

ABSTRACT

Title of Thesis: LOOKING FOR THE LOST WATER
 --- RENEWAL OF XIAN-YU-KOU RIVERFRONT IN BEIJING

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 School of Architecture

Beijing as a historic city now is going through with dramatic changes. There is always the confliction between preservation and new development. It is against this background that my thesis is attempted to study and propose a sensitive development whose intent would be to treasure and preserve design philosophy embodied in the old city fabric.

The proposed site – Xian-yu-kou area in Beijing used to be a commercial place for over 500 years. A historic river, which was filled early last century, not only stimulated the development of the whole area, but also was the generator of its unique urban fabric. Now as many traditional neighborhoods, this area is facing both physical and environmental issues.

My thesis is to pursue a reinterpretation of the historical urban context: by restoring the most important urban element - the old river and redevelop the waterfront amenities to revitalize this whole historic neighborhood.

LOOKING FOR THE LOST WATER
--- RENEWAL OF XIAN-YU-KOU RIVERFRONT IN BEIJING

by
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of requirements for the degree of
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2003

DEDICATION

This thesis is dedicated to my dear parents, for all of your love and support.

Mom, I hope you will be glad to see this.

Dad, thanks for your support and encouragement during this year, without you,
none of this would be possible.

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CHAPTER 1: INTRODUCTION TO THE OLD CITY OF BEIJING

THE ULTIMATE IMPERIAL CAPITAL IN CHINA

“The Old City of Beijing is considered to be one of the treasures of urban history. It is the last in a long line of imperial capitals in China. Unlike most of its predecessors, which perished at the end of the dynasties in which they were created, Beijing evolved through the last three dynasties of the Yuan, Ming, and Qing? It has become the ultimate example of ancient Chinese city planning.” (Wu, 1999, P.3)

LAYOUT OF THE IDEAL CHINESE CAPITAL CITY

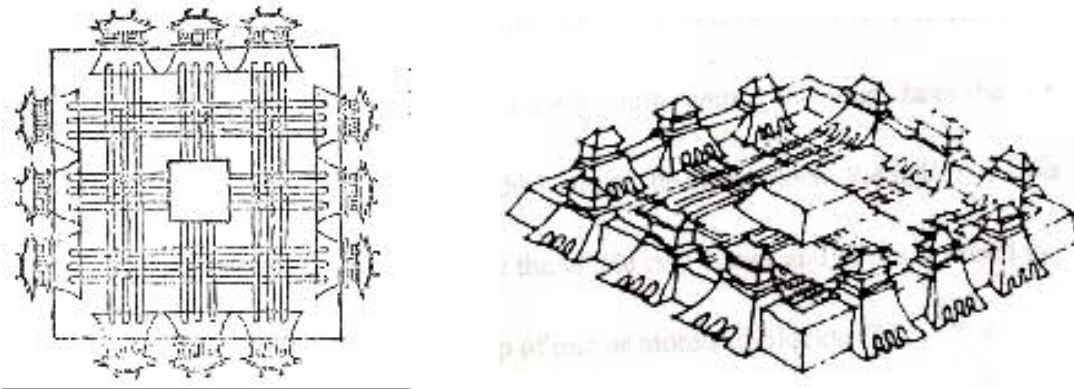


Fig. 1-1: Diagrams of the ideal Chinese capital city recorded in Zhou Li, Kaogongji.
(Source: He, Yaju, Research on Zhou Li)

The ideal city form of traditional China was first elaborated by passages that appeared in one of the Confucian classics, *Zhou Li*, in Spring-Autumn Period of *Zhou* Dynasty (770-475BC). It was the oldest and the most authoritative document that governed the layout of Chinese capital cities (Fig.1-1). Most of the rules and details concerning urban planning had been followed from *Zhou* Dynasty to *Qing* Dynasty (1644-1911AD).

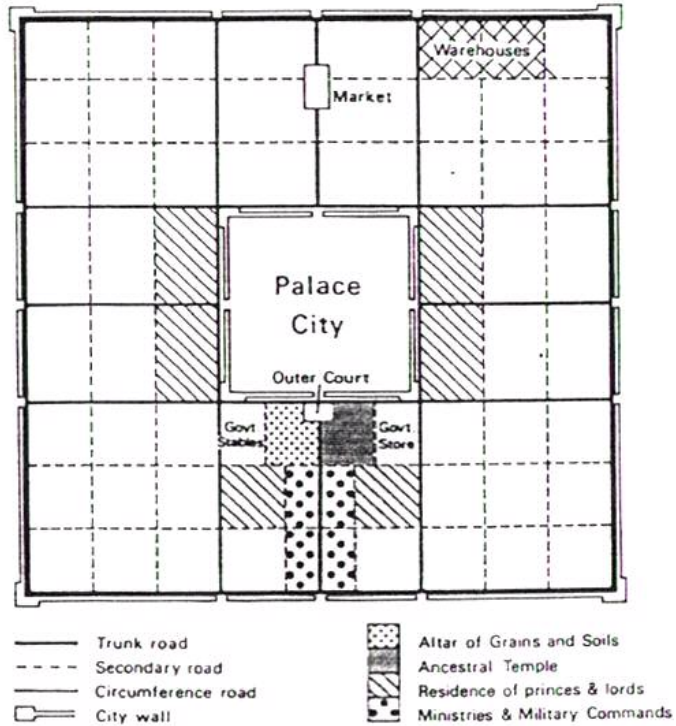


Fig. 1-2: Layout of Ideal Chinese Capital Cities.
 (Source: Beijing, Victor F. S. Sit)

“The capital city shall be a walled square. Each wall measures nine *li* (4,500m) and has three gates. There are nine north-south and nine east-west arterial roads, each of which shall have a width for accommodating nine chariot-ways. On the left-hand outside of the palace shall be the Ancestral Hall; while on the right-hand side shall be the Altar of Soils. In front of the palace shall be the Audience Halls. The market is to be located at the backside of the city, and measured one hundred paces on each side.” (Zhou Li, *Kao Gong Ji*) (Fig. 1-2)

From the description above, we can conclude that the main rules for the layout of ideal Chinese capital cities are as follows:

- The chessboard layout and the central axis
- The palace city and city walls
- The street network

BEIJING – “THE ULTIMATE EXAMPLE OF ANCIENT CHINESE CITY PLANNING” (Wu, 1999, P.3)

Almost all the major capital cities in Chinese history were developed following those principles, although each with its own adaptation to the natural environment and might changed through years’ development.

Among them, Beijing, which is the ultimate imperial capital in China, evolved through the last three dynasties, inherited the best achievements of the Chinese city planning from premodern period. (Fig. 1-3) Through this great “book” of Beijing, we can form a mental picture of the scope and forms of city planning in the past. This explained the admiration by historians, architects, and planners from around the world who, approaching this unique piece of planning and design in their own ways, employed it to establish their views of the culture and art it exhibited. This is also what attracted me to focus my thesis studies on the urban development in this old city, which is the most precious piece of Chinese architectural and planning heritage, and should continue to provide us with inspirations in planning and design.

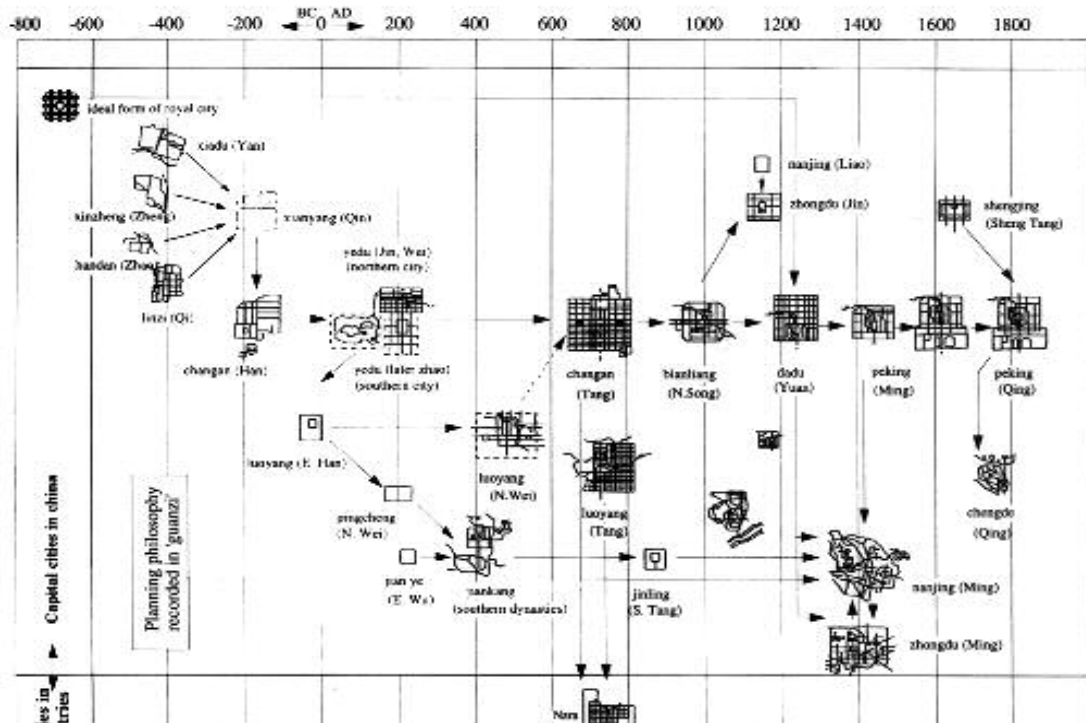


Fig. 1-3: Evolution of Chinese capital cities (all city plans are drawn to the same scale.)
 (Source: Wu, Liangyong, A Brief History of Ancient Chinese City Planning)

“The planning ideas for Beijing may be traced back not only through its development in the last three dynasties, but also through the development of contemporaneous cities (such as Nanjing of the Ming dynasty) and of cities that existed in earlier periods. It inherited the best achievements of Chinese city planning from the premodern period. The ancient cities of Chang’an, Luoyang, Kaifeng, and others no longer exist, but through this great book of “Beijing”, we can form a mental picture of the scope and forms of city planning in the past. The City of Beijing may thus be regarded as the ultimate crystallization of the planning and design of Chinese imperial capitals.” (Wu, 1999, P.4)

THE CITY OF BEIJING IN HISTORICAL PERSPECTIVE

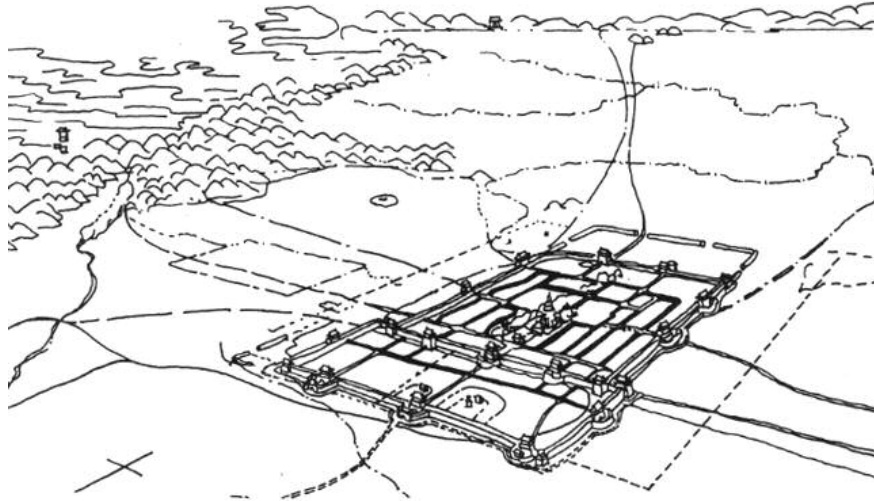


Fig. 1-4: The physical form and urban structure of Beijing.
(Source: Liang, Sicheng, Liang Sicheng Wenji [The Collected Papers of Liang Sicheng])

Surrounded by mountains on three sides, Beijing was built on a strategic site at the northern end of the North China Plain. This is an area where ancient roads converged from the Central China Plain to the south, the Mongolian Plateau to the northwest, and the Song-Liao Plain to the northeast.

Remains of the earliest walled cities of the early dynasties of Shang (16th to 11th BC) and Zhou (11th to 771 BC) were unearthed in the southwestern suburbs of present-day Beijing. There is sufficient evidence that the site was an important military town as well as a commercial center for trade and cultural exchange between peoples from the northern plateau and southern plains.

Since the early 10th AD, Beijing gradually evolved into the political center of the nation. First, the Liao dynasty established its sub-capital, Nanjing, there in AD 938; the Jin dynasty has its capital, Zhong Du.

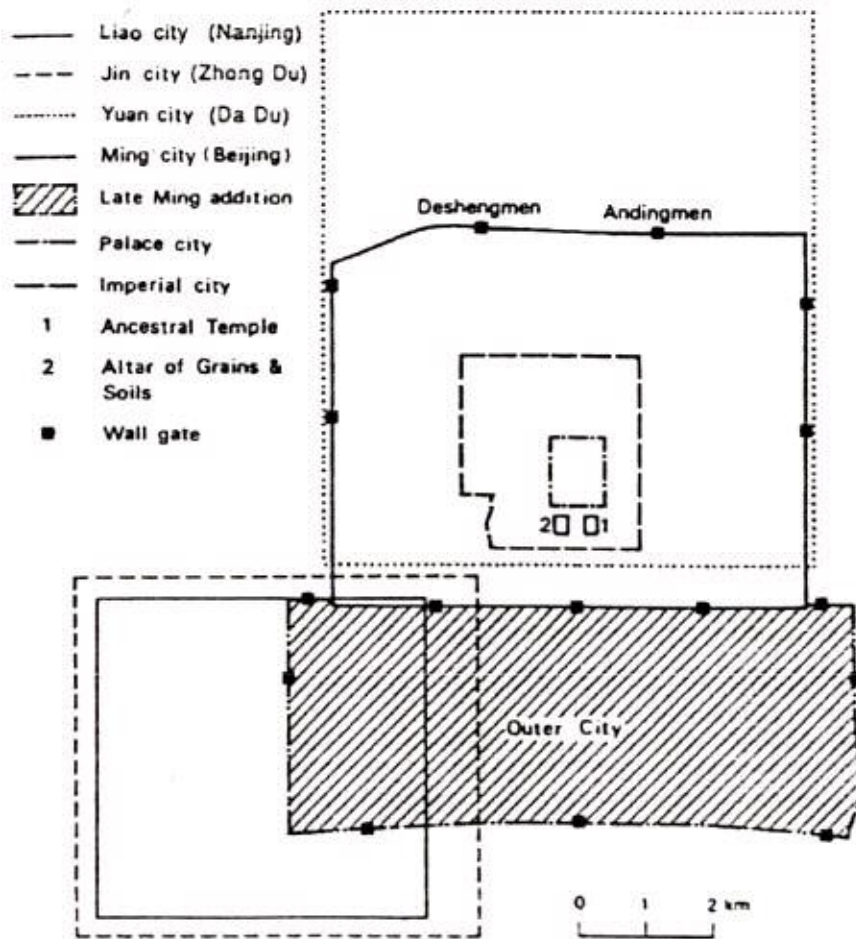


Fig. 1-5: Evolution of Beijing's site since the twelfth century: Zhong Du in the Jin dynasty, Da Du in the Yuan dynasty, and Beijing in the Ming and Qing dynasty. (Source: Wu, Liangyong, A Brief History of Ancient Chinese City Planning)

It was not until the Yuan dynasty (AD 1271-1368) that Beijing became the capital of a unified empire. (Fig. 1-6) A new city, Da Du, was constructed to the northeast of Zhong Du. Adapting to the topography of the site; the planners of Da Du laid out a rectangular walled city measuring 6.6 kilometers by 7.4 kilometers. The ideal Royal City prototype, as described in the ancient treatise Kaogongji, was first applied in an elaborate fashion to the planning and construction of an imperial capital in China.

Ever since then, the Ming and Qing dynasties have both had their capitals here. Within the first months of occupying Yuan Dadu in 1368, the new Ming administration moved the city's northern wall south 2.9 km. In 1419, the southern wall was moved south about 1 km, creating the Outer City of 7,950m by 3,100m. Although the exact location of the city changed from dynasty to dynasty, a physical continuity still exists. (Fig. 1-7)

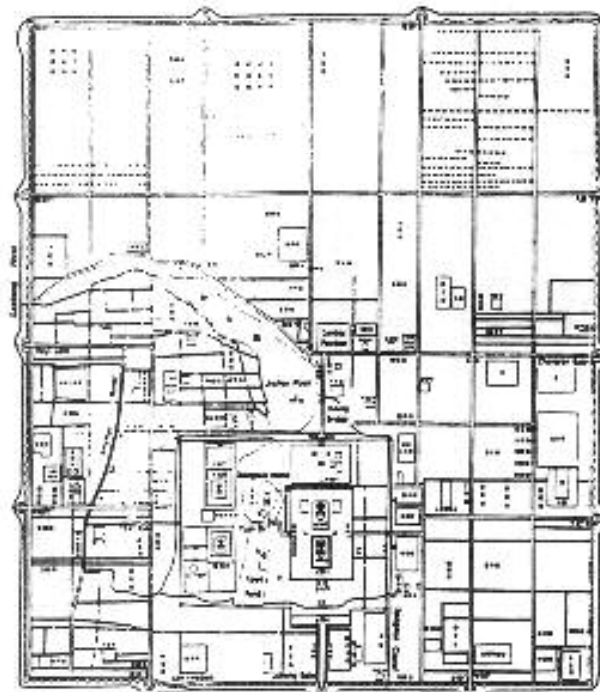


Fig. 1-6: Plan of Da Du, Yuan dynasty. (AD 1271-1368)
(Source: Hou, Renzhi, Beijing Lishi Dituji [An History Atlas of Beijing])

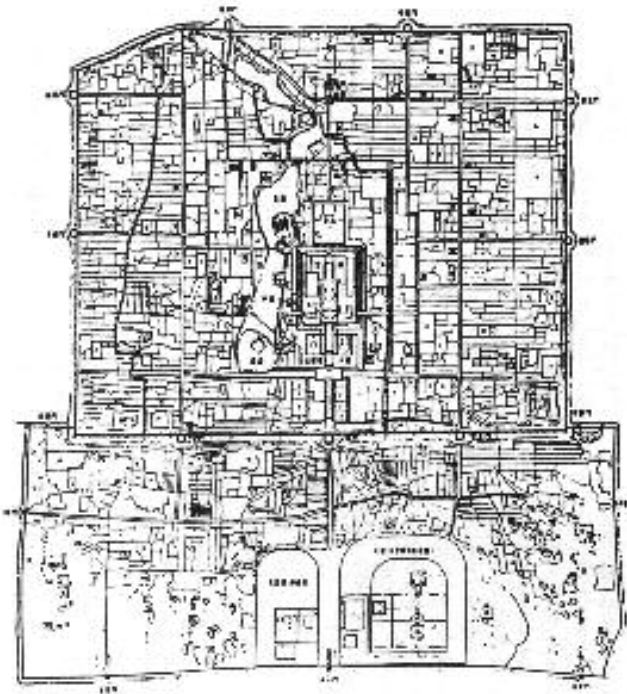
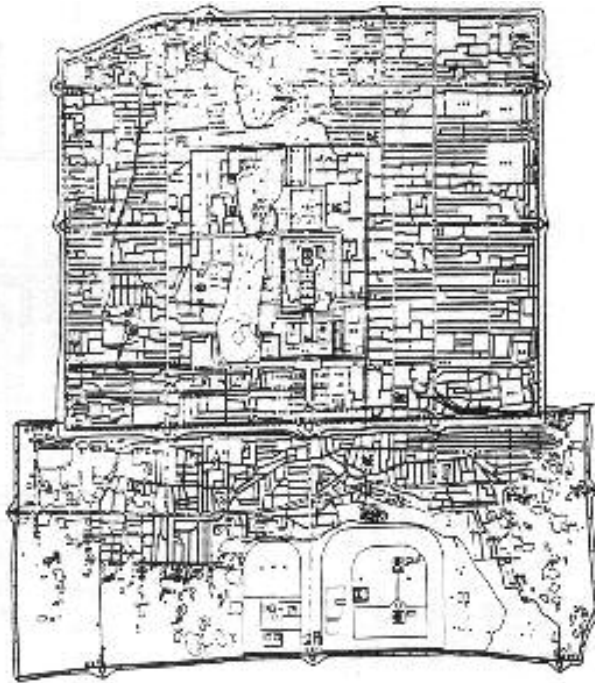


Fig. 1-7: Plan of Beijing, Ming dynasty (AD 1368-1644),
Qing dynasty. (AD 1644-1911)
(Source: Hou, Renzhi, Beijing Lishi Dituji [An History Atlas of Beijing])

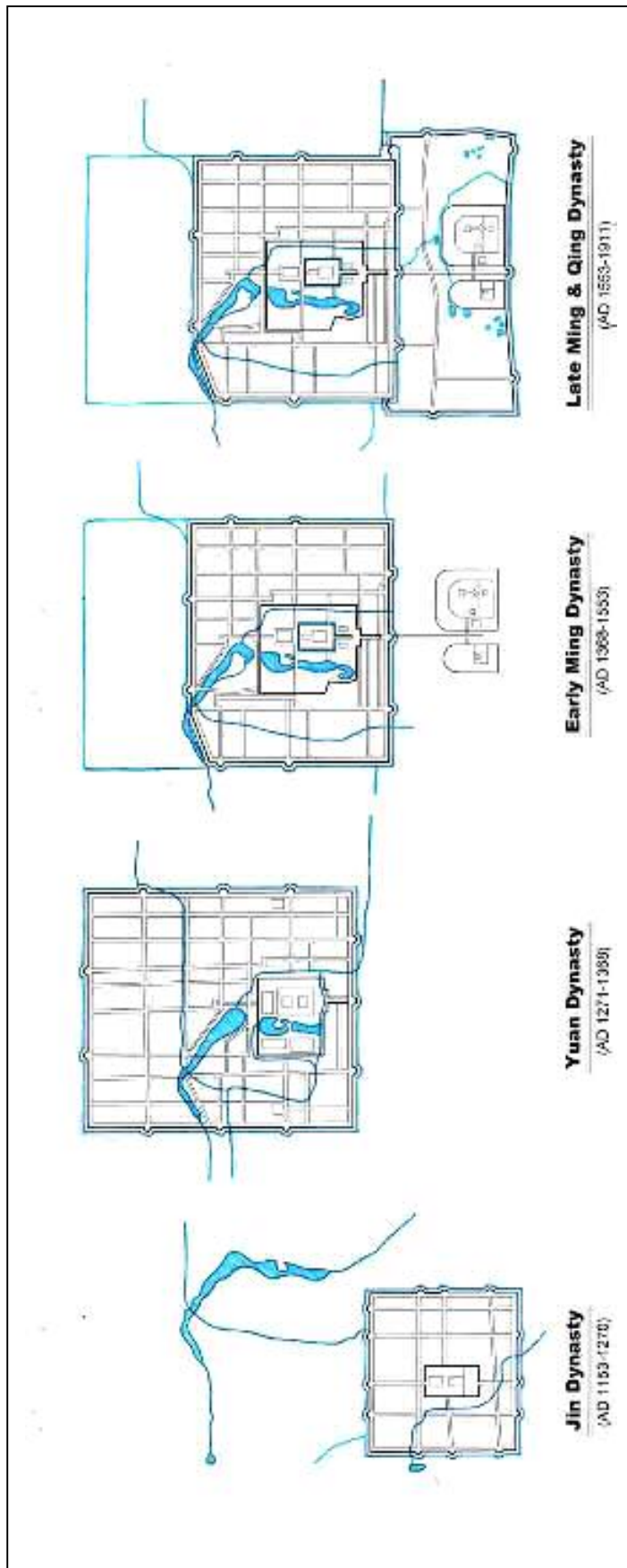


Fig. 1-8: Diagram of urban development in Beijing

URBAN ELEMENTS IN THE OLD CITY OF BEIJING

LAYOUT OF THE IMPERIAL CITY AND THE PALACE CITY, AND THE DEVELOPMENT OF THE CENTRAL AXIS

The layout of Beijing in these two dynasties comprised several areas:

The Forbidden City:

Located at the center of the Inner City with a wall of 10m high, surrounded by a deep moat, it is a square of 750m by 1000m. The major buildings in the city were all located on carefully planned and rank-ordered platforms along the central axis of the entire city.

