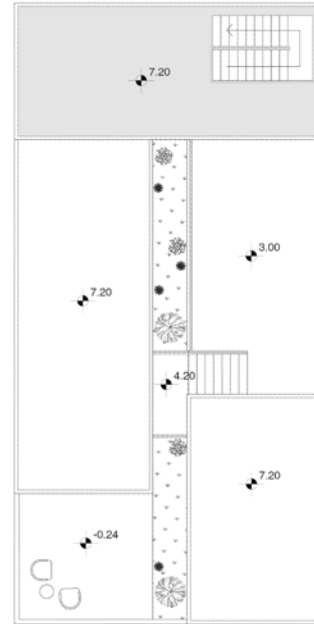
Ground Floor Plan



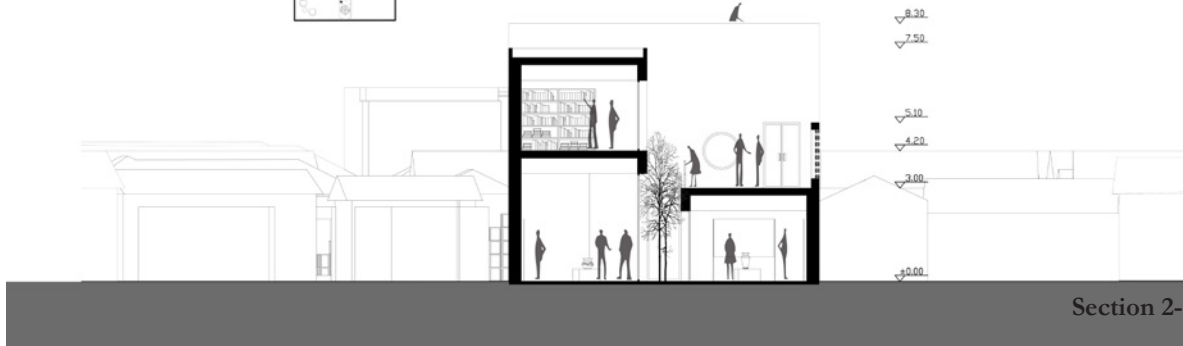
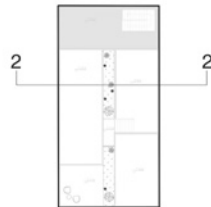
Section 1-1