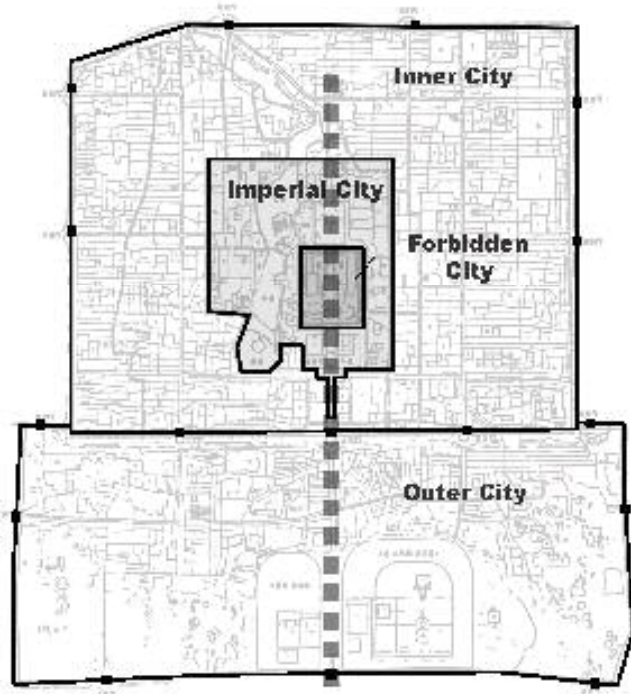


Fig. 1-9: Areas in the Old City of Beijing.

The Imperial City: It accommodated two ceremonial buildings, the Ancestral Temple and the Altar of Grains and Soils, and it was the central military and administrative headquarters.

The Inner City: The layout of this area followed much of the city of *Da Du* in Yuan Dynasty. Because the former northern tract of *Da Du* was relatively empty, for efficiency in defense, the emperor moved the northern wall five *li* (2.5km) to the south.

The Outer City: Located in south part of *Da Du*, this area was a later addition of 1553. Two major ceremonial structures – Heaven Temple and Altar of River and Mountains were built to the far south of the area.

Since the dynasty of Yuan, the original city central axis was conserved and used to relate each new element in the city plan. The 7.9-kilometer-long north-south central axis organizes the structure of Beijing. It was through the presentation, transition, and interrelation of space that the visual forms achieved their purpose and effect, endowed Beijing with a unique character and a sense of order. (Fig. 1-10)

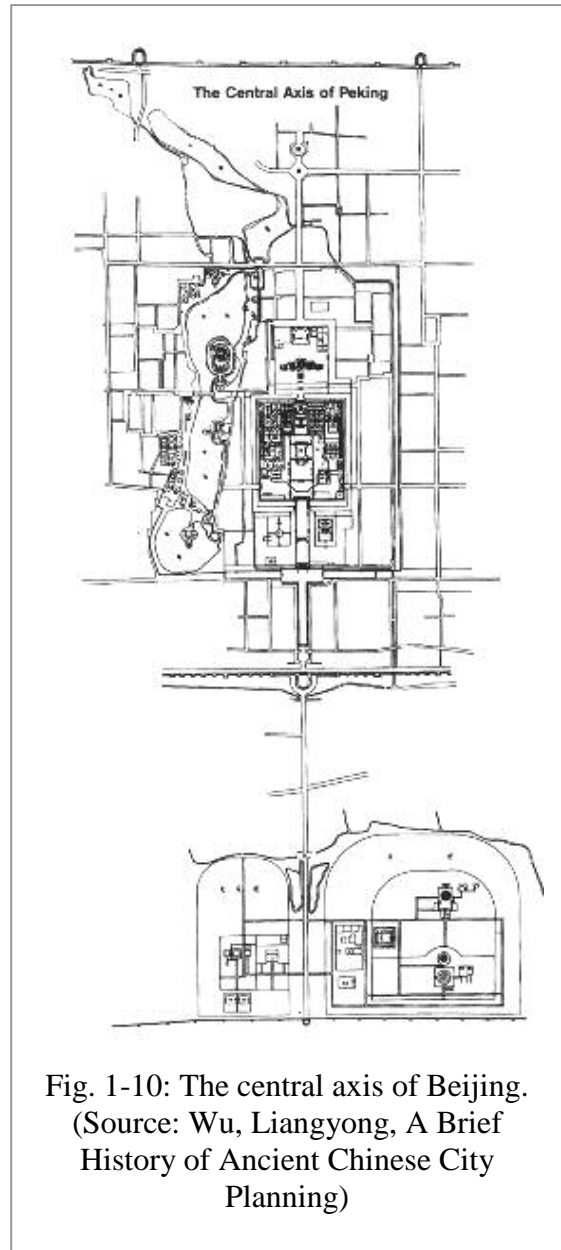


Fig. 1-10: The central axis of Beijing.
(Source: Wu, Liangyong, A Brief History of Ancient Chinese City Planning)

URBAN FABRIC AND HIERARCHY OF ACCESS AT DIFFERENT SCALES

The historic city of Beijing is ordered at many different scales, from the largest (the entire city) to the smallest (the rooms within the house). The order is summarized as follows:

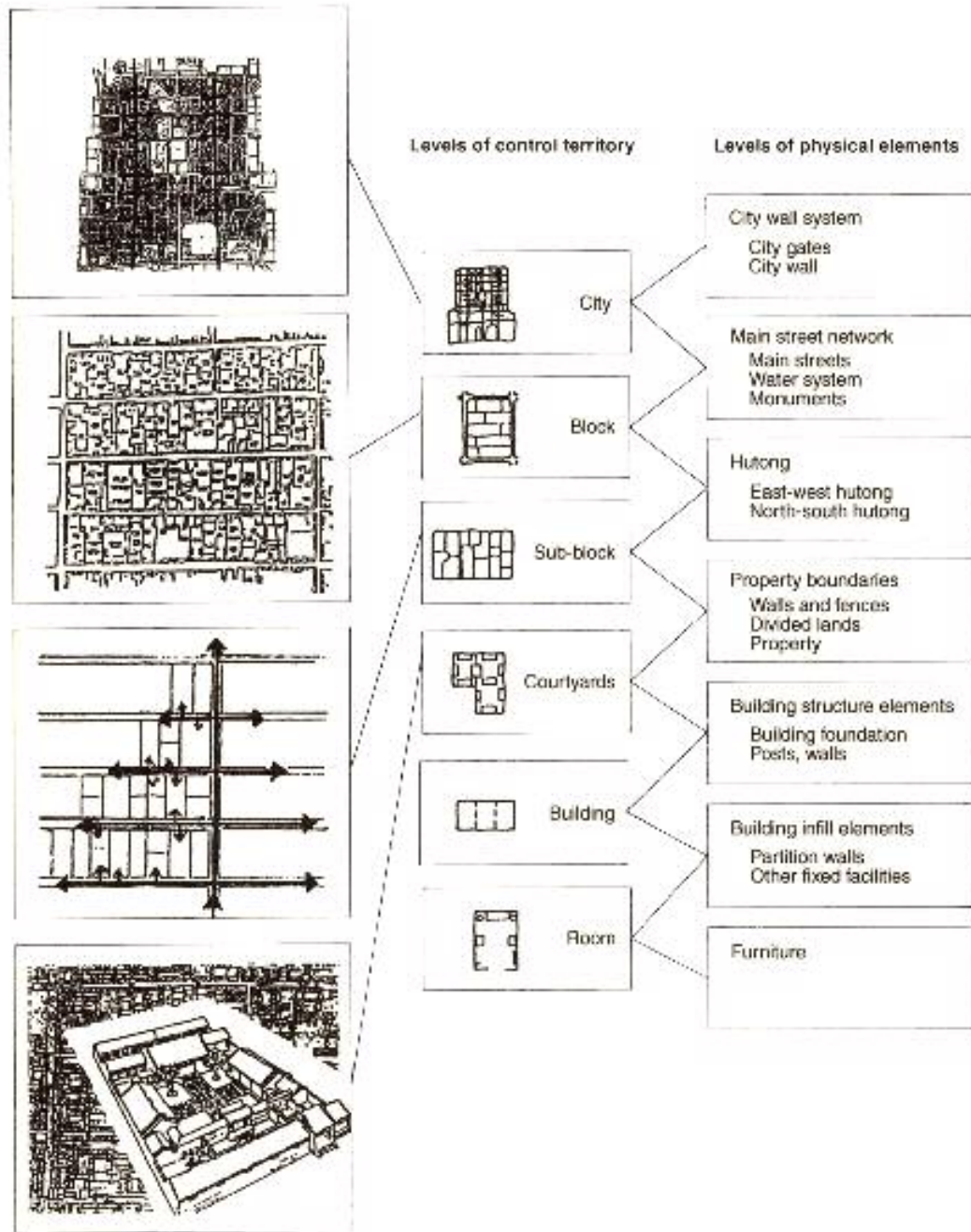


Fig. 1-11: The hierarchy of urban spaces in the Old City of Beijing.
 (Source: Wu, Liangyong, Rehabilitating the Old City of Beijing – A Project in the Ju'er Hutong Neighborhood)

NATURAL LANDSCAPE IN A FORMAL PLAN



Fig. 1-12: Map of old China

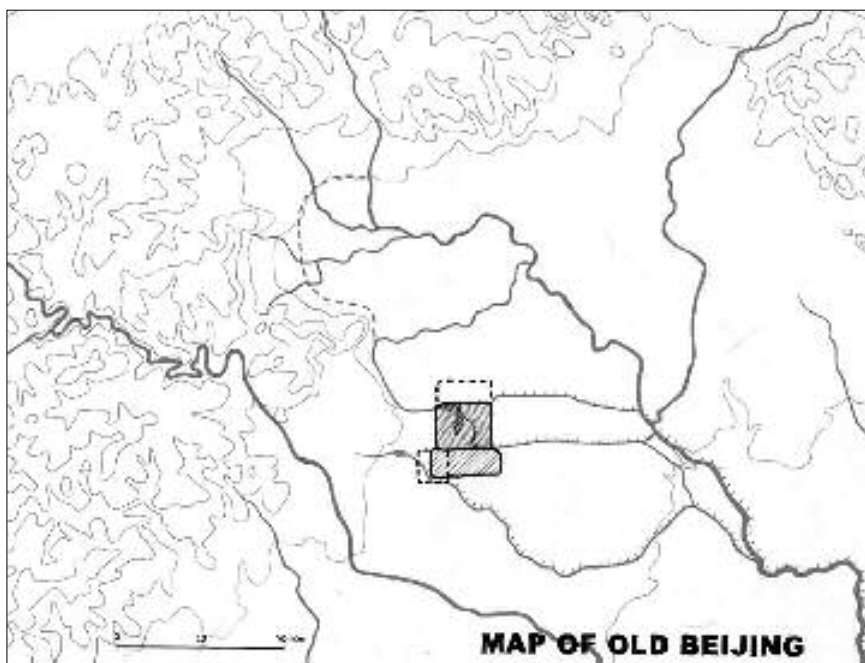


Fig. 1-13: Map of old Beijing



Fig. 1-14: Water system in the Old City of Beijing during Ming Dynasty. Irregular shapes introduced into the regular layout, served as an important urban form generator, had both functional and aesthetic considerations.

Beijing's development depended greatly on the Grand Canal in ancient China. The Grand Canal was first finished in 7th century, leads from Hangzhou to Beijing, and was the main transportation route from South China to the North. Most supplies to Beijing were carried through the canal. (Fig. 12, 13)

The integration of the natural landscape into a geometrical layout was another important achievement in the planning the city, its character owes a great deal to natural landscape features in and around the city. Lakes, island, rivers and wooded areas, with their highly irregular shapes, were skillfully introduced into a plan primarily composed of squares and rectangles.

The planning of water in the Old City of Beijing had both functional and aesthetic considerations. Since in ancient China, the main transportation route for goods was the

Grand Canal, which started at Hangzhou in South China and ended at Beijing. From the functional view, the rivers in Beijing used to be route for carrying supplies through the city. Prosperous commercial areas were always around the old ports. From the aesthetic view, this dynamic element, which was imposed into the regular layout, served quite well as an important urban form generator. The result was a fine contrast and complementarities that enhanced the solemnity of the general layout and added natural beauty to the architectural complexes.

The planning and design ideas manifested in the City of Beijing during the Ming and Qing dynasties reveal the culture and aspirations of the time. Today, although the old values and lifestyles have become less relevant, the physical space still imposes upon us a sense of timeless order, dignity, and magnificence and is open to new understandings and interpretations. We should treasure and preserve the great heritage and design philosophy embodied in the architecture and gardens, which achieved a perfect relationship with the plan of Beijing as a whole, in the new development.

TRADITIONAL NEIGHBORHOOD

Most of the neighborhood in the Inner City was built in Yuan Dynasty (AD 1267 ~ 1290), and their basic layout still remains today. The organization of these basic residential units had a profound influence on the planning structure of a city.

The formation of the residential neighborhoods generally follow a hierarchical fish-bone-shaped structure of access, from major street to small lane (hutong) to courtyard house, that extends in a systematic way from the most public spaces to most private. Hutong and courtyard houses form an integrate system

FISH-BONE LIKE TRANSPORTATION NETWORK

A traditional neighborhood, enveloped by major or secondary transportation thoroughfares, always has very clear boundaries. Within the neighborhood, the fish-bone-like transportation network is a very significant character. A series of major hutong which usually run east-west due to the orientation of courtyard houses, are either jointed by smaller transverse hutong or lead to even smaller dead-end hutong that occasionally run between housing plots. Varying the width of the lanes so that, in general, they became narrower as they become shorter and closer to the house creates the hierarchy.

STREETS SERVE AS MAJOR OPEN SPACE



Fig. 1-15: Old drawings of the people's lives in the Old Beijing in Qing dynasty. (Source: Old Drawing of the Old Beijing.)

Unlike most Western cities with plaza in the center of the city, the center of the Chinese capital city is always palace. Even the biggest open space in Beijing today – the Tian-an-men Square used to be an enclosed space, where common people cannot get in. While the natural landscape served as most desirable recreation space, with the clear hierarchical structure, street is always a significant kind of open space, which serves as an important communication space for the residents.

Along most of the broad and busy main streets were buildings for commerce and handicrafts, while residential buildings were laid out in rows along the narrow and quiet lanes. The environment is easily accessible to pedestrians and cyclists but not too heavy automotive traffic. The hierarchy provides a rich variation of the experiences of urban space and creates a quiet, livable environment with easy access to services. There are trees, even in houses on the narrowest hutong, and it is never too far to walk to a marketplace, even from the innermost alleys.

COURTYARD HOUSE AS THE BASIC UNIT OF THE CITY PLAN.

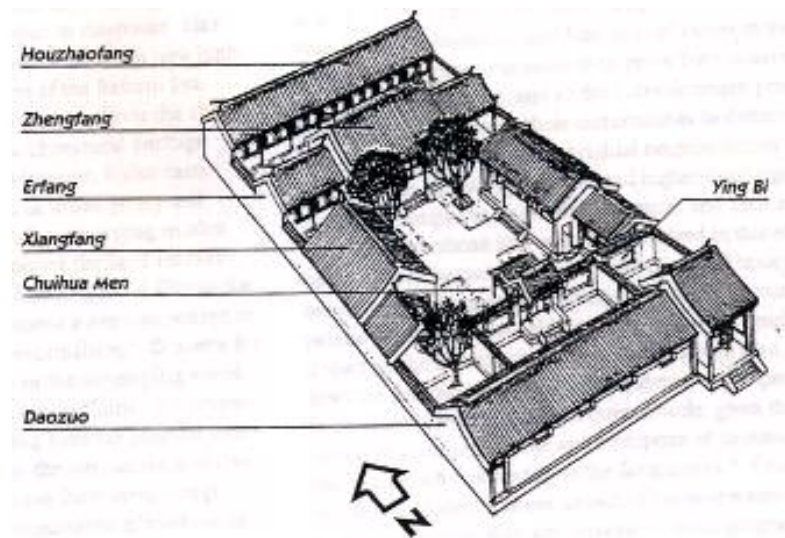


Fig. 1-16: A classic Beijing courtyard house.
(Source: Abramson, Daniel, Beijing's Preservation Policy and the Fate of Siheyuan, Vernacular Architecture, 2001. 11)

The traditional Beijing courtyard house has long received attention as a classic example of Chinese vernacular architecture. It is the basic building type of Chinese architecture, from which various building forms stemmed. From the social and technological points of view, courtyard houses expressed the old Chinese worldview of organizing the material world by a clear hierarchical way.

On the other hand, the courtyard house is particularly renowned worldwide for the way it is an integral part of old Beijing's entire layout – “as the basic, microcosmic unit of a capital city plan that is itself cosmological in scale and intent” (Abramson, P.7). It has had a particularly close relationship with the planned layout of street grids.

This urban layout of traditional neighborhood, combined with the characteristic low, undulating, and tree-dominated roofscape, is what most distinguishes Beijing from the cities of the West. What is more important, this urban layout is related closely to the traditional living pattern of citizens in Beijing. These features, therefore, are what need to be respected and maintained in any new development within the Old City if Beijing is to preserve its unique character.

CRITICAL ANALYSIS OF DEVELOPMENT IN CONTEMPORARY BEIJING



Fig. 1-17: Urban growth in Beijing: Expansion of the urban built-up area (1951-91)
(Source: Wu, Liangyong, Rehabilitating the Old City of Beijing – A Project in the Ju'er Hutong Neighborhood)

The urban development of Beijing entered a new era in 1949, and, since then, the contradiction between preservation and development has become more and more serious. The argument about the alternatives of “centering new development in the Old City of Beijing” and “setting up a new administrative center in the west suburbs of Beijing” was the big point of urban development at that time. The final choice of the former one resulted in a great deal of new construction in the Old City.

ISSUES CONCERNING STREET PATTERN

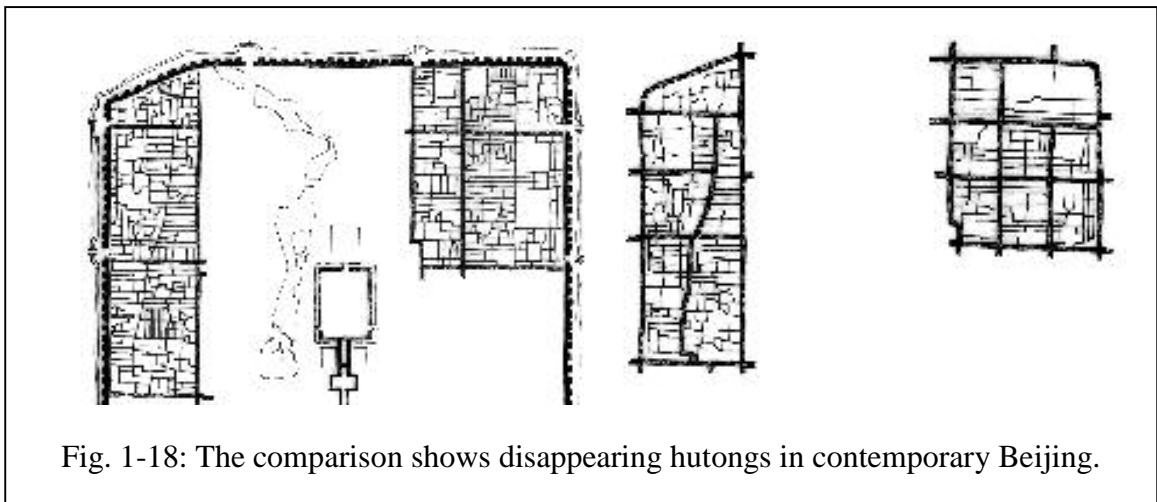


Fig. 1-18: The comparison shows disappearing hutongs in contemporary Beijing.

Among planners and architects, there is little agreement on how the existing city structure should be treated when redevelopment takes place. Redevelopment that aims only to solve vehicular traffic problems risks destroying the traditional cityscape.

Many renewal parcels of the size up to 40-50 ha totally disregard the existing street and hutong pattern. Typical layouts barely keep the existing street network, particularly the small lanes. Zoning plans divided the Old City into large blocks of single land uses. The new wide streets also act as barriers between once close neighborhoods. The continuity of urban pattern was broken and the interaction between neighborhoods was limited. However, more roads didn't solve the problems of traffic but attracted more to the Old City. The traffic problem became more and more serious.

ISSUES CONCERNING TRADITIONAL NEIGHBORHOODS AND COURTYARD HOUSES

Some residential quarters are poorly maintained, overcrowded, and lack amenities. The courtyard houses, which once had been the sanctuary of family life, had been deformed into shelters shared by several households. While other were even replaced by modern apartment blocks, which in the short-terms could really solve some temporary problems, but in the long-term have imposed such a heterogeneity to the old urban fabric and forced the area to lose its significance.

Actually, it is always been ignored that the traditional courtyard form continues to have its importance in the contemporary city. There are many examples of courtyard that serves very well for two or more families. Its intimate scale, clear hierarchy of spaces, and close relationship between indoor and outdoor spaces are difficult to be achieved in modern housing projects.

Courtyard compounds are also particularly adaptable as live-work spaces, for example, for households engaged in intellectual, artistic, crafts, or small trade work, and as offices for small enterprises. This particular kind of adaptability is increasingly important in current economic restructuring in China, which has encouraged small companies and has led many households to engage in their own entrepreneurial activities. So the courtyard house as a traditional type, still provide lots of indications for the future of China's traditional cities. Its adaptability will only become even more useful.

ISSUES CONCERNING THE NATURAL LANDSCAPE

The historic City of Beijing is highly integrated with the natural environment, green space, rivers and lakes. There is a need for the city's green space to be improved and increased not only because it would serve as more desirable recreational space, but, more important, because it would help to improve the general quality of the environment.

To solve the land shortage problems for residential and office uses in Beijing, planners tend to increase building density without recognizing the consequences. Green spaces are the most vulnerable parts of the city because they easily fall victim to development. For Beijing, the environmental issues are becoming more and more serious.

Sad to say, the importance of this historic city does not seem to have received the recognition it deserves. Although preservation of the city's monuments has made great strides during the past two decades, the conservation of Beijing as a whole has not been given sufficient consideration, the preservation of traditional road system, neighborhoods, courtyard houses, and the most important; the traditional living pattern is still being ignored.

It is against this background that my thesis is going to pursue a coordination of conservation and development in the Old Beijing. To a great historic and cultural city like Beijing, completely rebuilding seems inappropriate, because that it is not only a piece of cultural heritage but also a city living in the present. The Old City of Beijing is much like an organism, which has some features that are not suited to the demands of contemporary life and that need to be carefully rehabilitated.

My thesis will attempt to study and propose a sensitive development whose intent would be to interpret and honor the traditions of Chinese city planning, treasure and preserve design philosophy embodied in the old city fabric. By restoring an old river and redevelop the waterfront amenities in Xian-yu-kou area in the Outer City of Beijing, to revitalize this historic neighborhood, which possesses a valuable and unique urban fabric in Beijing while facing both physical and environmental issues now.

CHAPTER 2: SITE SURVEY

SITE LOCATION

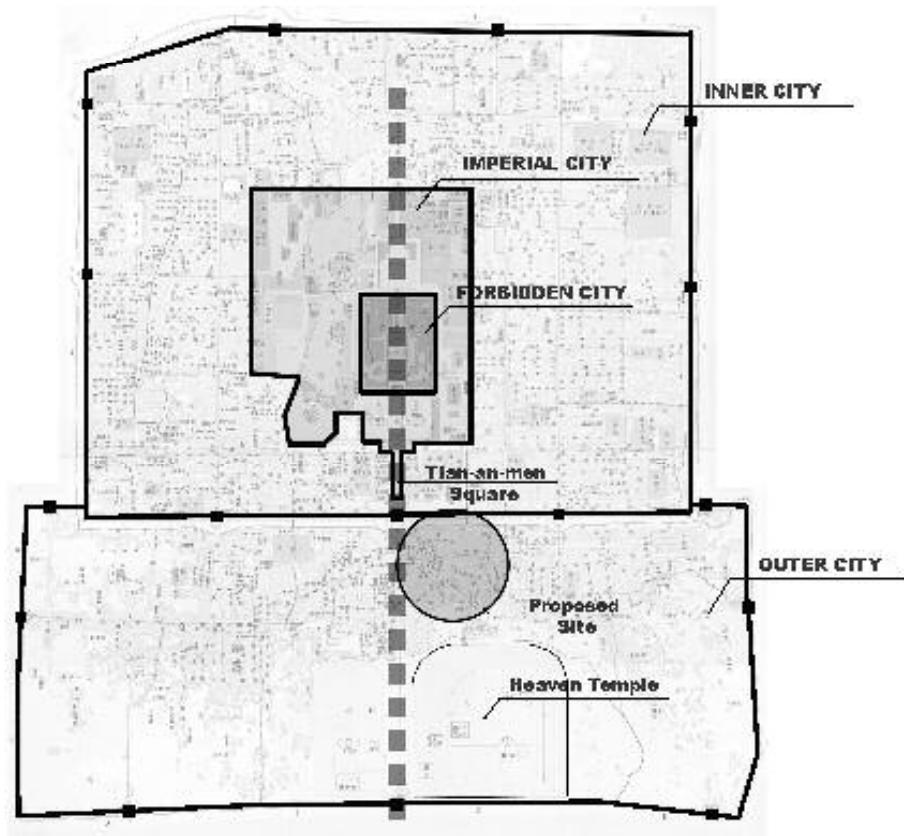


Fig. 2-1: Site Location in the Old City of Beijing.

The proposed site is located at the southern end of Tiananmen Square, to the south of Front Gate Avenue, just on the west side of the Central Axis, which has determined the physical shape of Beijing over time. The location of the Forbidden City, Tiananmen Square and Front Gate are directly on axis, while the Temple of Heaven is just minutes away to the south of the area.

HISTORICAL CHARACTER

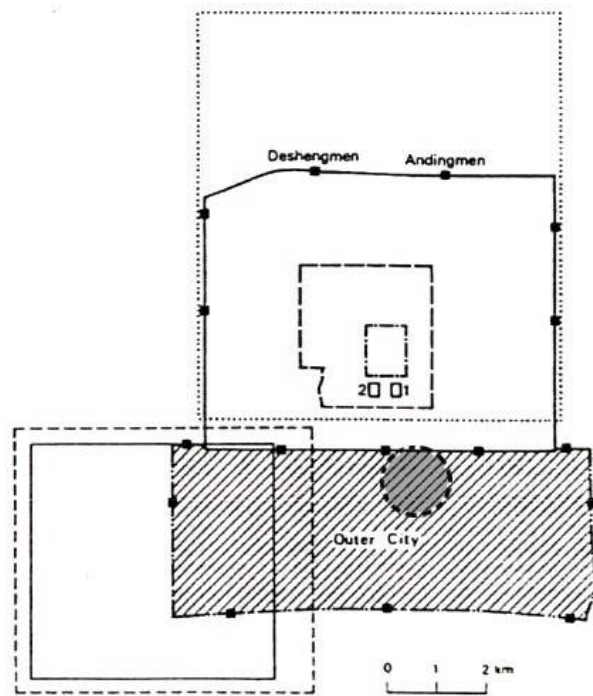


Fig. 2-2: The area developed with the city's expansion in Ming dynasty.

When Beijing became the capital of Yuan Dynasty (AD 1271-1368), the Ideal Royal City prototype, as described in the ancient treatise *Kaogongji*, was applied in an elaborate fashion to the planning and construction. The planners laid out a rectangular walled city with a north-south central axis and a chessboard style street network. The proposed site was natural rural area to the south of the city at that time.

In Ming Dynasty (AD 1368-1644), the location of Beijing moved south, the city's northern wall was moved south 2.9 km while the southern wall was moved south about 1 km, the Outer City of 7,950m by 3,100m was added to the south side of the original inner city. Thus this area became one part of the outer city, gradually developed with the city's expansion.

Historically, the area was a major commercial district within Beijing and includes a

number of well-know commercial areas. The development of this area should be mainly Credited to the old river – a branch of the Grand Canal.

In Ming Dynasty, following with the move of the previous wharf of the Grand Canal from the north of the Imperial City to the Outer City, the commercial center of the city also moved from north to south. To release the floodwater of the end of the Grand Canal, people dug a river in the area where the site located.

Because of the easy transportation and the convenient location which is adjacent to the main south gate of the Inner City, this area gradually attracted markets gathering here, houses and shops were built along the natural curve of the river, with streets possessing a unique urban feature in Beijing. Through years' development, this area became one of the most famous commercial areas in Beijing.

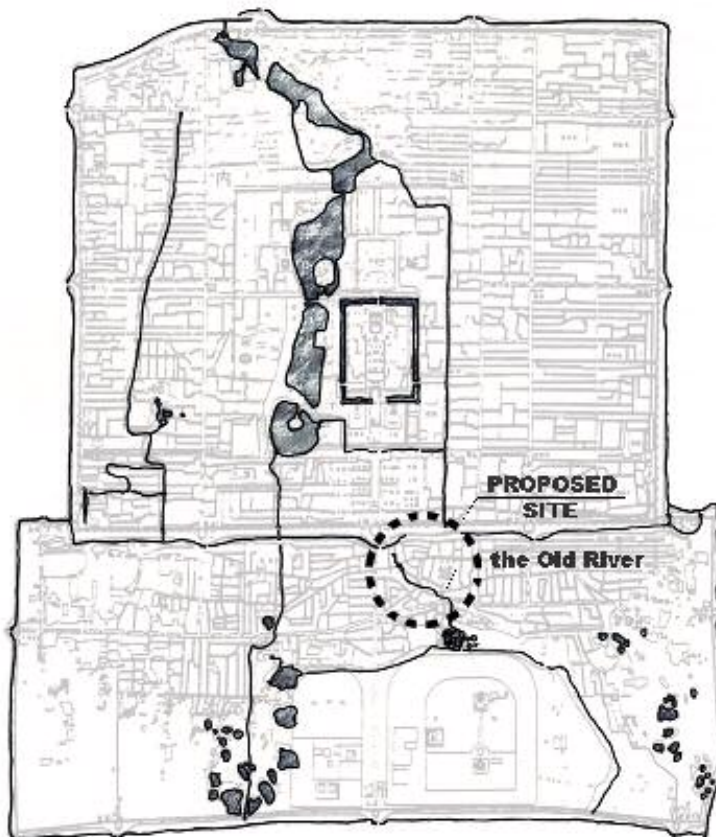
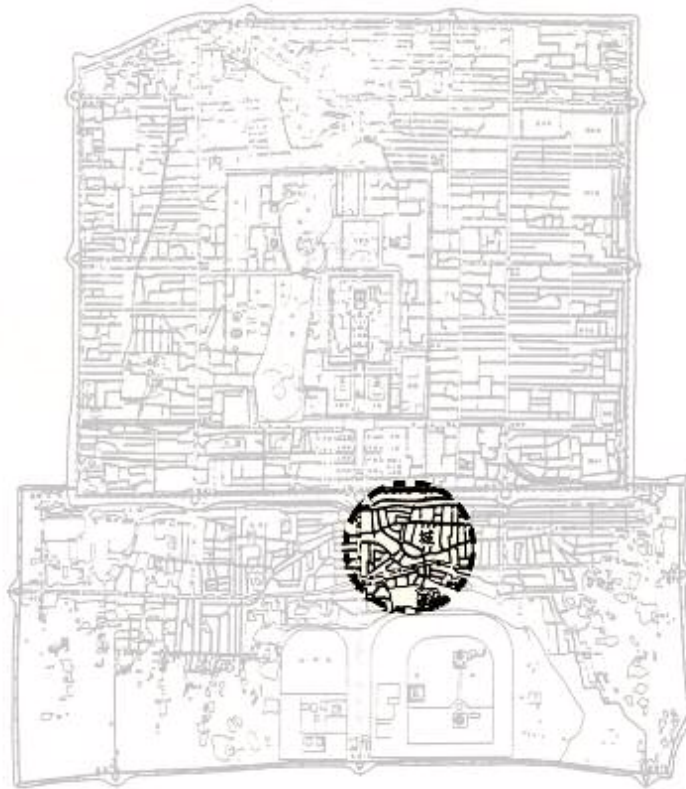


Fig. 2-3: The Water System of Beijing in Ming Dynasty.

The old river stimulated the development of this area, while also became the generator of the urban fabric

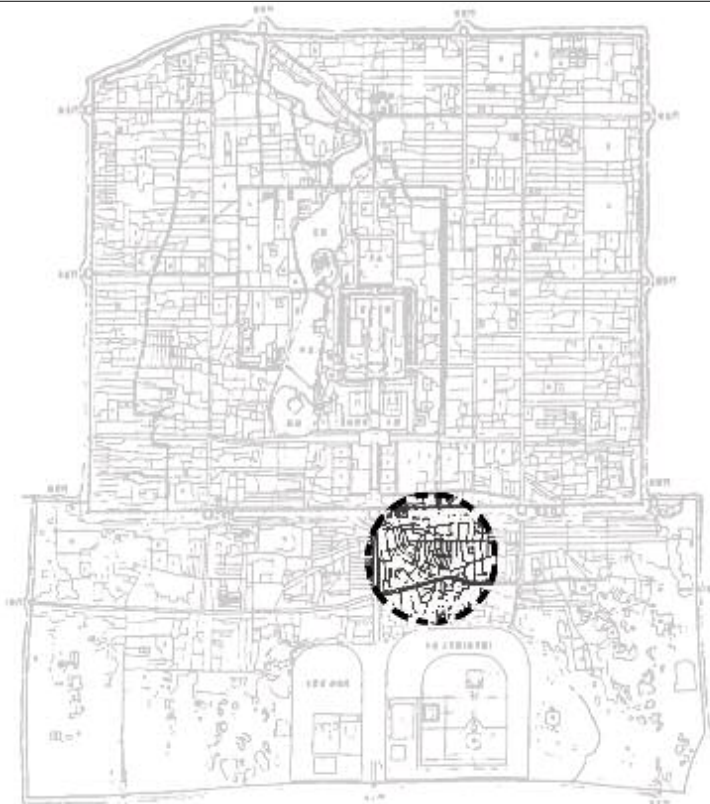


In Ming dynasty:

- Wharf for the whole city moved from north of the Imperial City to the Outer City.

- The old river in this area appeared.

- Markets, houses gathered here, streets generated parallel or perpendicular to the curve of the river.



In Qing dynasty:

- No big commercial building was allowed to be built in the Inner City, many shops moved to the Outer City.

- This area became more prosperous commercial center and residential area for poor people.

- More streets (hutongs) appeared.

Fig. 2-4: Site in Ming and Qing dynasty.



Fig. 2-5: Old photos of Front Gate street and Xian-yu-kou street.
(Old photos of Beijing)

CURRENT CONDITION

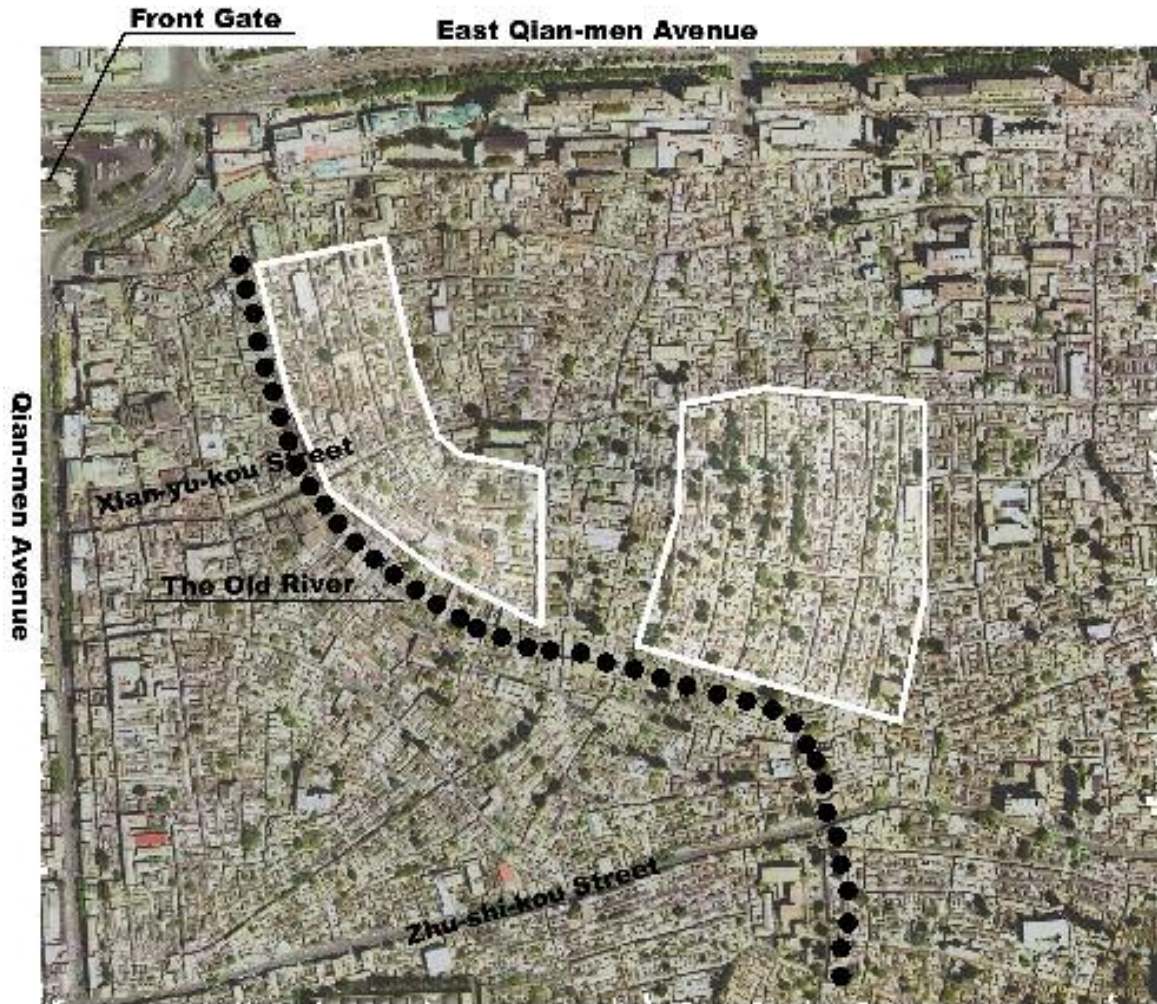


Fig. 2-6: Aerial View of the Site.

The site is enveloped by Front Gate (Qian-men) Avenue to the west, which is part of the central axis, East Qian-men Avenue to the north and Zhu-shi-kou Street to the south.

The old city gate – Front Gate locates at its northwest corner.

Xian-yu-kou Street, which is a prosperous commercial street go through the site.

This drawing also shows the location of the old river, and the hutongs generated parallel and perpendicular to the curve of the river.

SPECIAL URBAN FABRIC

Traditional curve streets, which dated as early as 1300 AD, are still intact and provide the area with a rich historic fabric. The attraction and uniqueness of this historical feature plays an important role in the perception and identity of the area within the city.