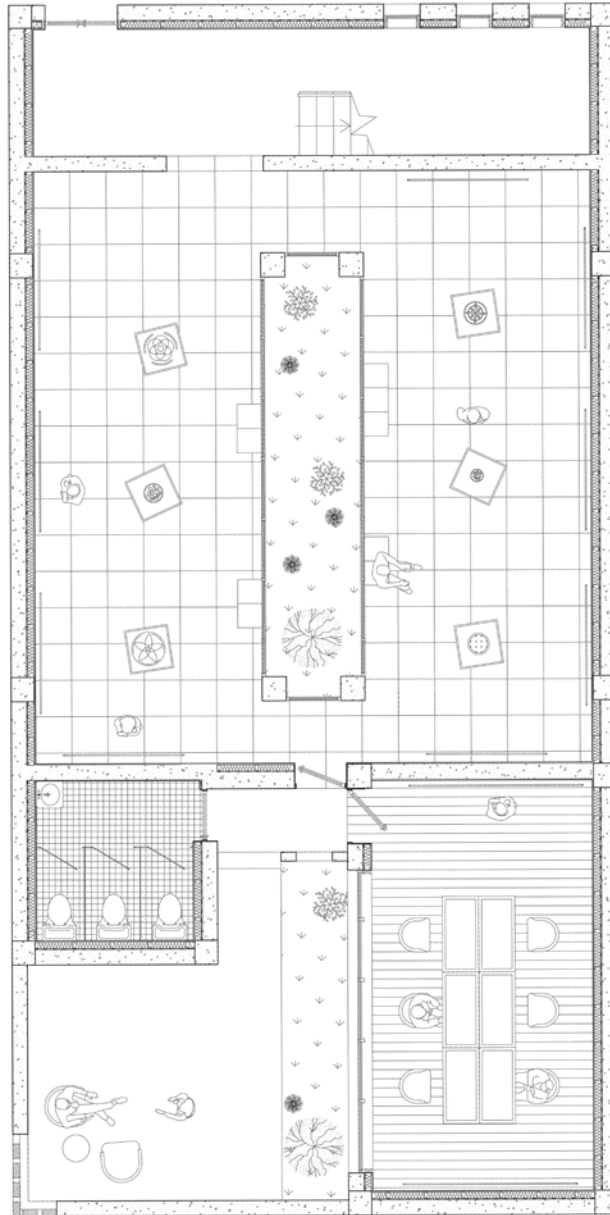
First Floor Plan



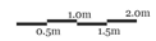
Roof Plan

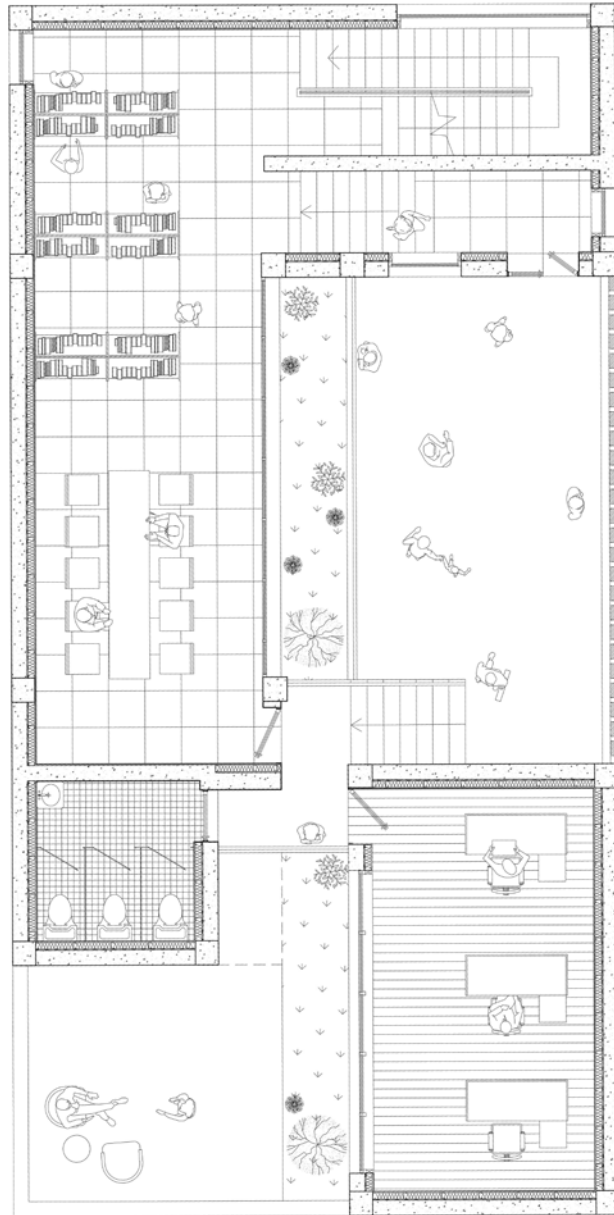


Section 2-1

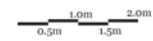


Ground Floor Plan with details





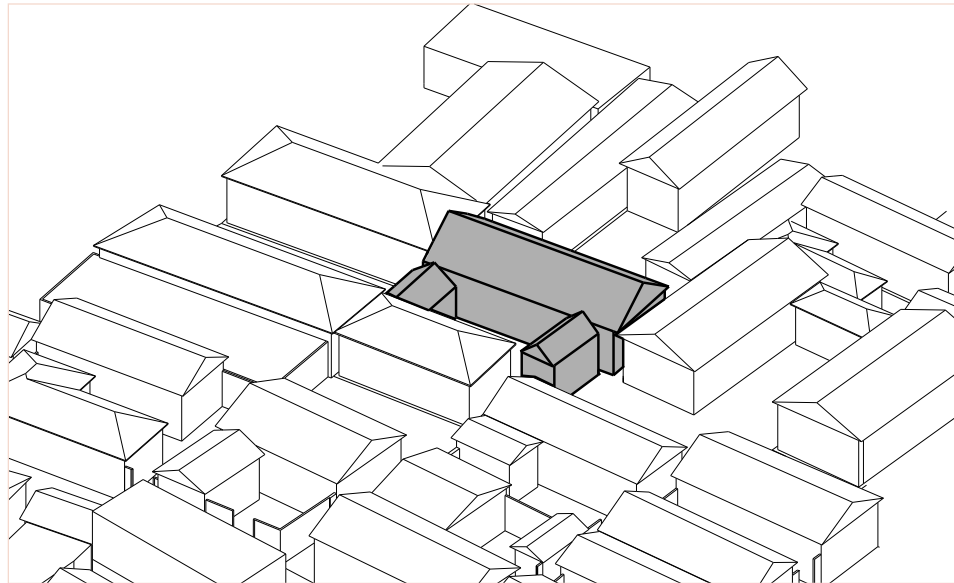
First Floor Plan with details



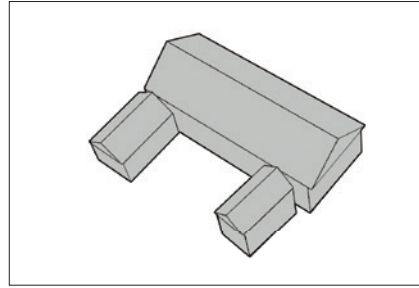
8.5 Atelier House



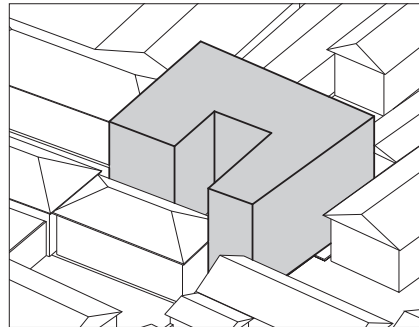
Current Situation



Original layout



Current layout



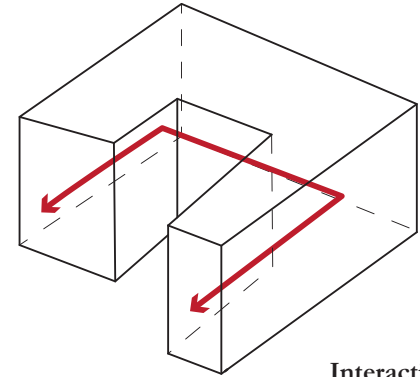
Design layout

-Improvement of the interaction: compare with the current situation, the lack of communication of each courtyard became a severe drawback among all the community, in the meantime, the owner of this yard is a couple but want to make the space full of use and make it like an area with more leisure.

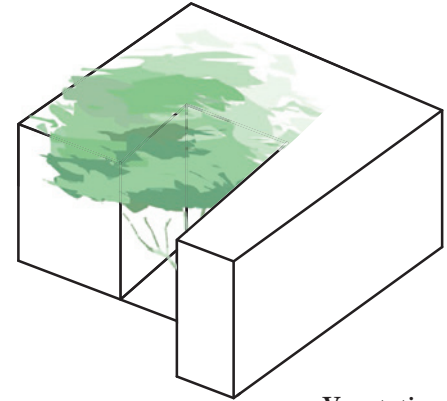
-Increasing of vegetation: considering the whole design aims of the project, also with idea of sustainability and environmental friendly, the more green of this area could be a strength.