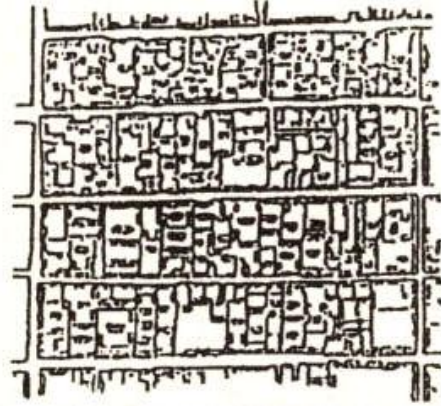


Fig. 2-7: Typical east-west hutongs. (Source: Wu, Liangyong, *Rehabilitating the Old City of Beijing – A Project in the Ju'er Hutong Neighborhood*)



Fig. 2-8: Special curve streets and north-west streets in this area. Streets were organized parallel or perpendicular to the disappeared river.

NEIGHBORHOODS DEVELOPMENT

There exist several significant traditional neighborhoods, which remain their original structure since Ming Dynasty. The edge along the broad and busy main streets, Front Gate Avenue was occupied by buildings for commerce, while residential buildings were laid out in rows along the narrow and quiet lanes. Although social economical background developed greatly, no new streets go through this neighborhood. That is the reason why their edges could still keep steady today.

Most parts in the area are now used for residential. The majority of the buildings are low-rise and high-density courtyard houses. While in today, the most serious problem in these neighborhoods is overcrowding. Residents continued to fill in the traditional courtyards and add new buildings along the streets. Some streets are too narrow for vehicle pass.

And as a major commercial district in Beijing since Ming and Qing Dynasty, it still includes some well-know traditional commercial areas. There are some famous shops in this area, however, most commercial are small and without organized. Most of them are along Xian-yu-kou Street, which was the first commercial street in this area since Ming Dynasty.

Like most historical area in the Old City of Beijing, the area today lacks sufficient public infrastructure. Most of the existing area is in a desperate need for public utilities and improvement of services. What's more, this area has very limited public open space for the use of both residents and visitors.



Fig. 2-9: Front Gate Avenue start at the Front Gate
A part of the central axis, with buildings for commerce on both sides.



Fig. 2-10: Old shops and small retails along Xian-yu-kou Street.



Fig. 2-11: View of small lanes in the residential neighborhood.

SITE ANALYSIS

AT URBAN LEVEL

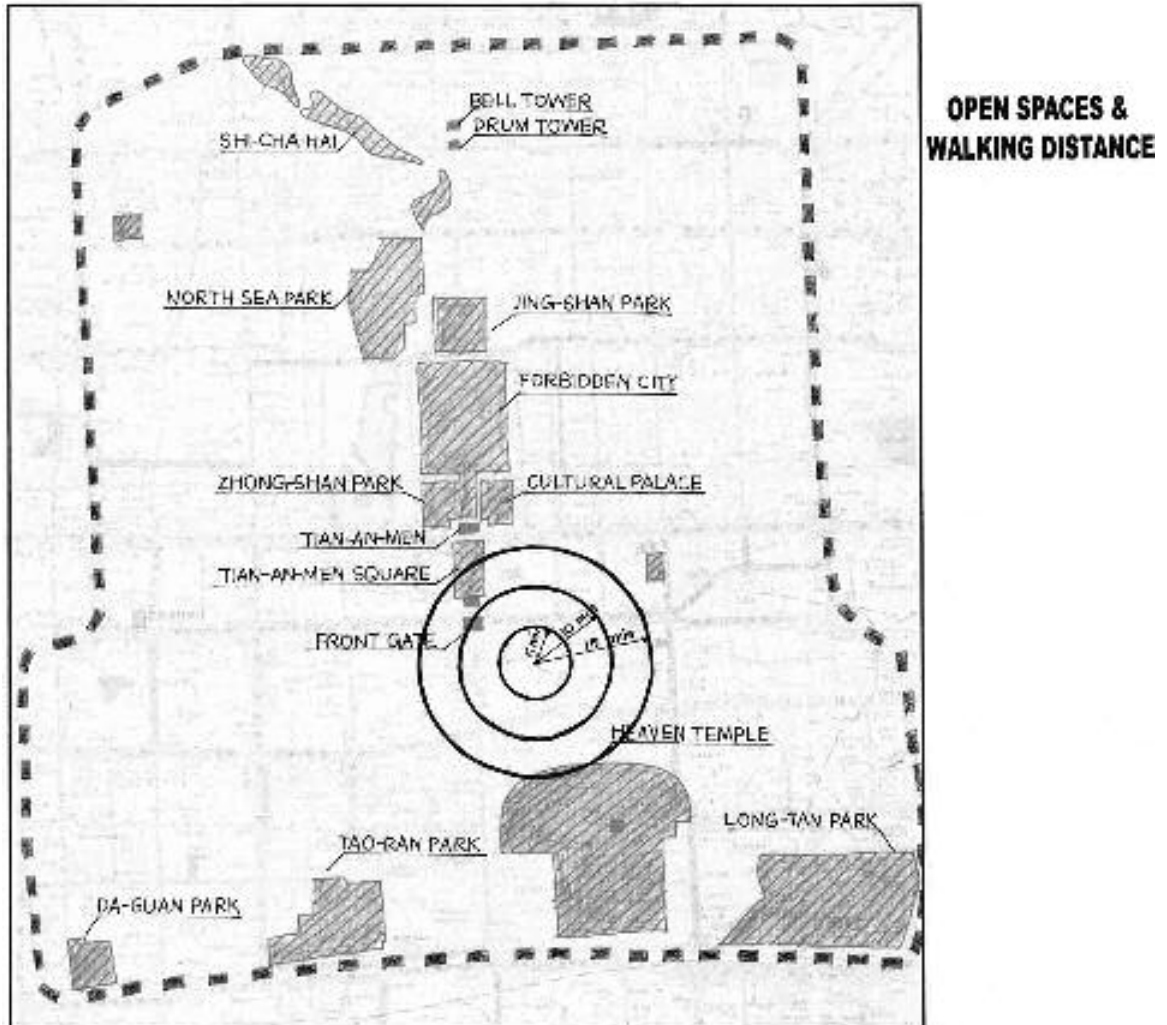


Fig. 2-12: 5 minutes', 10 minutes' and 15 minutes' walking distance and open space

This diagram shows the 5 minutes', 10 minutes' and 15 minutes' walking distance of the site. It indicates that the site is almost within 5 minutes' walking distance. The 15 minutes' walking distance circle can include Tian-an-men Square, and almost reach the Forbidden City and the Heaven Temple.

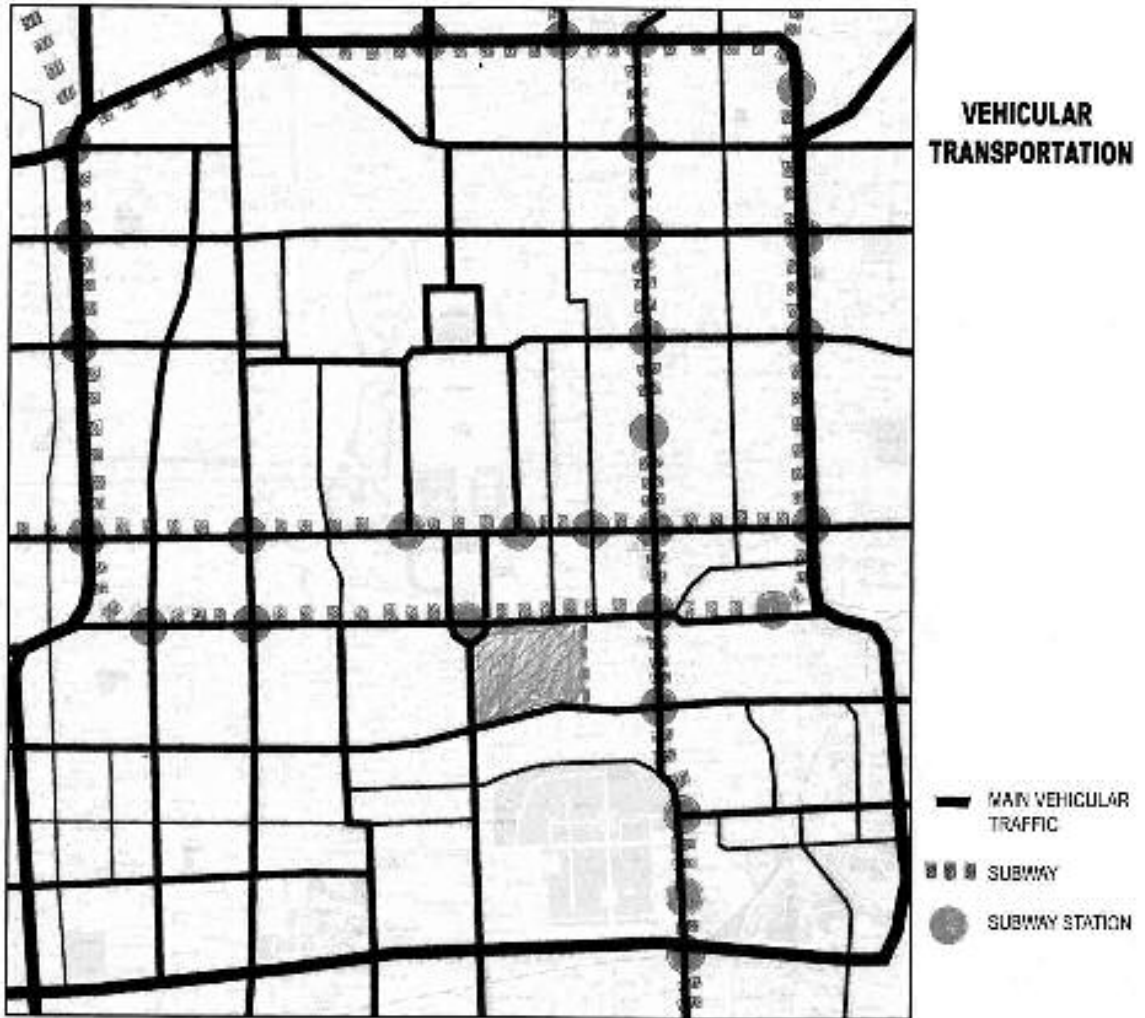


Fig. 2-13: Vehicular Transportation

Three major traffic streets on the north, south, west sides and the subway system in the north have given the site a quite convenient access and thus the strong commercial potential.

AT NEIGHBORHOOD LEVEL



Fig. 2-14: Base Map and Figure/Ground

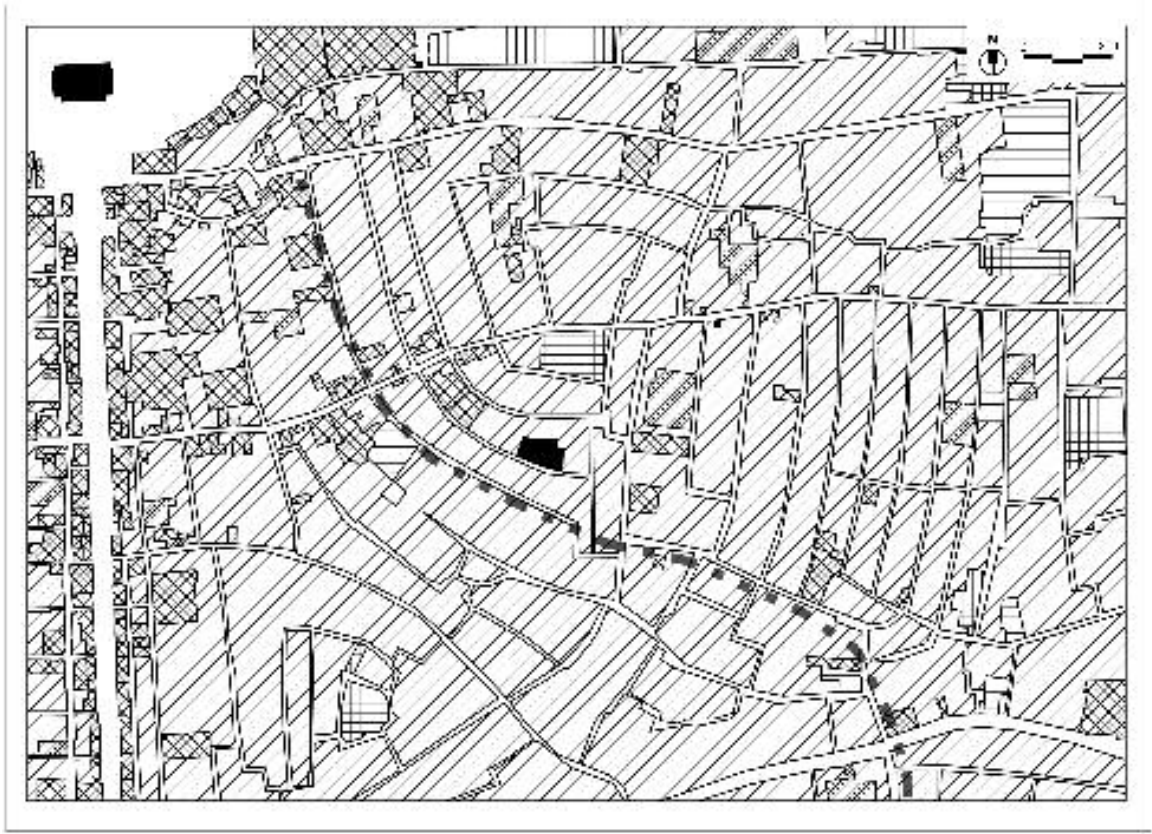
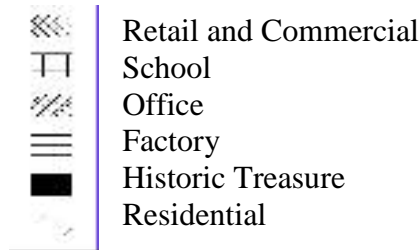


Fig. 2-15: Land Use.



The diagram of land use indicates that this area is mostly used for residential. Commercial is arranged along the Front Gate (Qian-men) Avenue and Xian-yu-kou Street, while also some dispersed in the neighborhoods.

Data:

Whole Area: 73.5 hectare

Residential: 55.46 hectare (75.45%), Density: 732 person (118 units) / hectare;

Average living area: 6.68 sqm / person; FAR: 0.66

Commercial: 4.32 hectare (5.7%)

Recreational: two old theatres, one children center

Hotel: 2.1 hectare (3.15%)

Schools: 1.61 hectare (3 middle-schools, 4 junior schools, 1 kindergarten)

Office: 1.07 hectare

Factory: 1.59 hectare

No open green space / playground. No community building. Less of hospital.

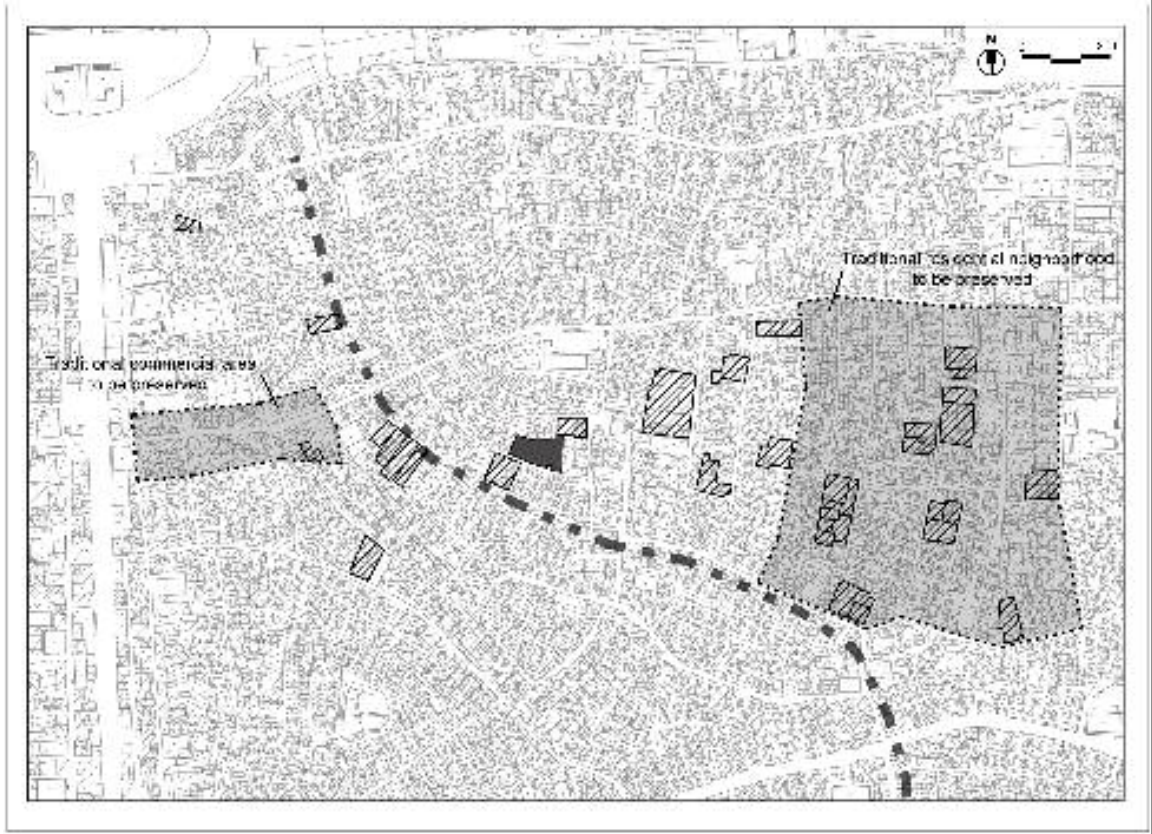
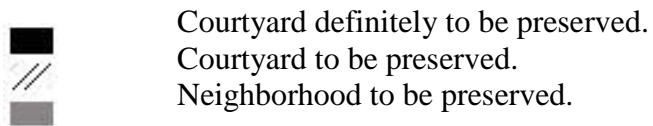


Fig. 2-16: Courtyard and Neighborhood Preservation Categories.



After a careful research of the historical value and current quality of the buildings, courtyards are divided into several categories: some should definitely be preserved; some had better to be preserved. And two areas in the site are recommended to be preserved, one is a traditional commercial area, the other is a residential area with north-south hutongs, which possessing a unique urban structure.

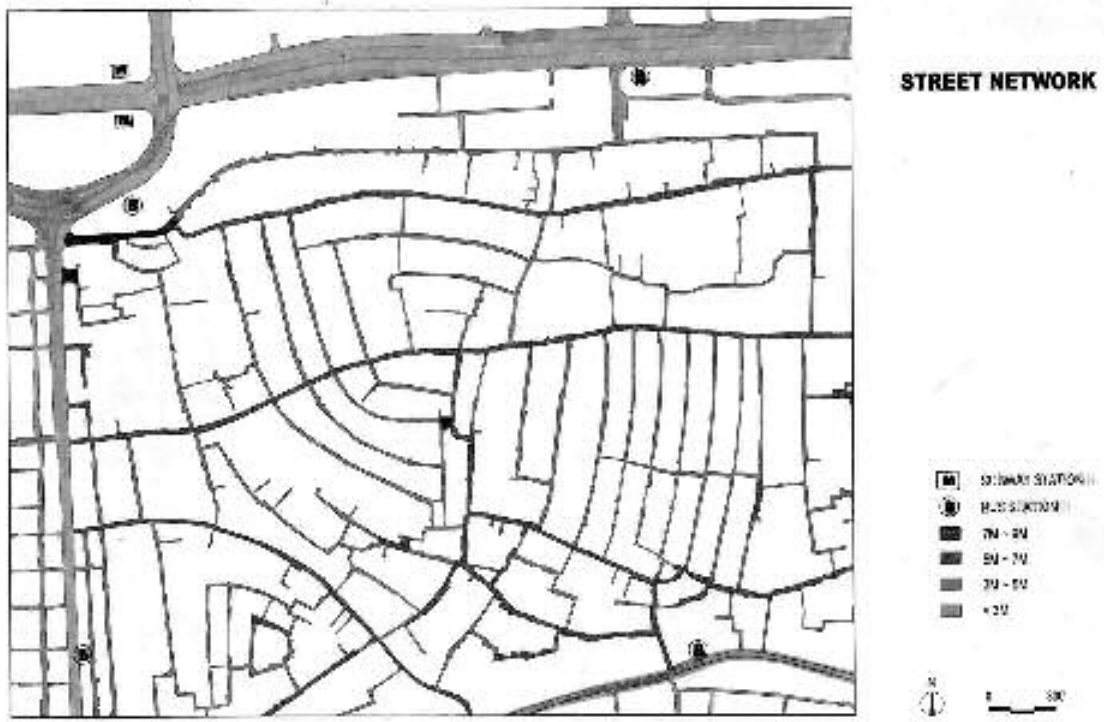


Fig. 2-17: Street Network.

Streets are narrow; the widest is 9m, while some are no more than 3m. Many additional buildings along the streets.

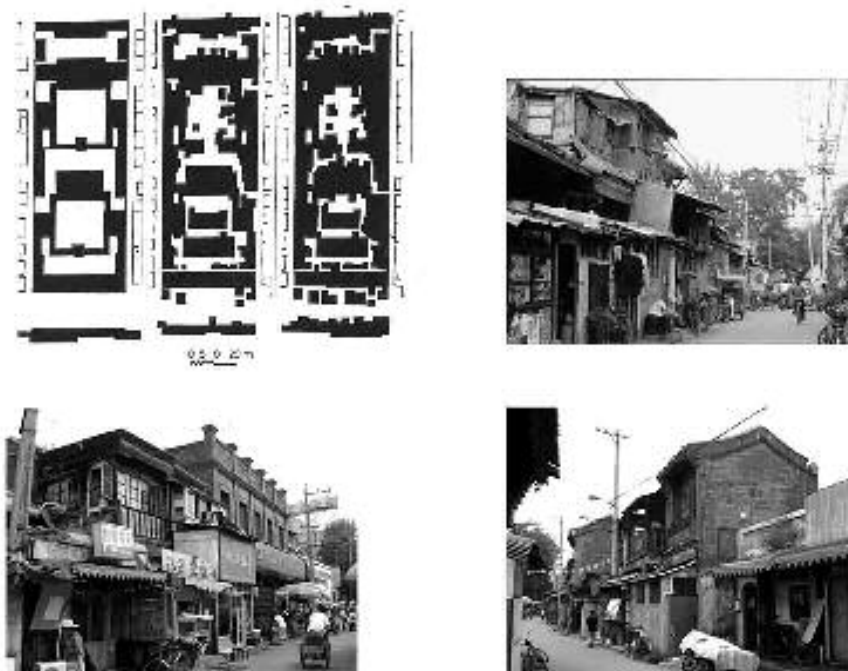


Fig. 2-18: Additions along the streets.

CHAPTER 3: FUNCTIONAL CONSIDERATIONS AND PROPOSED STRATEGIES

THREE DIFFERENT PROPOSALS FOR THIS AREA

PROPOSAL I

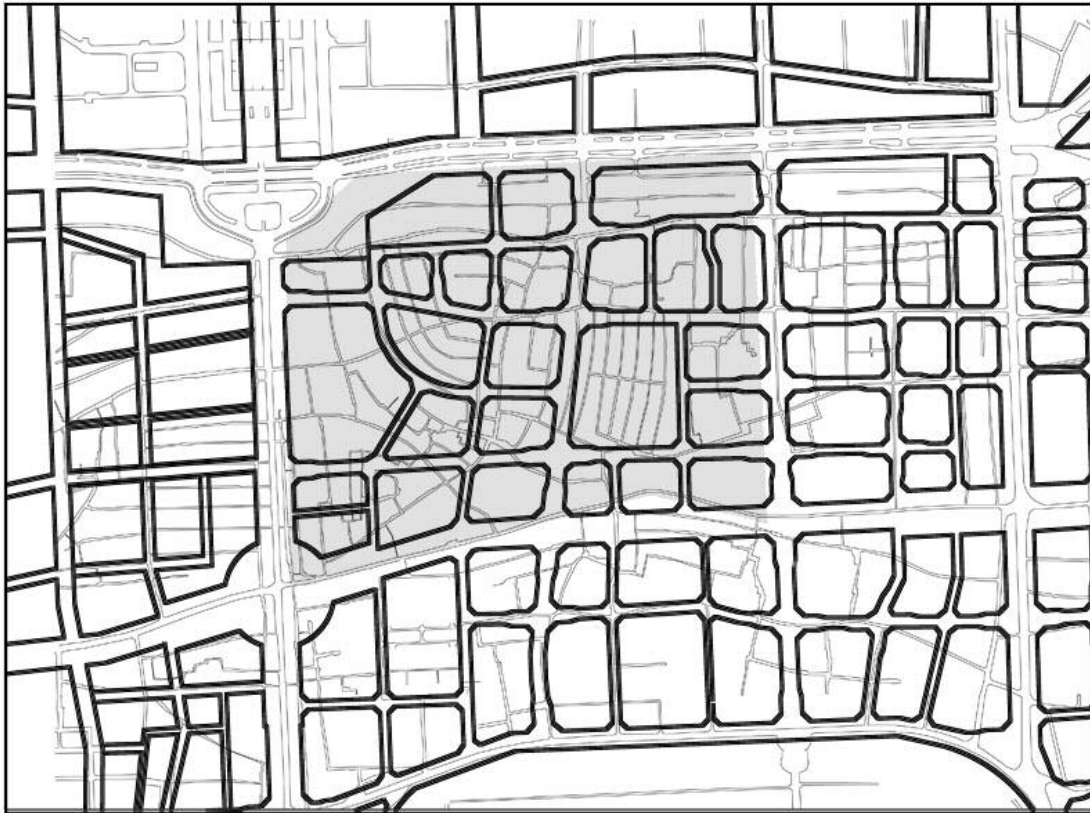


Fig. 3-1: Proposal of the planning office for development along the Front Gate Avenue.

Widen streets cut Xian-yu-kou (shaded area) area into regular blocks; totally disregard the original urban fabric (underlaid).

PROPOSAL II

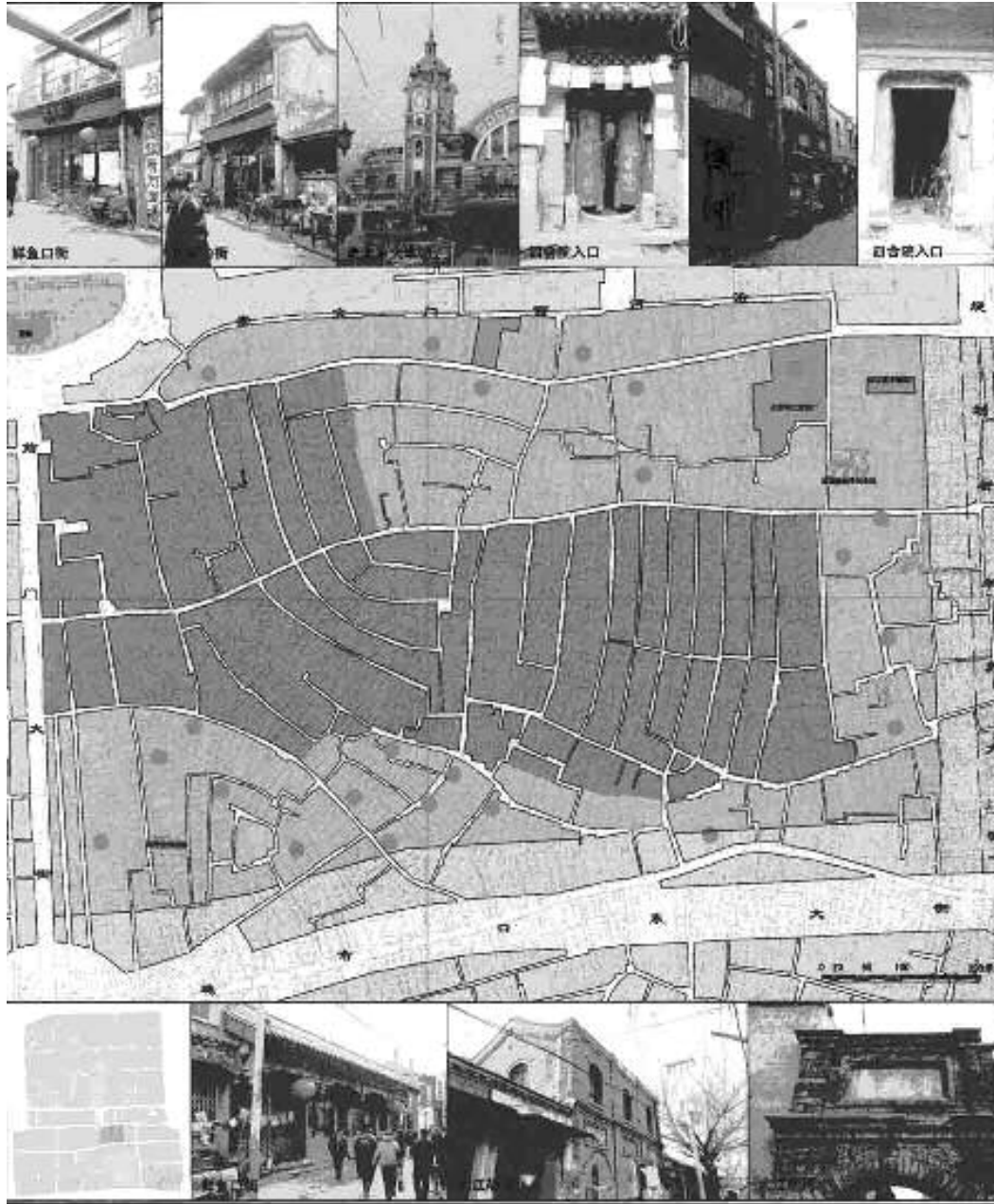


Fig. 3-2: Proposal of the preservation of 25 traditional neighborhoods in Beijing.

Beijing indicated 25 traditional neighborhoods to be preserved; Xian-yu-kou area was also included. This preservation proposal stopped new development here.

PROPOSAL III

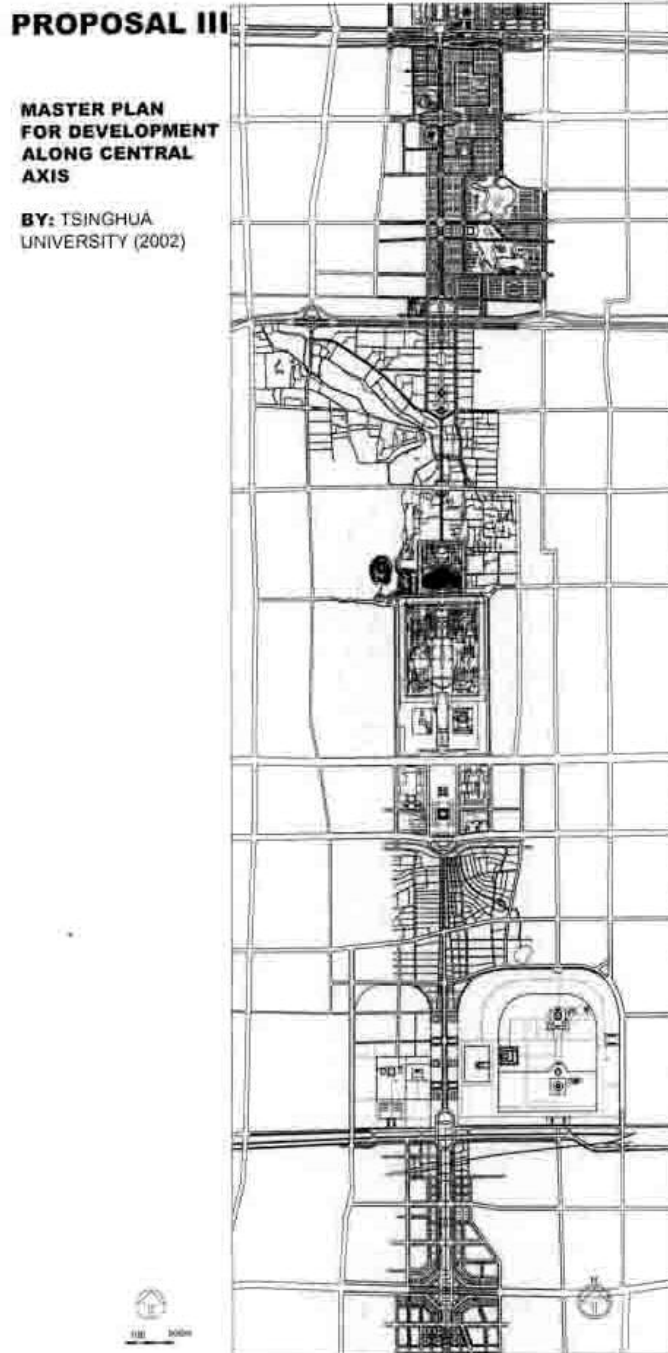


Fig: 3-3: Proposal of development along central axis by Tsinghua University. In this approach, they proposed to restore the historic river in Xian-yu-kou area.

CURRENT STATUS AND PROPOSED STRATEGIES FOR RESTORING THE HISTORIC RIVER

Conservation and evolution; preserving the old while accommodating the new are two contradicting ideas. The irregularity and organic quality of the streets, hutongs, and the courtyards represent an old ways of living, are part of the environment that needs to be preserved. While on the other hand, the area is facing both physical and environmental issues, such as congestion, deteriorating living quality and lack of public space, which is definitely in need of revitalization now.

Think about both the historical value and the need of new development, my design strategy is to revitalize the whole area through the restoration of the most important urban element – the old river and its edges. The principle is to responding to the history, culture and environment in the process of urban renewal through focus on the clarity of the amenity of the renewed river.

The site's current status is impacted mainly by these concerns:

HISTORIC URBAN STRUCTURE PRESERVATION

Current Status:

As analyzed before, the urban fabric dated as early as 1300 AD in this area is quite unique in the whole city and the relation between that and the history and people's life pattern makes it even more valuable. The streets are still intact and the edge is also kept steady today. This urban fabric plays an important role in the history of city planning and urban development in the Old City of Beijing, which is definitely what, should be preserved.

Proposed Strategies:

Since the old river was the main generator of the unique urban structure in this area, it is regarded as a perfect example of urban fabric generated by natural landscape in the old city. Through restoring the river, I am going to pursue a reinterpretation of the historical context in modern society, to rebuild the city image, maintain and enhance the traditional urban fabric, to pursue the continuity in the history, preserve the culture and context.

CIRCULATION AND TEXTURE

Current Status:

Some of the neighborhoods in the proposed site are organized around roads running north-south, while others are organized parallel or perpendicular to the disappeared riverfront. Due to the unauthorized buildings along the street, most streets are narrow to adapt contemporary need to solve the traffic problem. And prevalent problem of the circulation in both major and tertiary roads is the mix of vehicular and pedestrian traffic, which tend to reduce the transportation efficiency.

Proposed Strategies:

Reorganizing the transportation network after restoring the old river is a quite important key through the whole design process. I am going to pursue an integration of the new designs with the spatial system, integration of the road systems with green spaces, water surface and public open space. Pursue a river-street double transportation network, and widen some of streets with a separation of traffic and pedestrian.

PUBLIC FRAMEWORK OF PLACES AND BUILDINGS

Current Status:

The public framework includes the streets, parks, buildings and historic structures that make up the public system. This system is the kind of space, which allows individuals from, both of the neighborhood and the surrounding area to gather in varying numbers to interact with each other. Now, this area has very limited open space for both residents and visitors. And what's more, there is far less enough place and facilities serve for the community's life.

Proposed Strategies:

With development of the natural landscape, which is the most desirable recreational space, I will organize public space and public buildings along the river. To create a system of open spaces with a hierarchy and differentiation in types, and also give them easy access from the neighborhoods.

HIGH DENSITY HOUSING

Current Status:

The dense low-rise fabric of the site is composed mainly of old courtyard houses that date back to Qing Dynasty. The intimacy created by the system of hutong and courtyard is the most attractive feature in the traditional neighborhood, and is also what is often lacking in most contemporary housing development in Beijing. While today, some of them are still in good condition, while others are overcrowded, dilapidated. The population density is so high that this area cannot stand for a long time.

Proposed Strategies:

In the process of the urban design along the restored river, what I am also going to pursue is a continuity and development of the traditional courtyard houses. I am going to

keep the current density and most of the original residents in this area. To promote a new housing type which will be 2 or 3 stories stemming from the traditional courtyard houses, which will save more land for public space.

COMMERCIAL FACILITIES

Current Status:

This area is still a great commercial area in Beijing. Some famous shops remains here and people use street space for selling. The traditional commercial activities always take place in the relatively narrow street. But now many small-scale shops' condition is bad, the commercial space need to be reorganized.

Proposed Strategies:

I will develop the commercial potential of this area; redevelop the commercial facilities and space taking advantage of the river edges, which will make a highlight of this area in the whole city.

ENVIRONMENTAL ISSUES

Current Status:

Facing the same environmental problems as other areas in Beijing, there is no concentrated green space in this area. Those big trees in the courtyard are not enough to solve the environmental problem. More green space is needed for the environmental issues.

Proposed Strategies:

Restoring the old river will be not only beneficial to the environmental quality of this area but also the whole city. Through landscape design along the river, I will increase green space to improve the natural beauty and environmental quality.

CHAPTER 4: PRECEDENT ANALYSIS

VENICE



Fig. 4-1: Plan of Venice.
(Source: Antonio Salvadori, Venice)

Almost all cities, with successful design and impressive townscape, are richly endowed by nature. As a port-oriented city, Venice stands out above every other because of its beauty and wealth. No other city shows, in more diagrammatic form, the ideal components of the medieval urban structure. The evolving urban plan of Venice was long the epitome of flexibility and subtle adaptive ness to the natural conditions.

As the most famous “water city” in the world, Venice possesses a rich vocabulary on urban design responding to the canal environment, which would give inspirations to designs for new river front development.

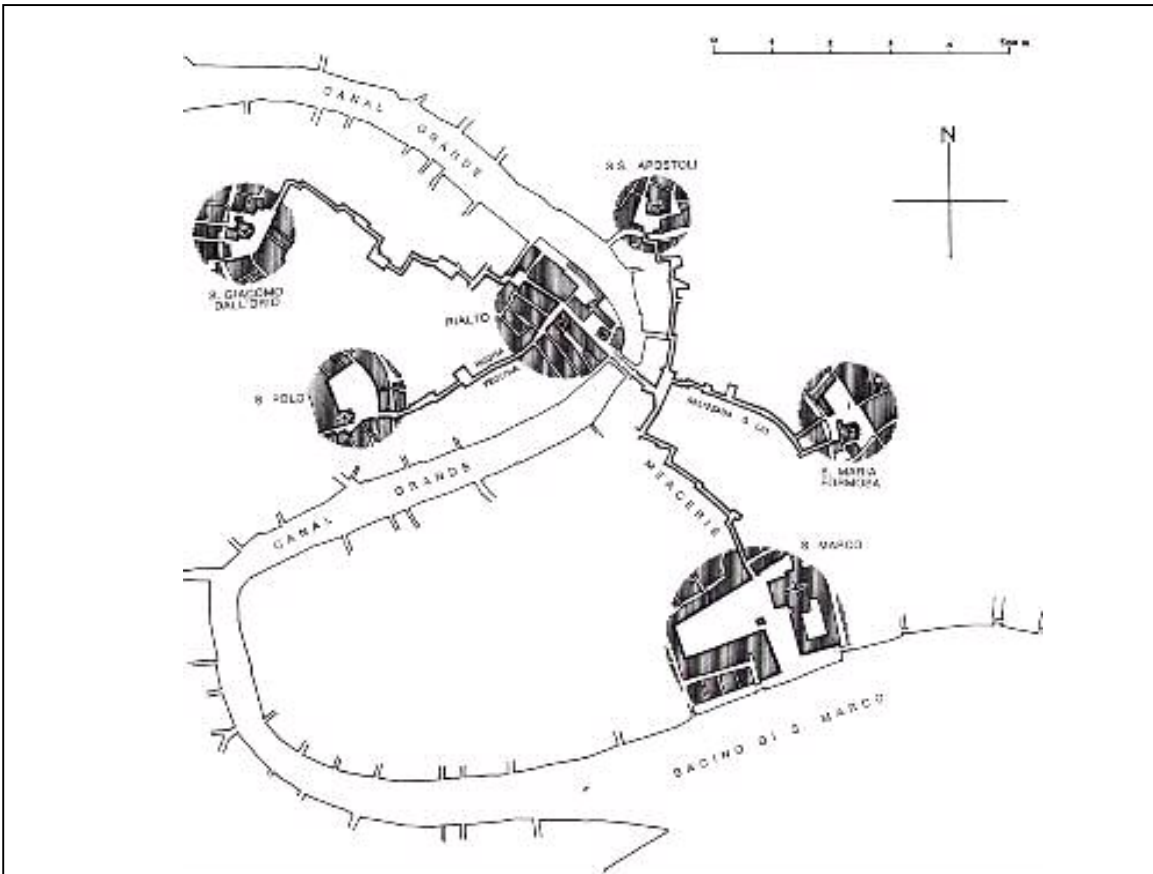


Fig. 4-2: Campi in the original urban nucleus of the city.

(Source: Antonio Salvadori, Venice)

In the early Middle Ages Venice had distinct centers such as San Marco, Rialto and the Santi Apostoli. The settlement extended along the Grand Canal.

“No Venetian building can be completely understood if not seen in its urban context. In Venice there often are particularly successful planning solutions in figurative and spatial terms, without there being any particularly inspiring individual architecture involved, or the buildings involved are part of a different large urban complex.” (Salvadori, P.3)

It is interesting, to look at the examples of such masterpieces of urban layout in which constructional and spatial elements are interwoven in an extremely natural way, while carefully responding the canal environment.



Fig. 4-3: A typical corner of Venice with an inter change between water and land transport

(Source: Antonio Salvadori, Venice)

Generally, all the squares of Venice still served by canals.