-Combine with Traditional Culture: in order to achieve the final aim of the awareness of Chinese traditional culture for each one who lives or visits, planning to add some visual elements should be a necessary aspect too.

Design Concept



Interaction



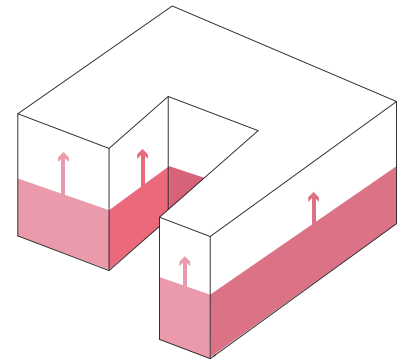
Vegetation

1. Reorganization the existing space with better use

2. Creating a interaction space in the middle to memorize the traditional courtyard space and in the meantime increase the effect of light gain.

3.Improve the functional aspect compare with the traditional ones.

Strategy



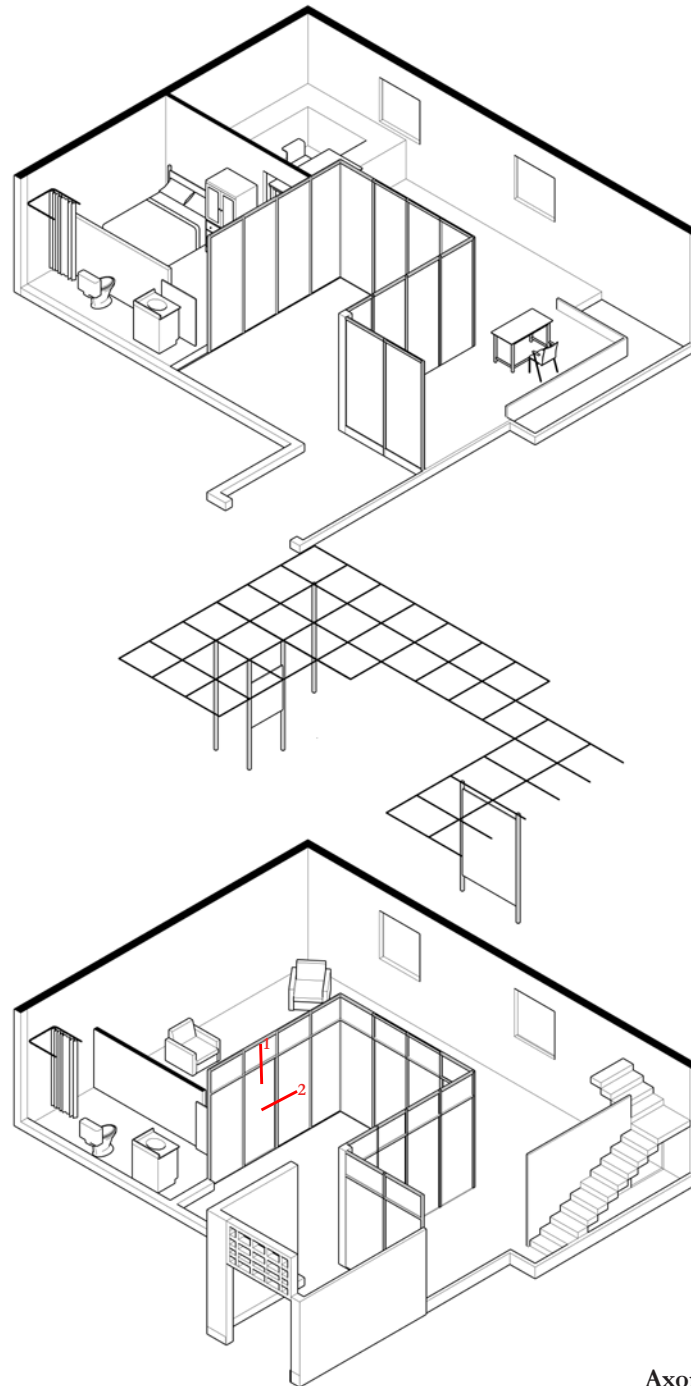
Reorganization

Atelier House:

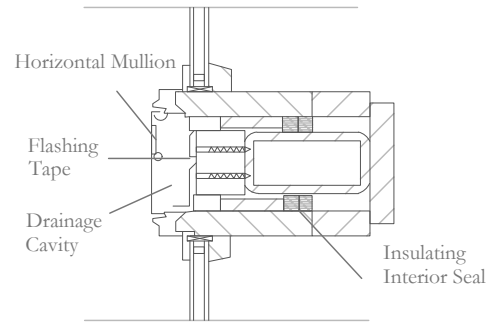
The owner of the courtyard house is an artist. The ground floor is the place for him to exhibit his works and also provide a place to communicate with the guests. First floor is the private zone, including bedroom, bathroom, living room, working space, kitchen.

In the meantime, according to the research done above about the traditional courtyard organization and its important elements, we are going to redesign the entrance part of our site and add other typical elements which can respect the history and correspond the current and arts.

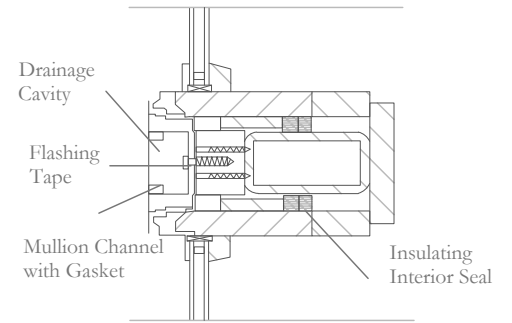
Also, for the ground floor is going to be a free space mainly for the exhibition and we are going to invent a new system according to the grids logic all the project.