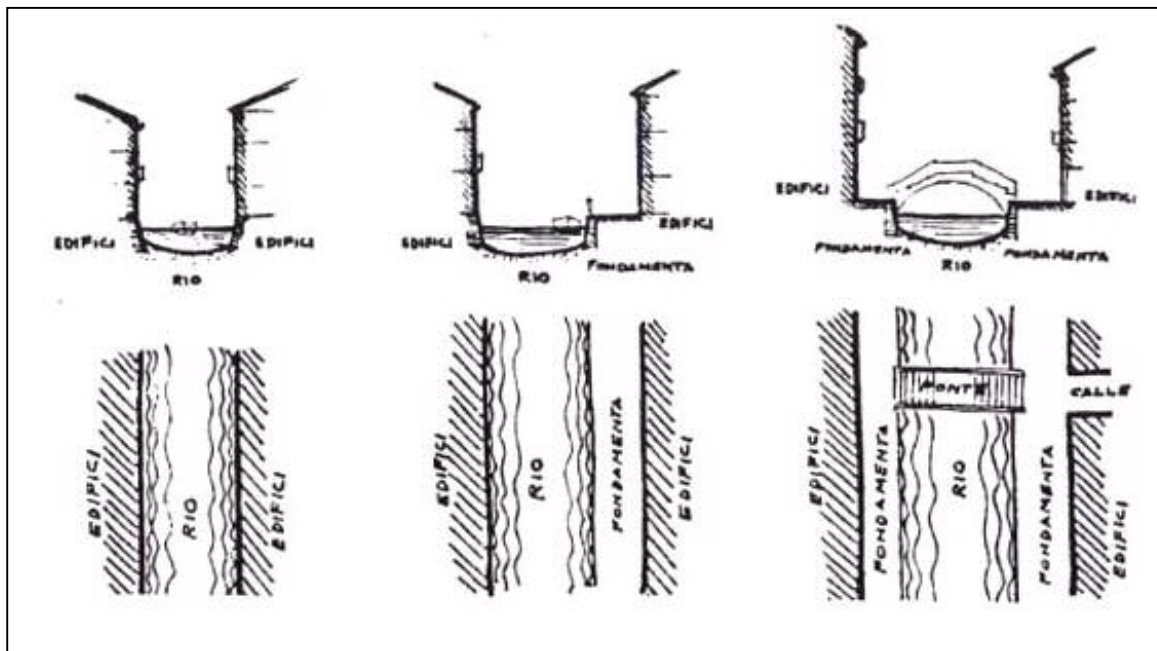


Fig. 4-4: Typical section of canal and street in Venice.

(Source: Antonio Salvadori, Venice)

Rio (a small internal canal) may have no fundamental (waterside streets), a fundamental on one side only or, more rarely, on both sides.

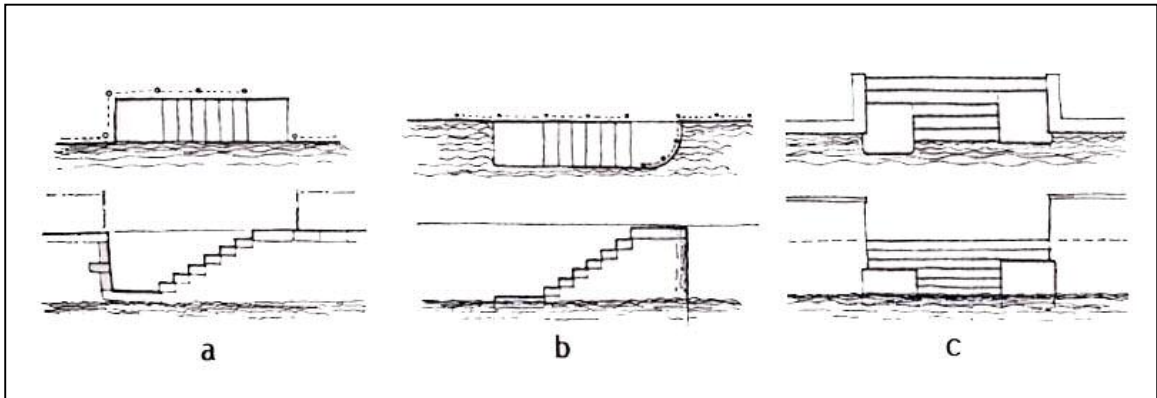


Fig. 4-5: Landing steps.
 (Source: Antonio Salvadori, Venice)

Landing steps form a link between the water transport and pedestrian circulation. There are various kinds:

- Straightforward parallel steps built into the fundamental.
- A block of parallel steps adjacent to the fundamental where the street is narrow.
- A flight of steps at right angles leading down perpendicularly into the water to accommodate changes in tide level.

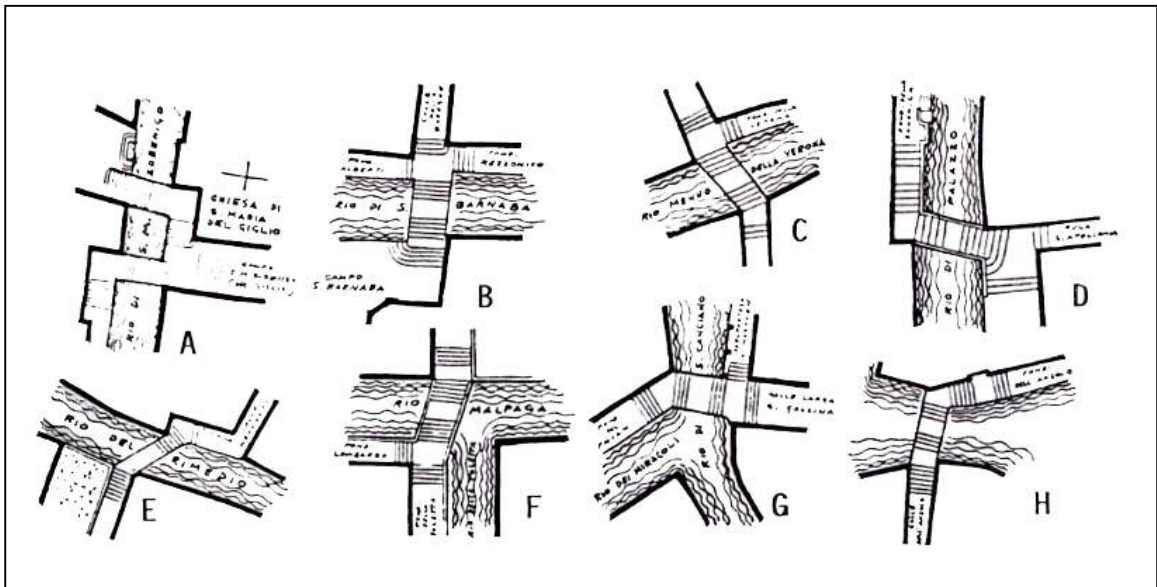


Fig. 4-6: Bridges come in various shapes and sizes according to the layout of the streets leading to them.
 (Source: Antonio Salvadori, Venice)

VARIOUS OPEN SPACES (CAMPI) ALONG CANALS:

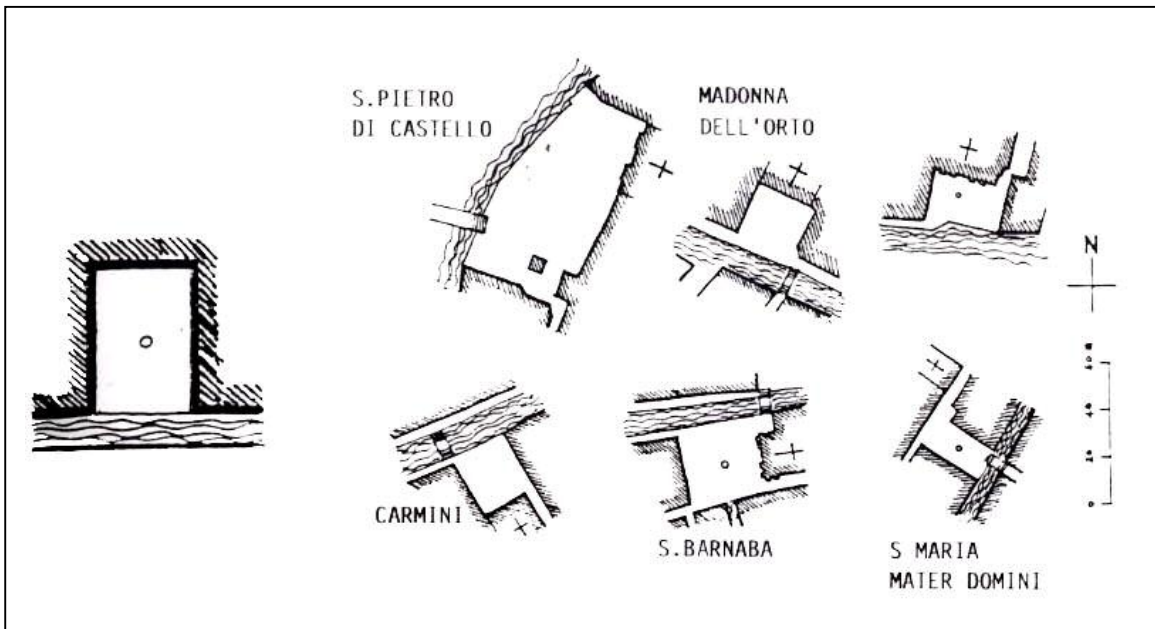


Fig. 4-7: Rectangular campi with canal.

(Source: Antonio Salvadori, Venice)

This kind of campo is more or less rectangular with a canal on only one side.

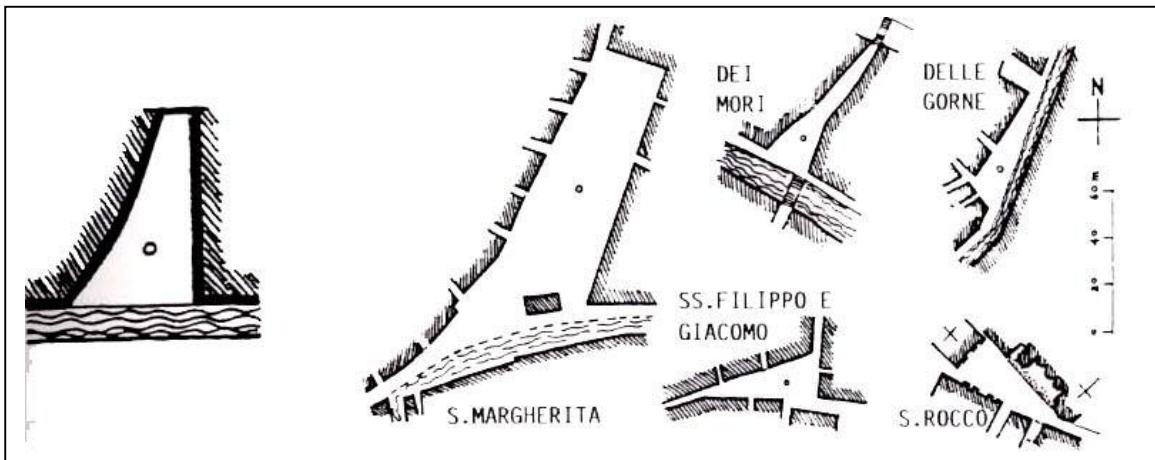


Fig. 4-8: Triangular campi.

(Source: Antonio Salvadori, Venice)

This kind of campo is derived from the previous one and often simply seems to be a widening in a street with no canal or church.

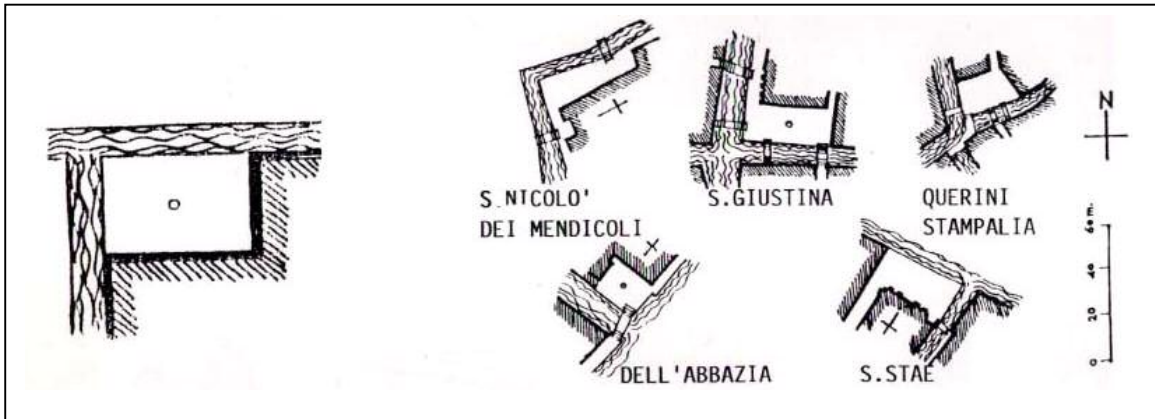


Fig. 4-9: Rectangular campi with two canals.

(Source: Antonio Salvadori, Venice)

A basically rectangular kind of campo with canals on two sides. These are usually very limited spaces, which can only be extended out onto the canals.

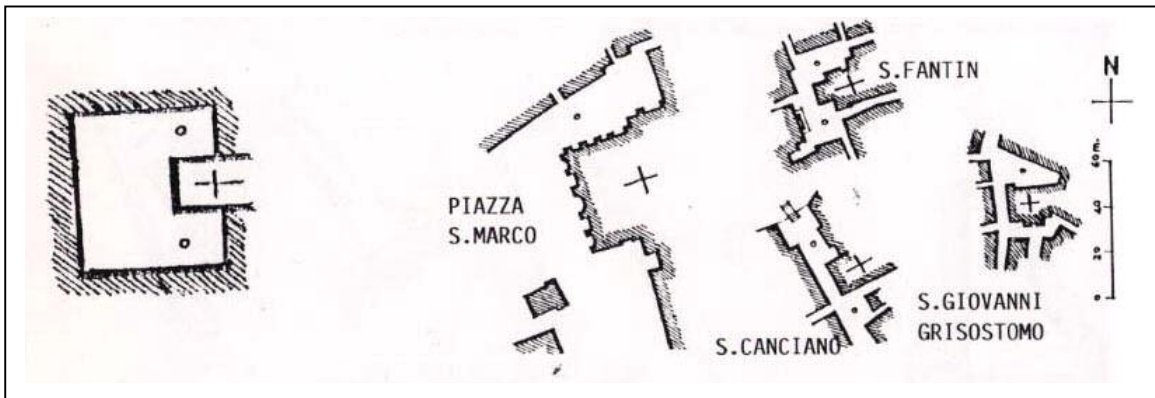


Fig. 4-10: Campi with central church.

(Source: Antonio Salvadori, Venice)

This more complex type of campo is divided by a church.

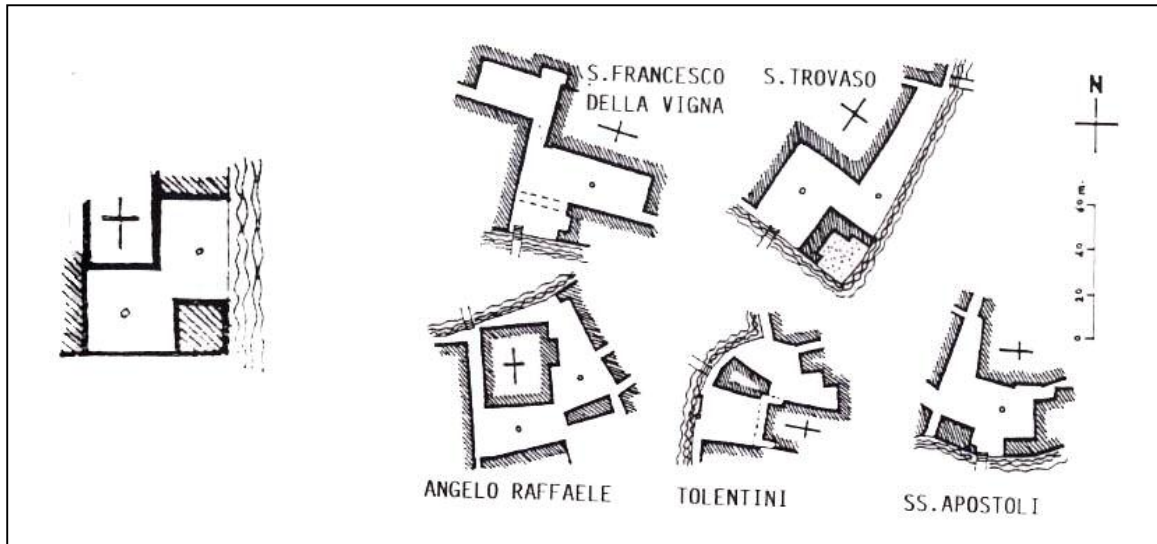


Fig. 4-11: Multiple campi.

(Source: Antonio Salvadori, Venice)

In this case a church or other constructions break up the space creating two or three separate campi, often formed at different times.

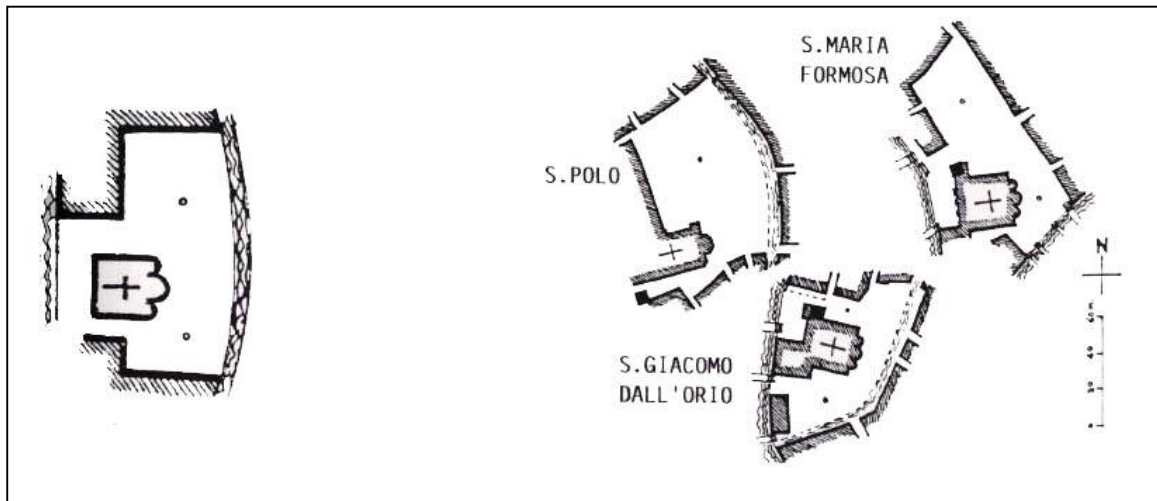


Fig. 4-12: The large campi.

(Source: Antonio Salvadori, Venice)

Almost always beside a canal, these campi have differentiated spaces usually created by the apses of a church; the bell tower is also a key architectural and environmental element.

SUZHOU

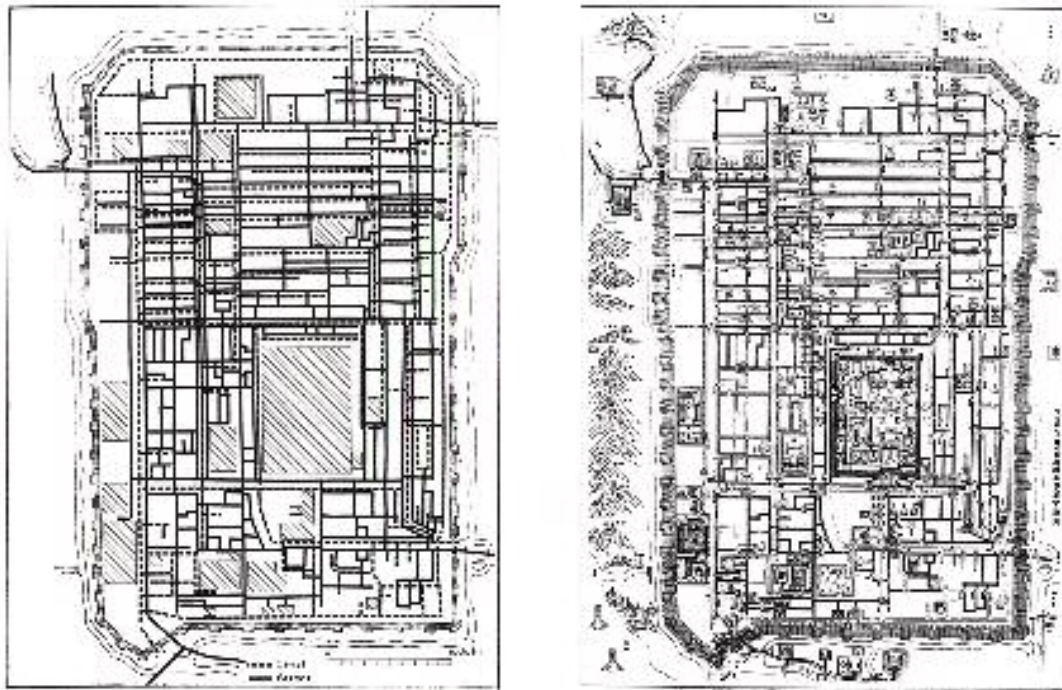


Fig. 4-13: Plan of Suzhou.

(Source: Suzhou)

The city map (in 1229) presents the layout of the city in the conventional Chinese manner, combining architectural plans with brief elevational images. The movement and spatial pattern formed by the canals and streets produced a unique framework for the building up of the urban network.



Fig. 4-14: Map of Suzhou
Suzhou situated in the “Water County” of southern Jiangsu, a few miles to the Grand Canal.

(Source:Suzhou)

When golden Venice was celebrated for its beauty and prosperity throughout the Europe during the Middle Ages, the Venetians might never knew that Suzhou, an ancient Chinese city in the far East, was simultaneously walking into its most glorious times.

The overall dimensions of the city are just over 3 miles, north to south, and 2 miles east to west. The city planning is based upon the simple principles of the ideal Chinese city prototype, with walled enclosure, axis, north-south orientation, chessboard street network. The grid of canals running north-south and east-west shadows the street pattern, thus the city's dual chessboard layout has been determined.