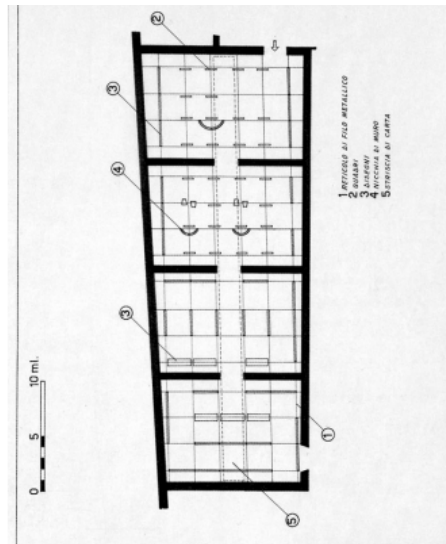
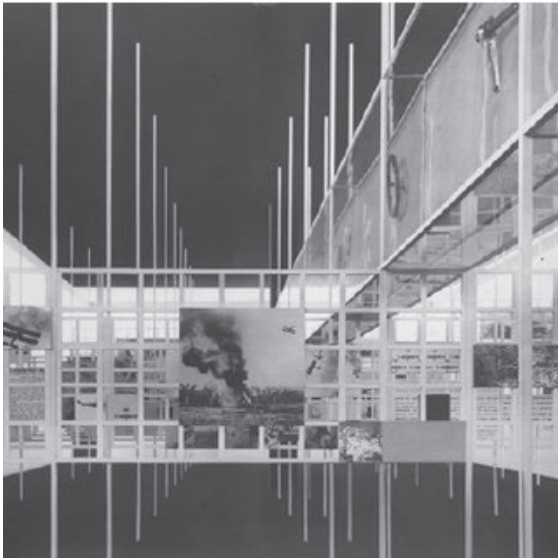
Axonometric Diagram



Horizontal Mullion 1-1



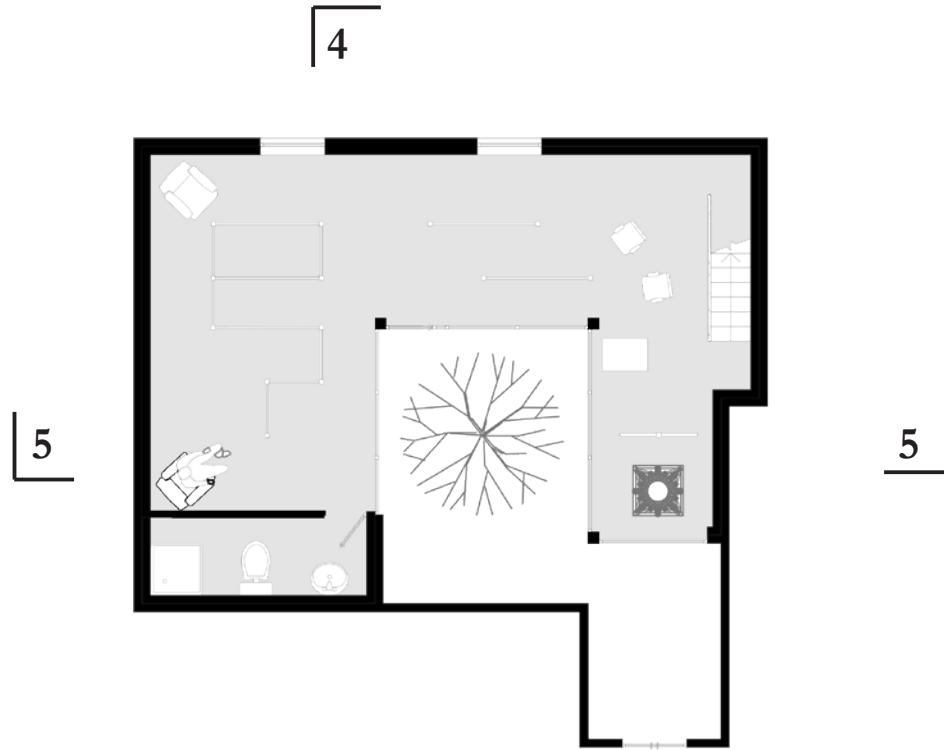
Vertical Mullion 2-2



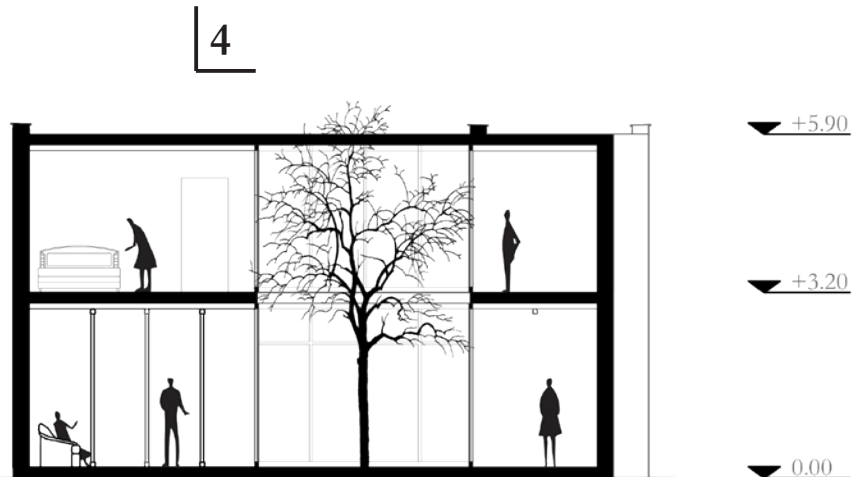
Reference of the exhibition system:

Franco Albini

Triennale di Milano, 1936
Pinacoteca di Brera, 1941



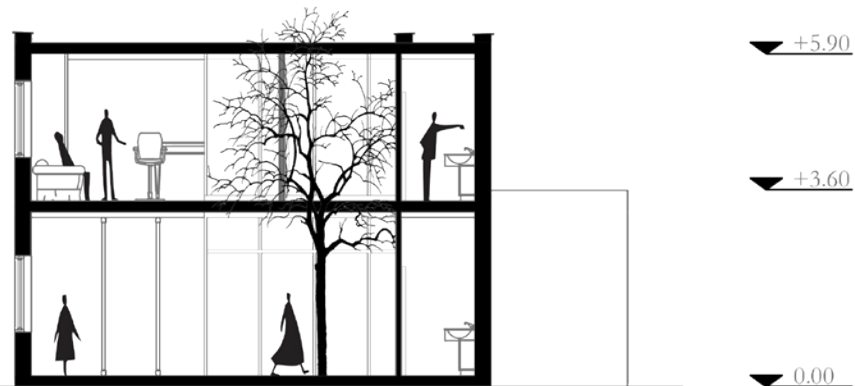
Ground Floor Plan



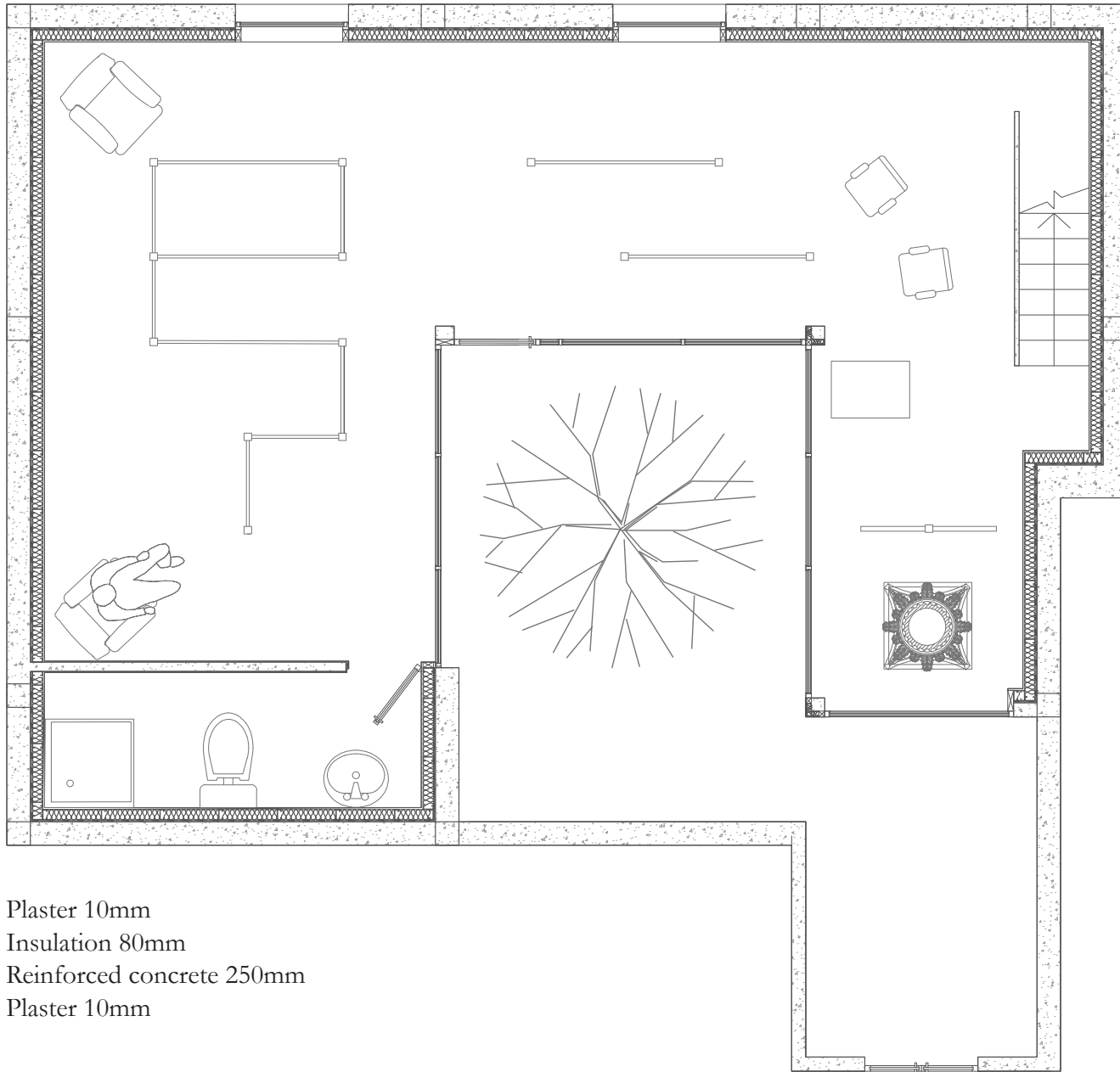