Multi water lanes have provided the indispensable environment for people's daily lives. Along the water lanes are usually one or two-storied buildings with simple, small scale, the water lane space have placed a considerable emphasis on the individual elements such as canals, bridges, streets and lanes. In particular, a canal is generally 6 to 10 meters in width, and a street, or a lane, is 3 to 4 meters wide. Canals relate to their adjacent uses in several different ways, the most common ones of which are embodied in three types of spatial layouts.

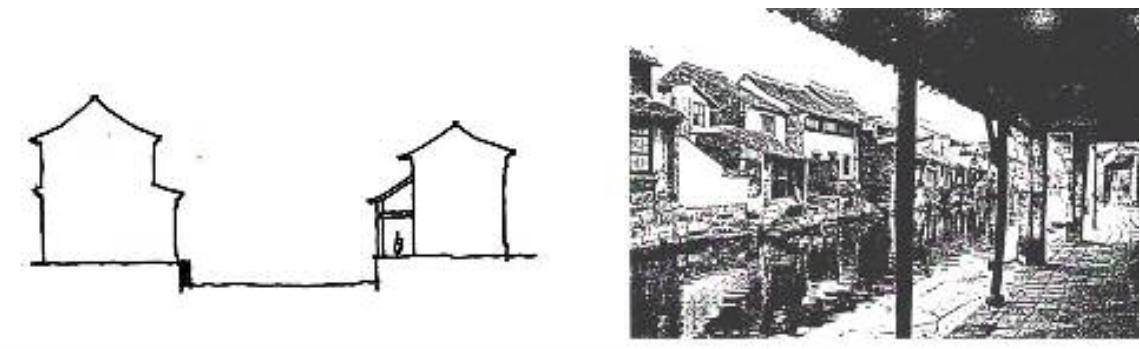


Fig. 4-15: Canal with one pedestrian lane.

(Source: Liu Chen, Revitalize Waterside Neighborhoods)

This layout has been the most prevailing one in Suzhou by the virtue of the numerous neighborhoods of the “front street and back river” type. There are three different spatial levels constituted with canals as the lowest one, lanes as the middle and buildings as the highest.

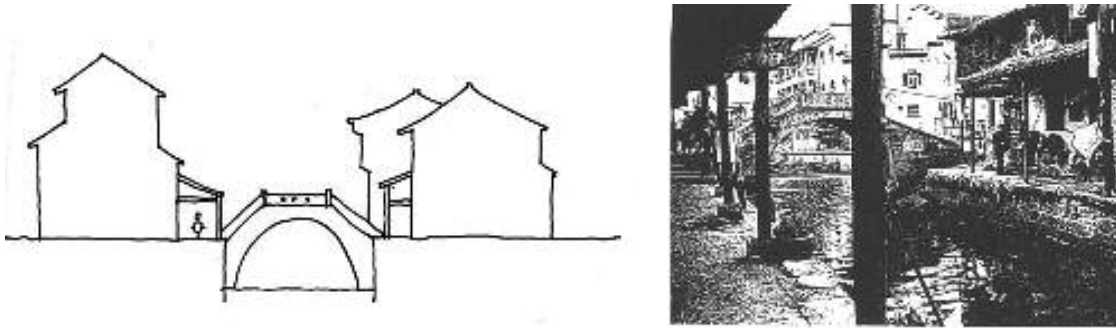


Fig. 4-16: Canal with one pedestrian lane on each side.
 (Source: Liu Chen, Revitalize Waterside Neighborhoods)

The canal is in the center, with pedestrian lanes parallel to both sides and the houses parallel to the lanes.

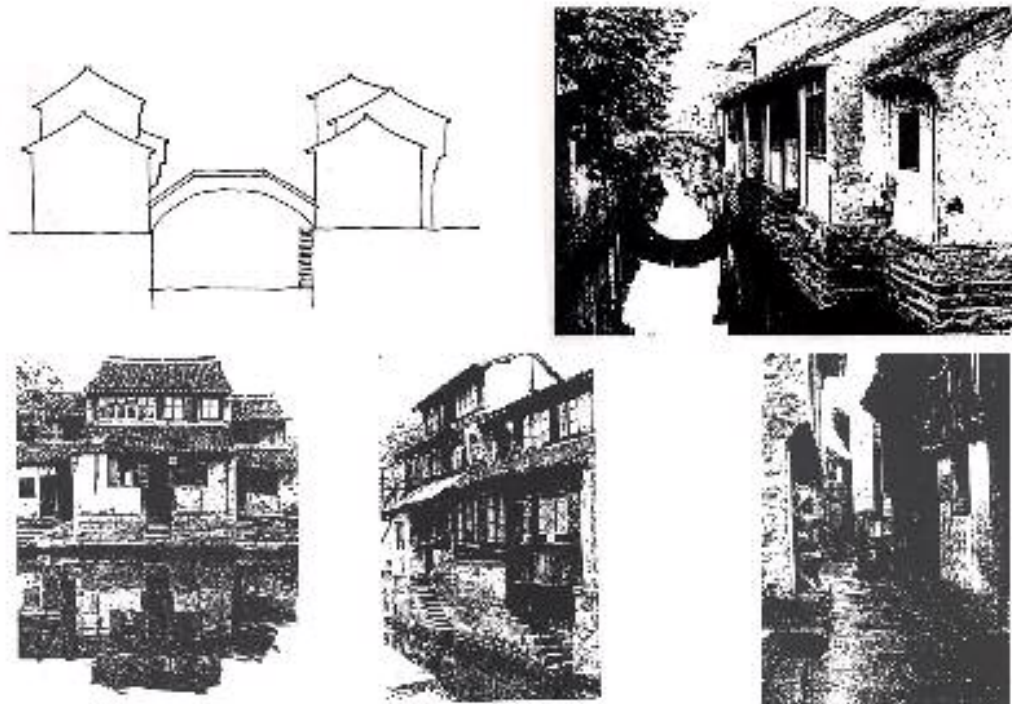


Fig. 4-17: Canal without pedestrian lanes.
 (Source: Liu Chen, Revitalize Waterside Neighborhoods)

Houses are built on each side of the canal with their walls aligning the canal, thus creating a compact, quiet and secluded setting. The view of the waterside house shows setbacks and stone steps leading to the surface of the water.

There was not much central open space in Suzhou like those piazzas in Venice. Most activities took place along the street or water lanes. Alongside the streets and canals are dwelling houses mainly, among which some retails, workshops, or small temples are occasional interspersed. The famous gardens in Suzhou were also private and enclosed. Practicing the fundamental principle of the Chinese urban garden design – “borrow scenery”, many garden designs successfully achieve “visual airways” which connect gardens and distant scenery.

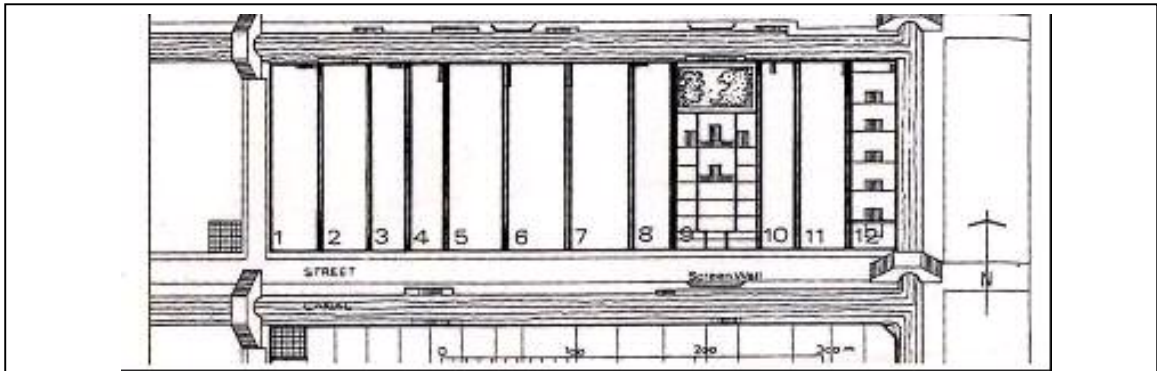


Fig. 4-18: The typical relationship between house and garden.
(Source: Liu Chen, Revitalize Waterside Neighborhoods)

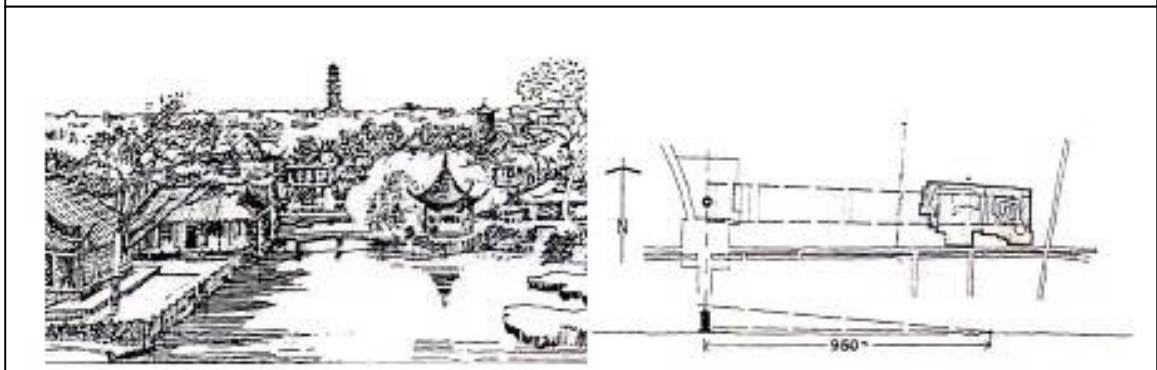


Fig. 4-19: “Visual airway” between a private garden and the Beisi Pagoda.
(Source: Liu Chen, Revitalize Waterside Neighborhoods)

Many gardens were planned to be able to “borrow scenery” from other parts of the city or from more distant views of hills or other distinctive landscape or man-made features.

ORGANIC RENEWAL APPROACH IN BEIJING

Some scholars, architects and planners have realized the importance of preserving the historic city of Beijing as a whole. There are some organic renewal approaches in some traditional neighborhoods in the Old city. Some new rules are established, such as design with the Old City's fabric, step by step approach, and small and flexible plan, etc.

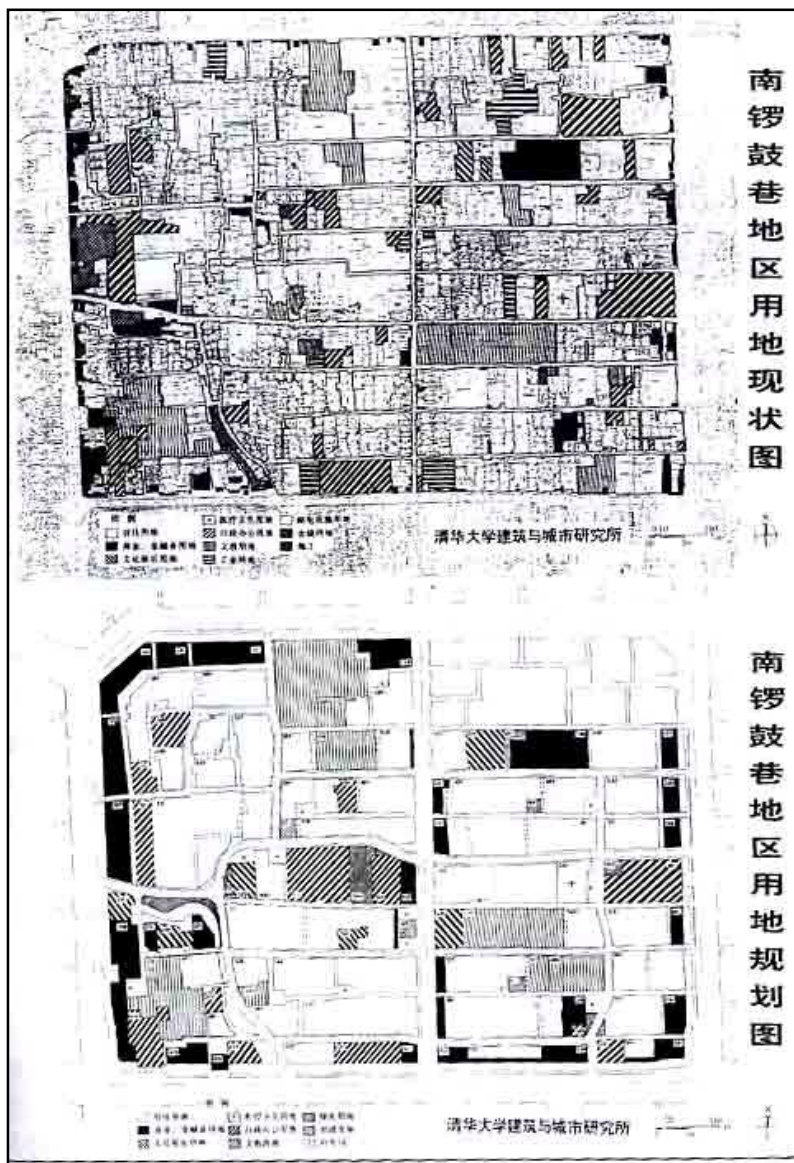


Fig. 4-20: Renewal approach of Nan Luo-gu Xiang traditional neighborhood by Tsinghua University, design with the old fabric. (Source: Fang Ke, Contemporary Redevelopment in the Inner City of Beijing)

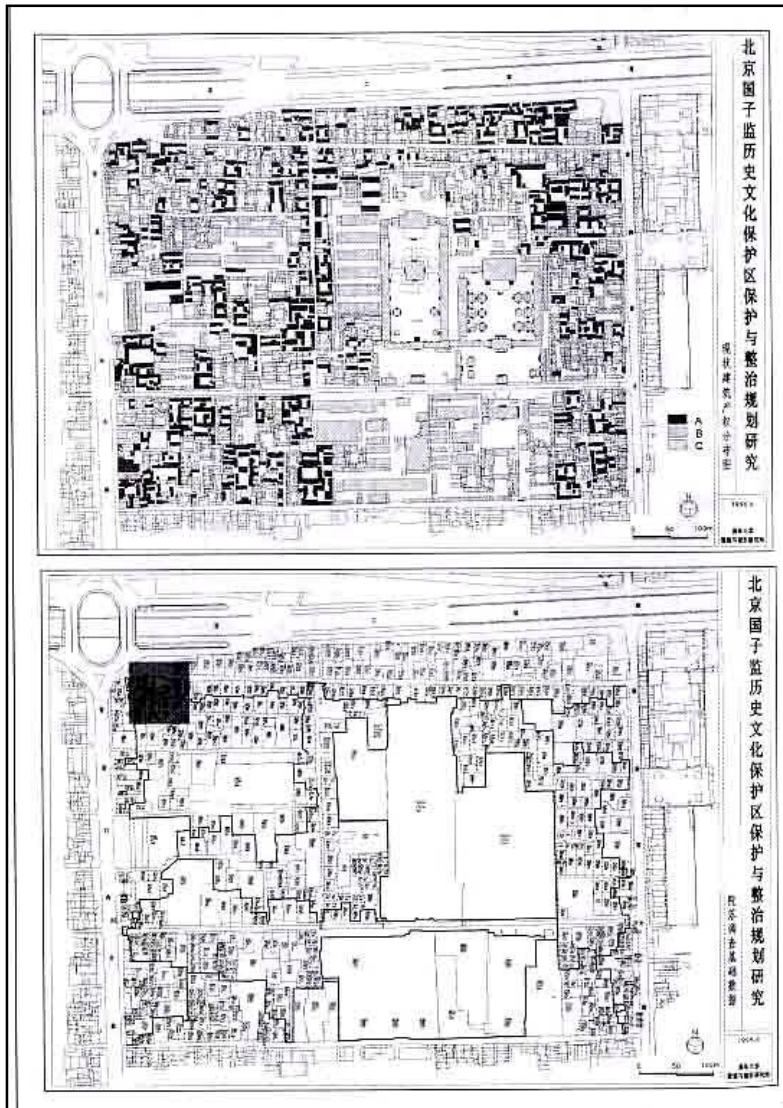


Fig. 4-21: Step by step approach in Guo-zi-jian area by Tsinghua University. (Source: Fang Ke, Contemporary Redevelopment in the Inner City of Beijing)



Fig. 4-22: Ju-er Hutong project by Tsinghua University. A new courtyard type housing. (Source: Fang Ke, Contemporary Redevelopment in the Inner City of Beijing)

CHAPTER 5: DESIGN APPROACH

URBAN INTERVENTION

URBAN AGENDA

--- To connect two main landmarks: the Front Gate and Heaven Temple in the outer city by the river, rebuild the historic urban scene while promote tourism.

CURRENT RIVER SYSTEMS IN BEIJING



Fig. 5-1: Waterways in current Beijing.

Several historic rivers has disappeared in current Beijing, the historic urban scene no longer exist. However, it's good that Beijing has realized it; the government began to protect and restore the river systems recently, to reproduce the landscape of the ancient capital, and also help to improve the environment of Beijing.

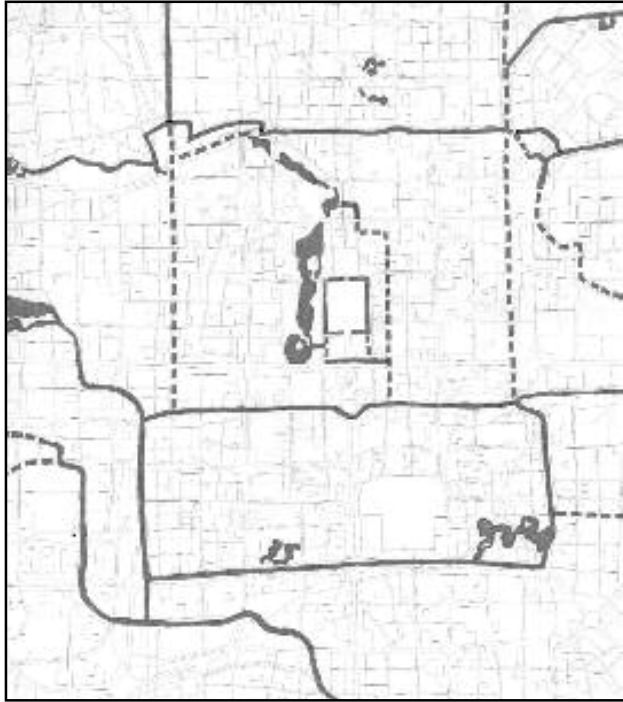


Fig. 5-2: River restoration approach in the Old City.

The moat out of the Front Gate is going to be restored.

URBAN INTERVENTION

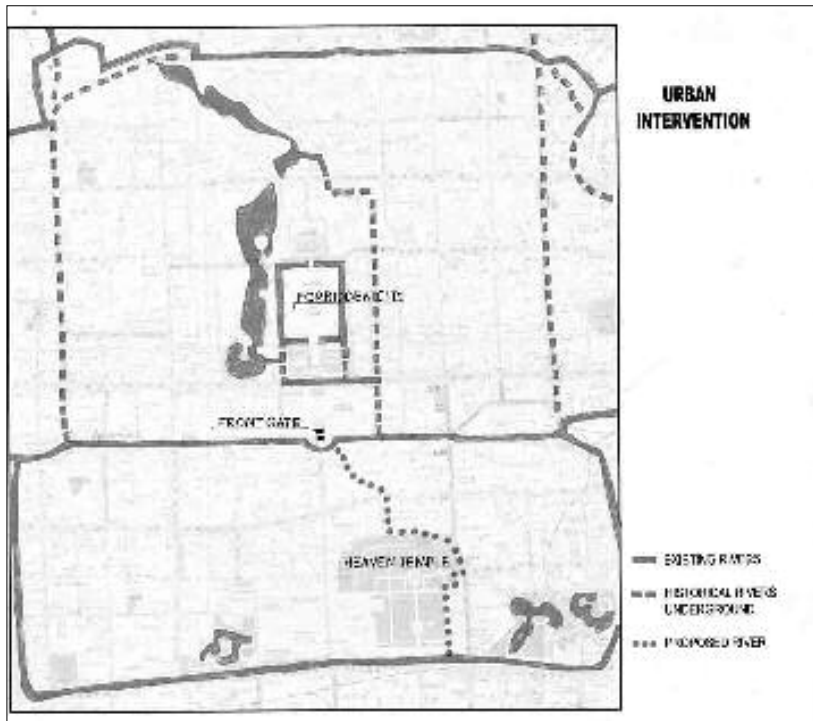
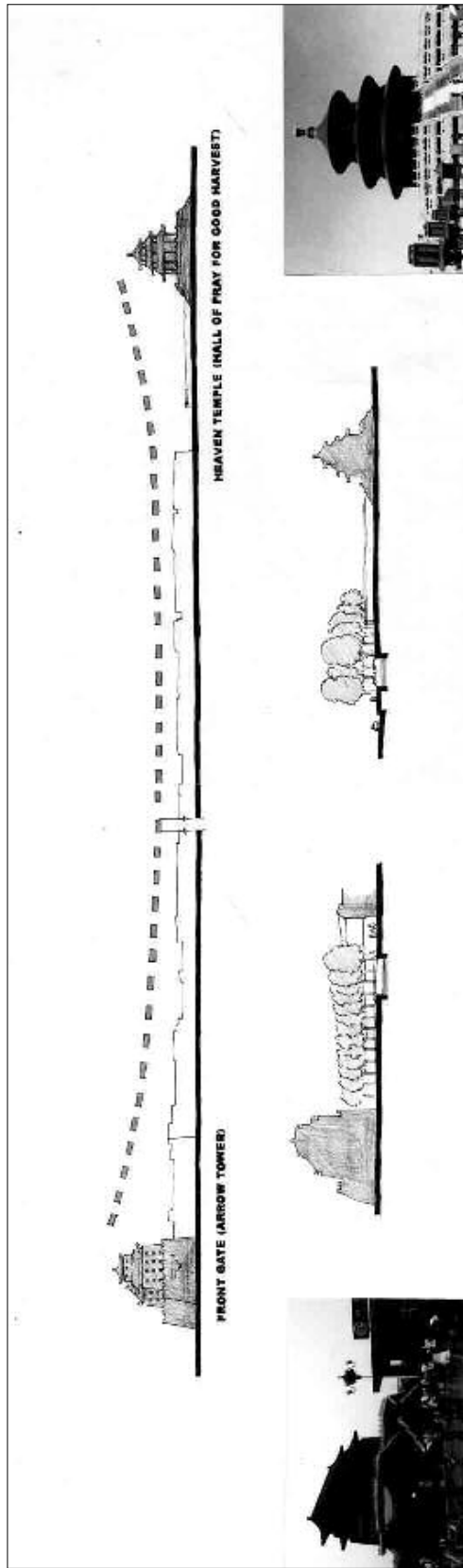


Fig. 5-3: Urban intervention.