Section 4-4



First Floor Plan

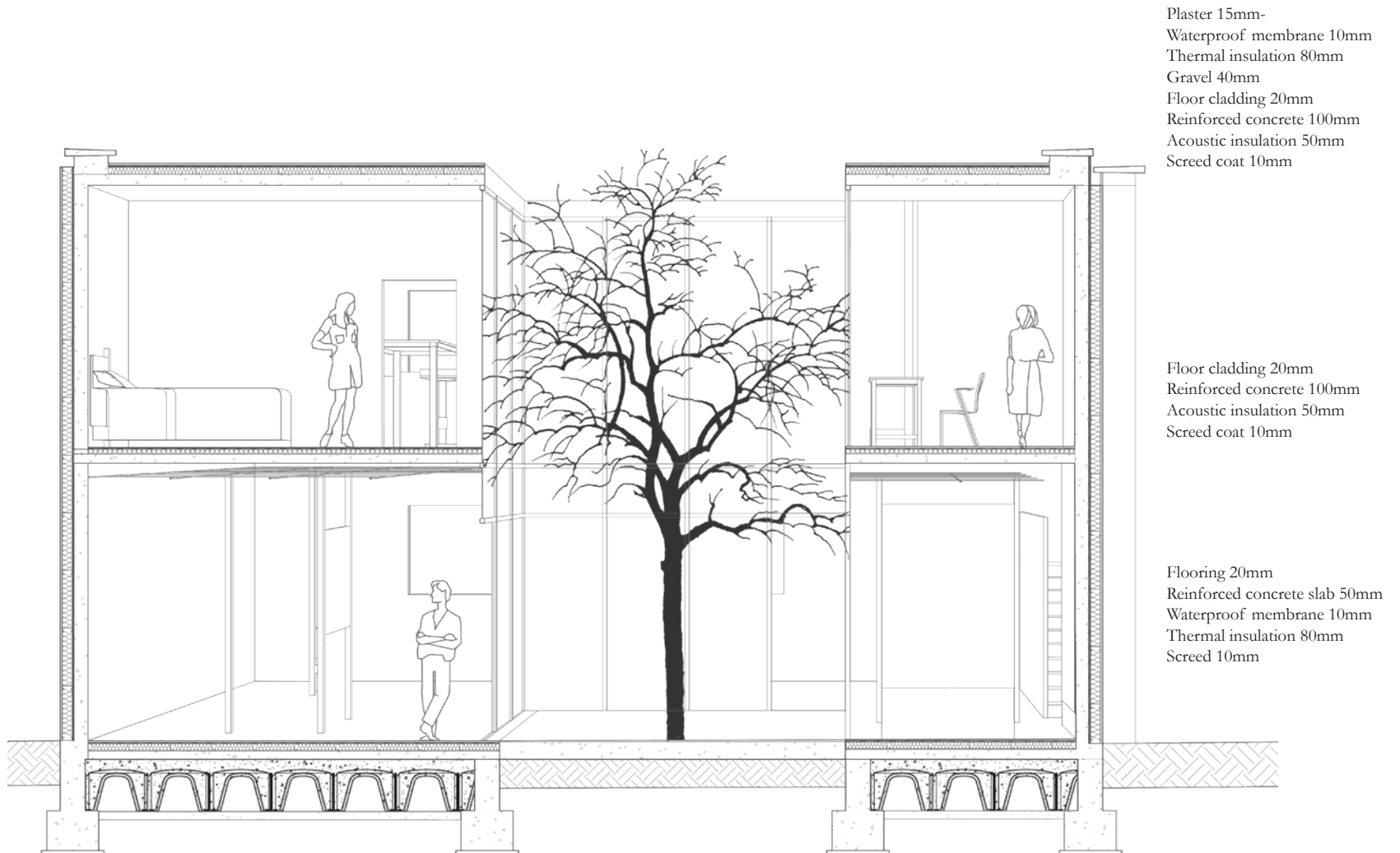


Section 5-5

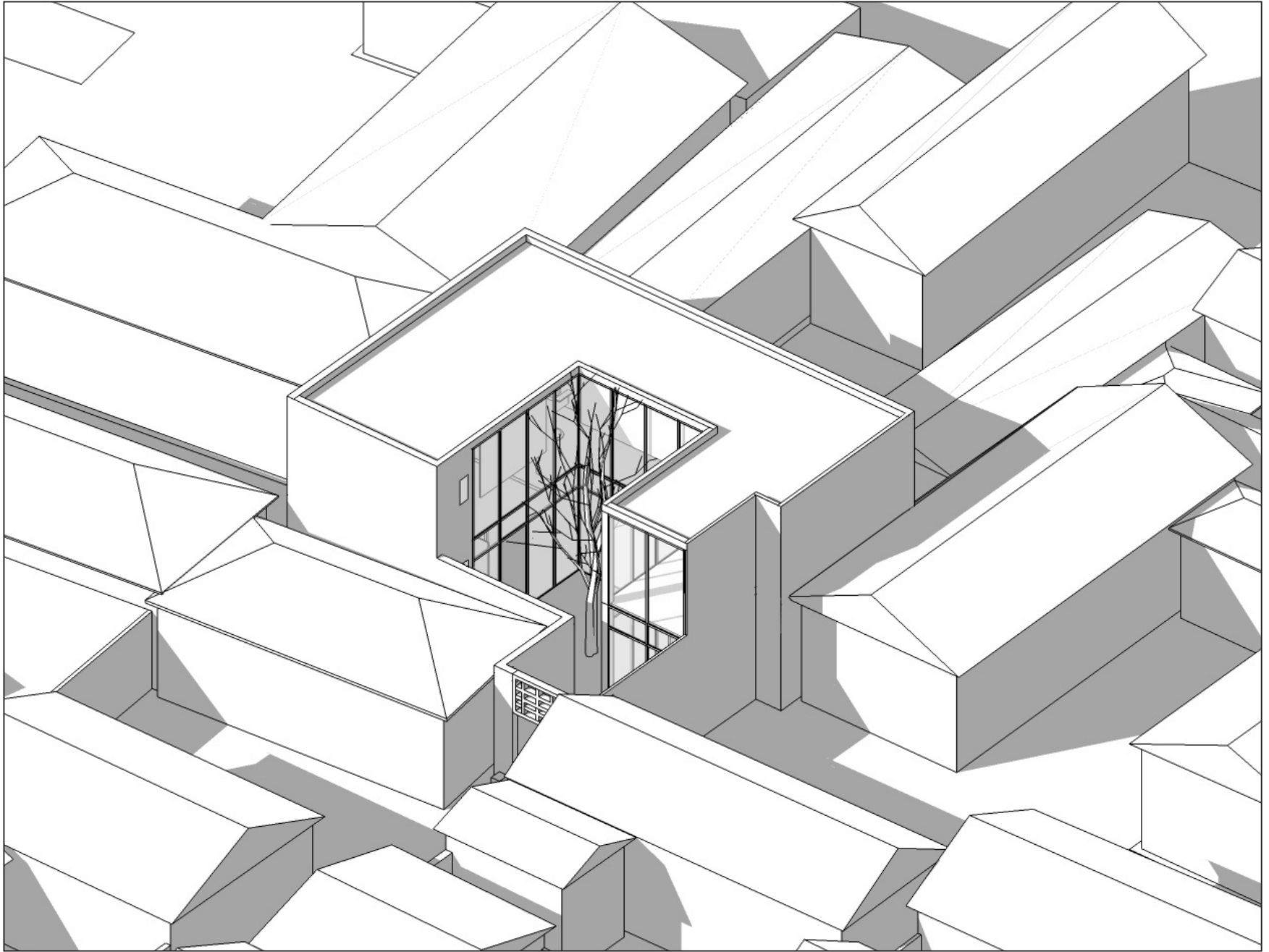


Plaster 10mm
 Insulation 80mm
 Reinforced concrete 250mm
 Plaster 10mm

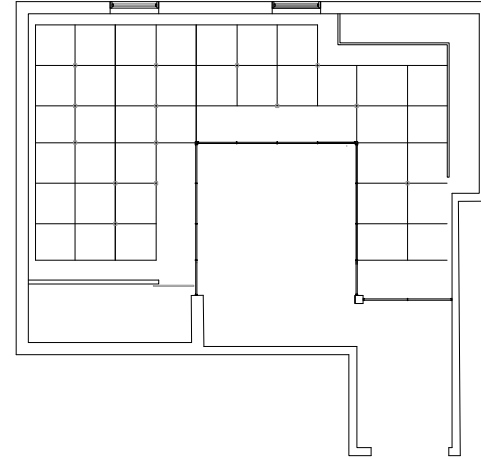
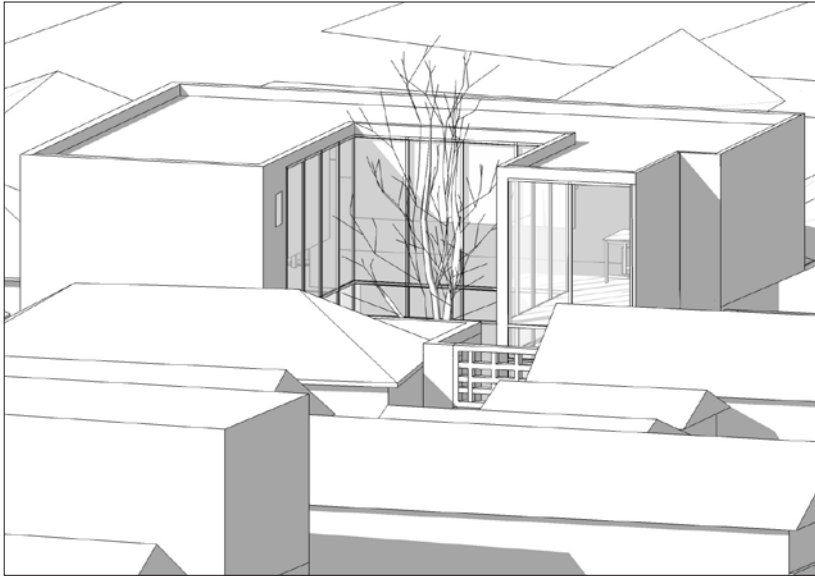
Ground Floor Plan with details



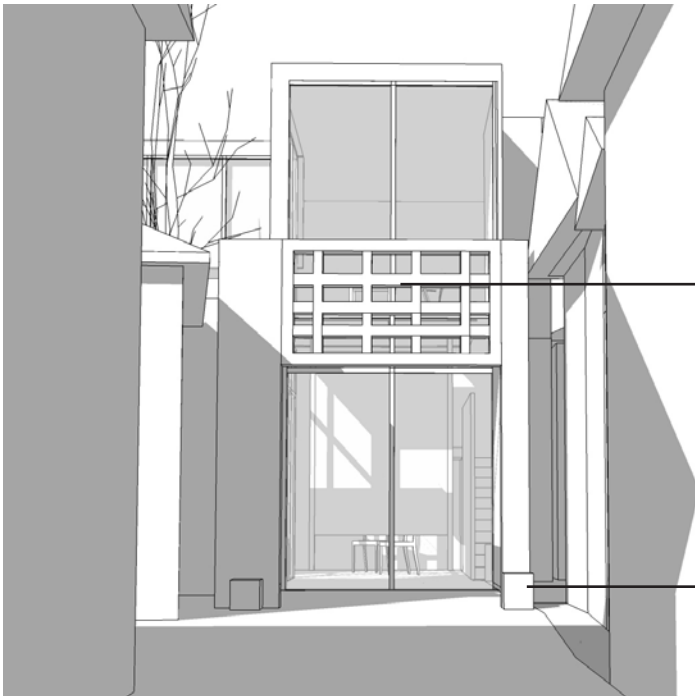
Perspective Section with details



Overall View



Installation grid system



Fancy Hollow Wall

Drum-shaped bearing stone

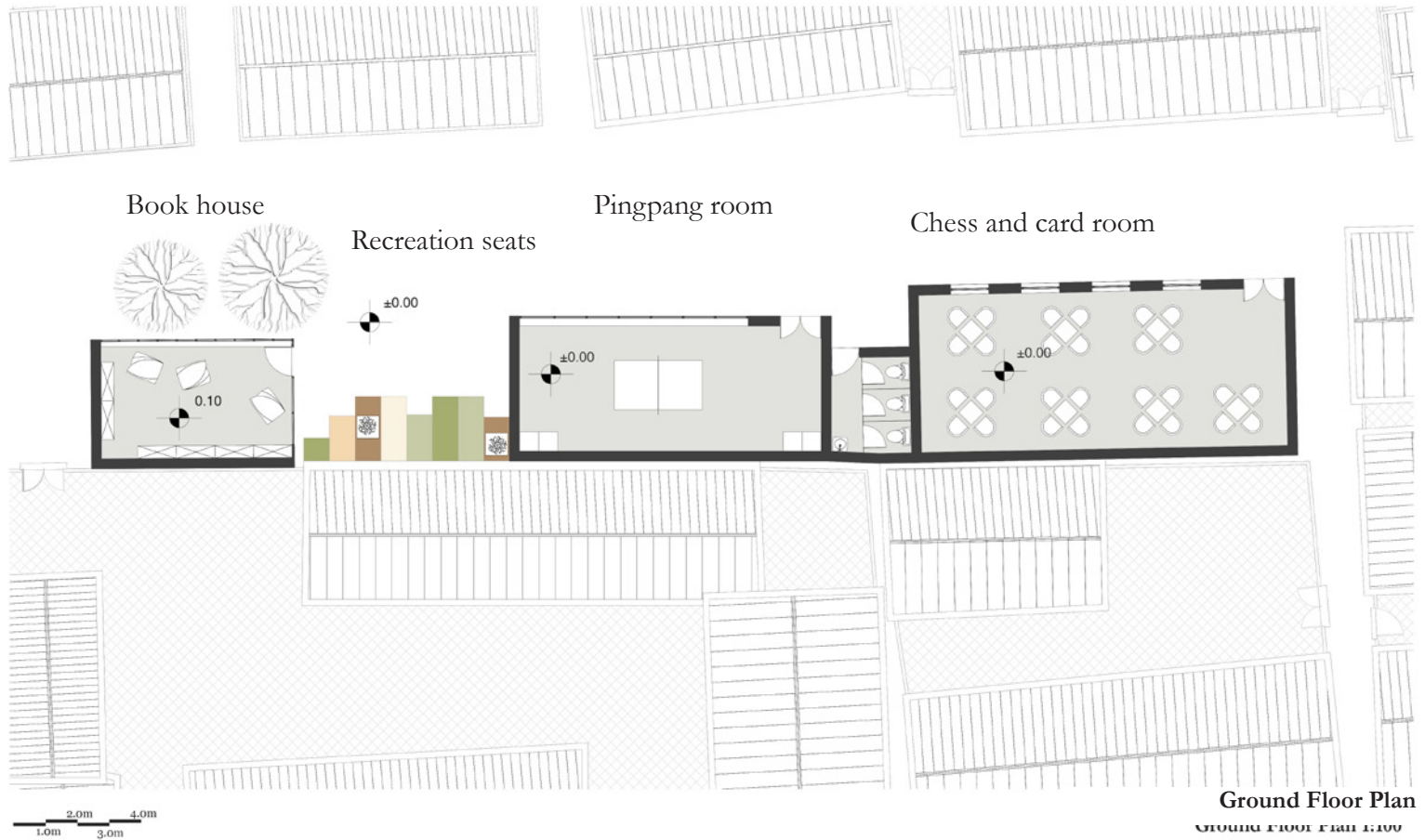
Entrance

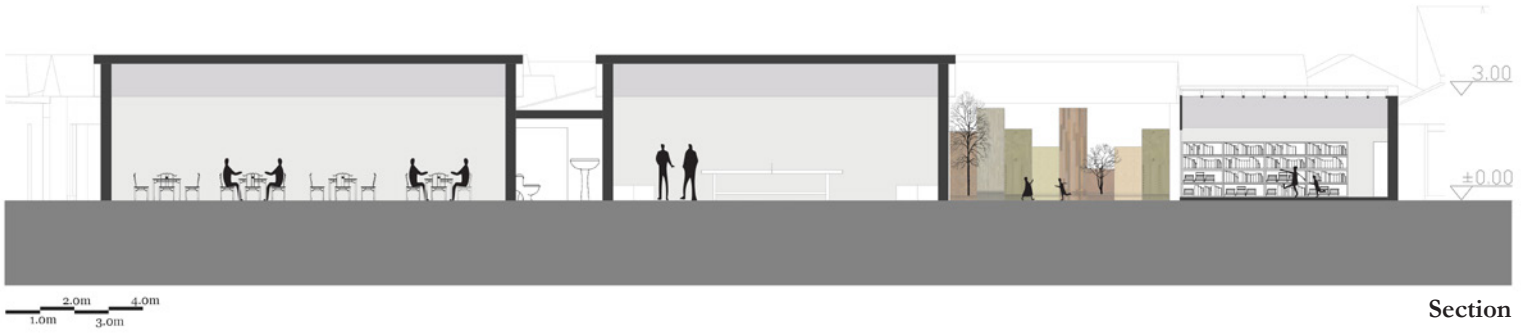
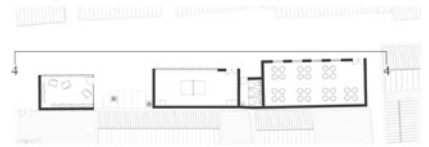


Highlight of the elements from traditional courtyard

8.6 Other Design along the Alley

8.6.1 Drawings of the book house, recreation seats, pingpang room, chess and card room





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