I am going to connect the moat out of the Front Gate and the moat along the second ring road. Thus connect the two main landmarks: the Front Gate, the Heaven Temple, it can also reach the Forbidden City, has a potential to be a visiting route for the city.

Fig. 5-4: Urban Diagram.

The Arrow Tower of the Front Gate and the Hall of Pray for Good Harvest in Heaven Temple should control the urban scene.

Along the Front Gate, I propose two or three stories commercial buildings around the Arrow Tower, kind of give a sense of enclosed space, like the old city walls there.

Around the Heaven Temple, I propose big trees along the river; emphasize the quiet atmosphere of the temple.

NEIGHBORHOOD AGENDA

- To rebuild the historic fabric by restoring the historical river.
- To develop the commercial and recreational potential of the area, and promote tourism.
- To establish preservation categories for old buildings: conservation, adaptive reuse, and potential for removal.
- To improve the living environment, by design of new courtyard-type houses, inspired by historic types.
- To maintain the existing density of the neighborhood (732 people/hectare), while providing amenities for contemporary life.
 - . Addition of community facilities (community center, hospital, etc.)
 - . Addition of green space, public space.
 - . Addition of parking space (0.2 car/unit)
- To solve local traffic while keeping the old fabric.
- To maintain most of the original residents by phased development.

DESIGN ALTERNATIVES

SCHEME 1

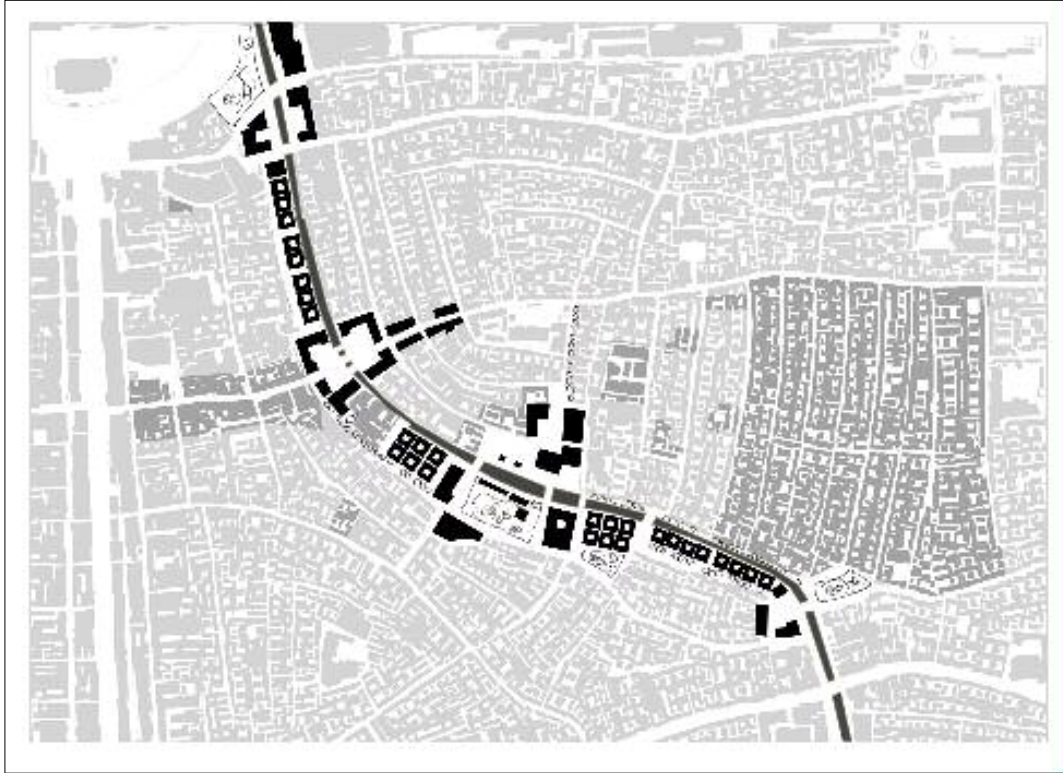


Fig. 5-5: Scheme one.

Design Strategies:

This scheme tries to develop a series of open spaces along the riverfront, each space possess its own character and use. It develops the commercial potential along the Xian-yu-kou Street; a central commercial plaza is added at the intersection of the river and the original commercial street. A new museum, several historical preservation courtyards forms another plaza for visitors, while several new community buildings and green space forms another place mainly for the amenities for local residents.

Commercial buildings with green space.

Develop the commercial potential of Xian-yu-kou Street, add a central commercial plaza at the intersection of the river and the traditional commercial street.

A new museum and several historical preservation courtyards form a plaza for visitors.

Community plaza.

Community buildings with green space serves mainly for local population

---A series of open space organized along the river.

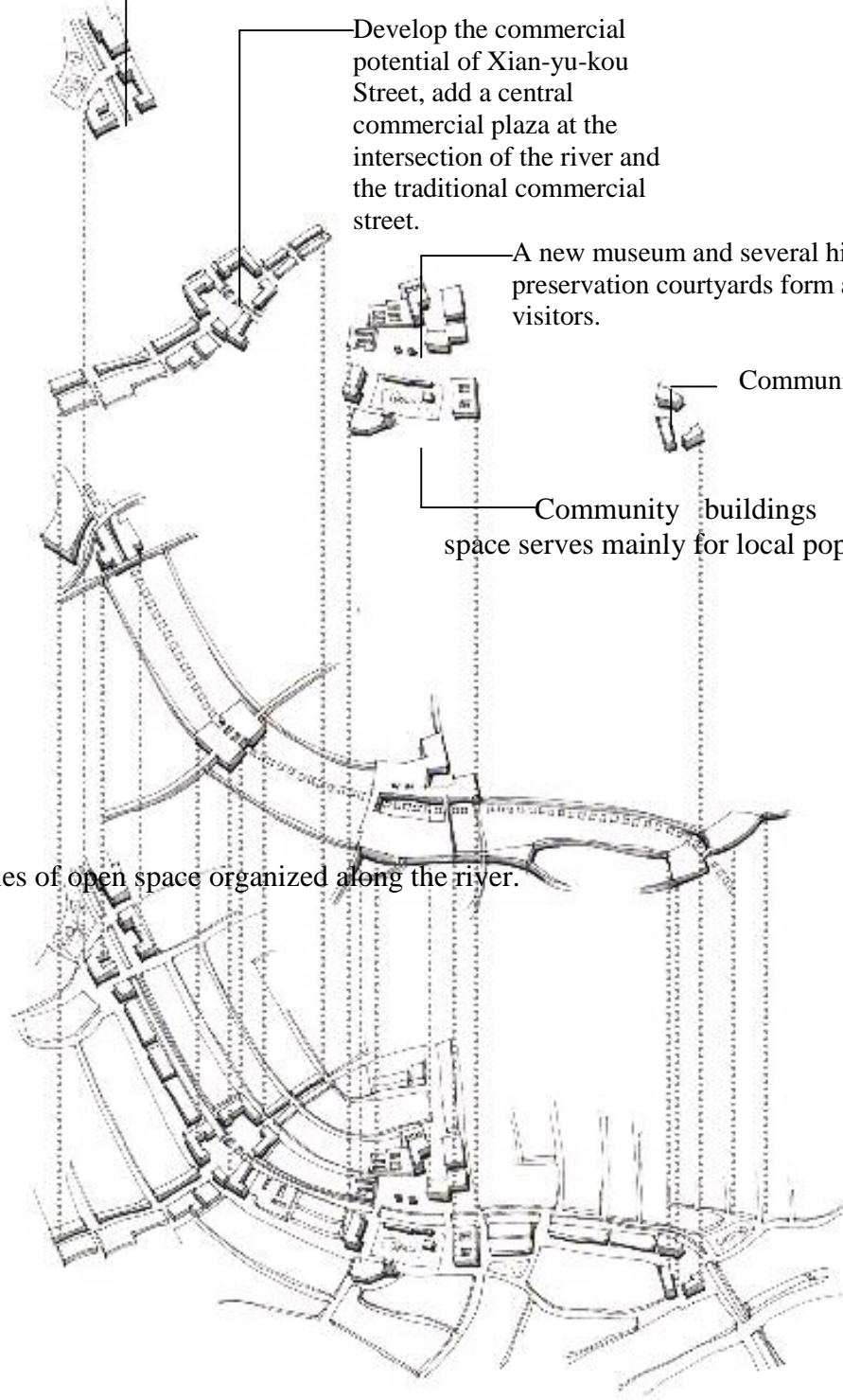


Fig. 5-6: Scheme one – design strategies.

SCHEME 2:

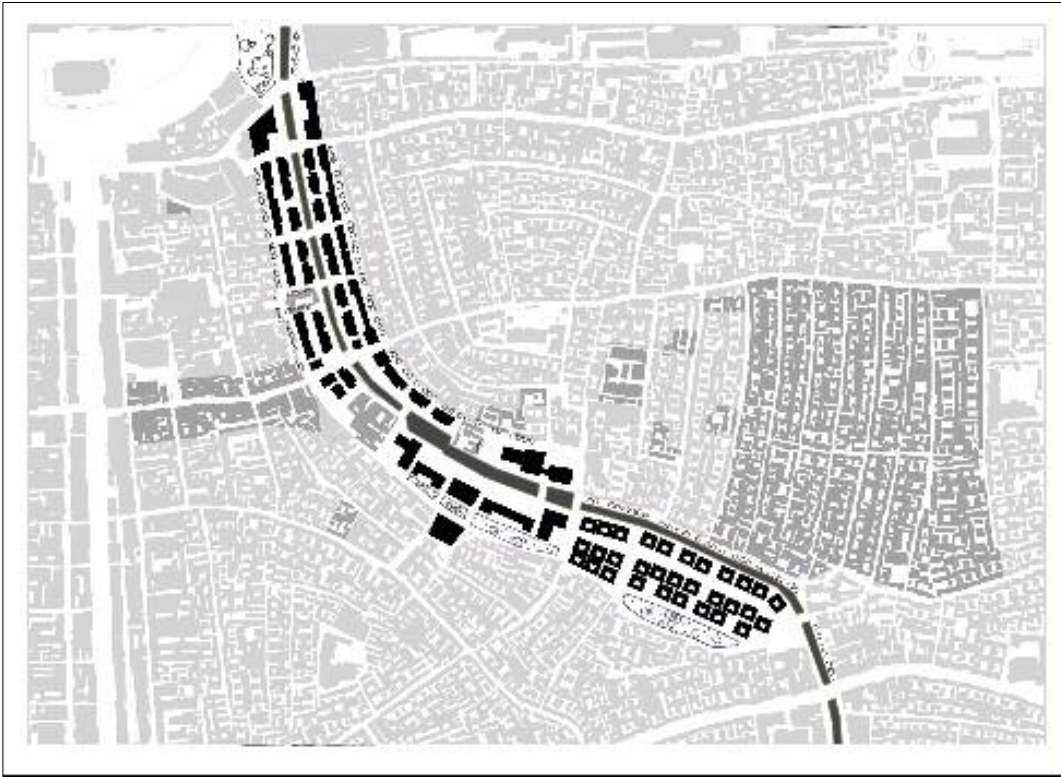
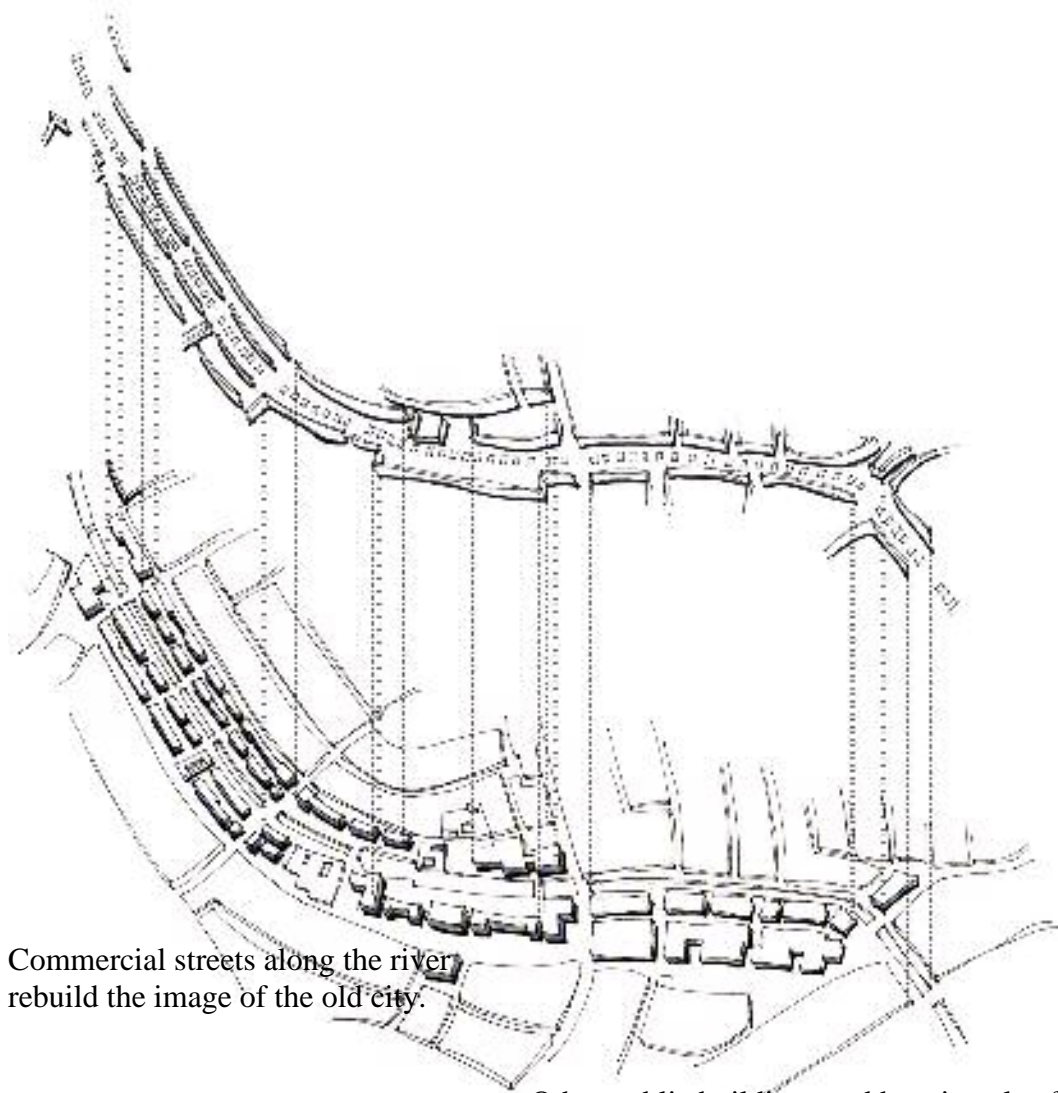


Fig. 5-7: Scheme two.

Design Strategies:

This scheme wants to promote the potential function of the historic structures – streets to serve as a kind of open space in the public system. It develops commercial streets along one part of the river where is connected with the original commercial street. Other public buildings or housings are also settled to generate linear space along the river.



Commercial streets along the river
rebuild the image of the old city.

Other public buildings and housing also form the
linear open space.

Fig. 5-8: Scheme two – design strategies.

SCHEME 3

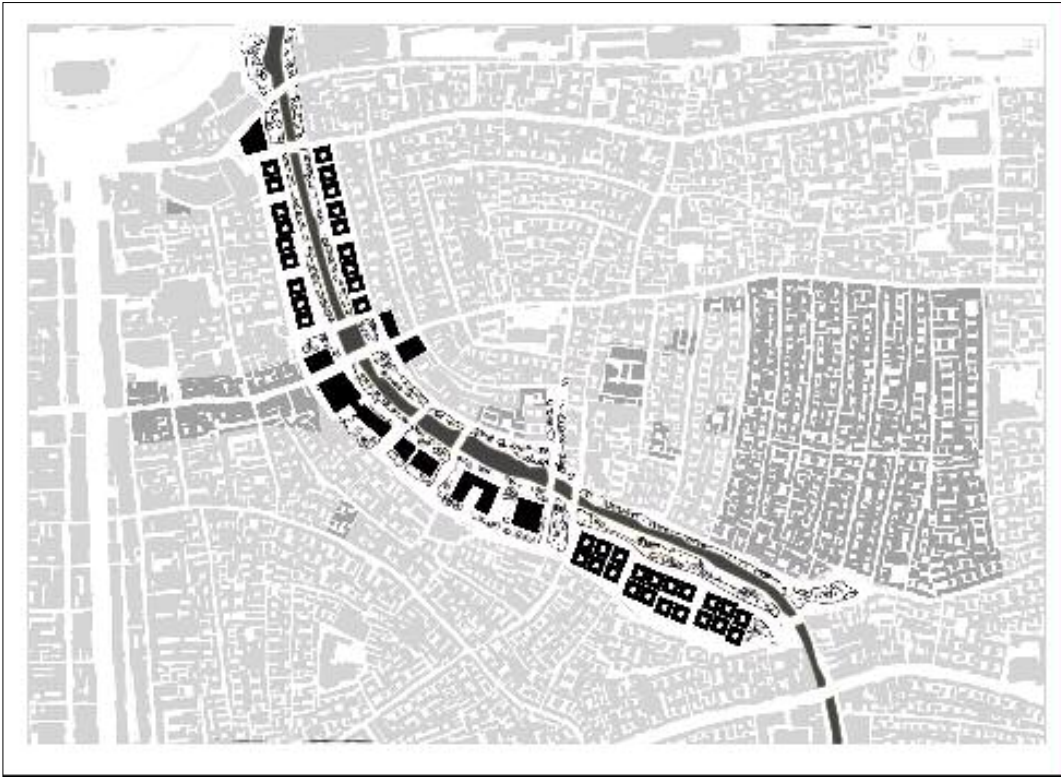


Fig. 5-9: Scheme three.

Design Strategies:

This design tempts to emphasize the landscape design along the riverfront, while buildings are set dispersed in the landscape.

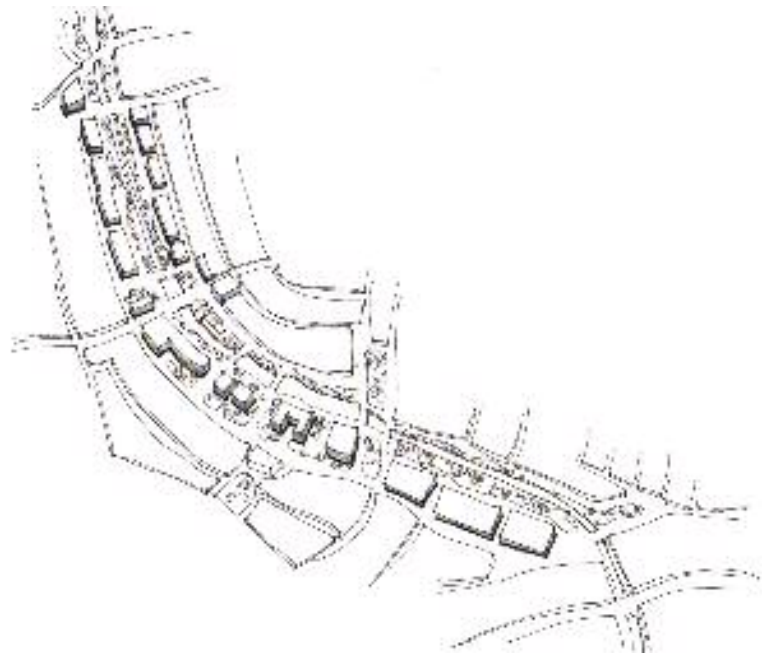


Fig. 5-10: Scheme three – design strategies.

DESIGN CONCLUSION

PROPOSED MASTER PLAN

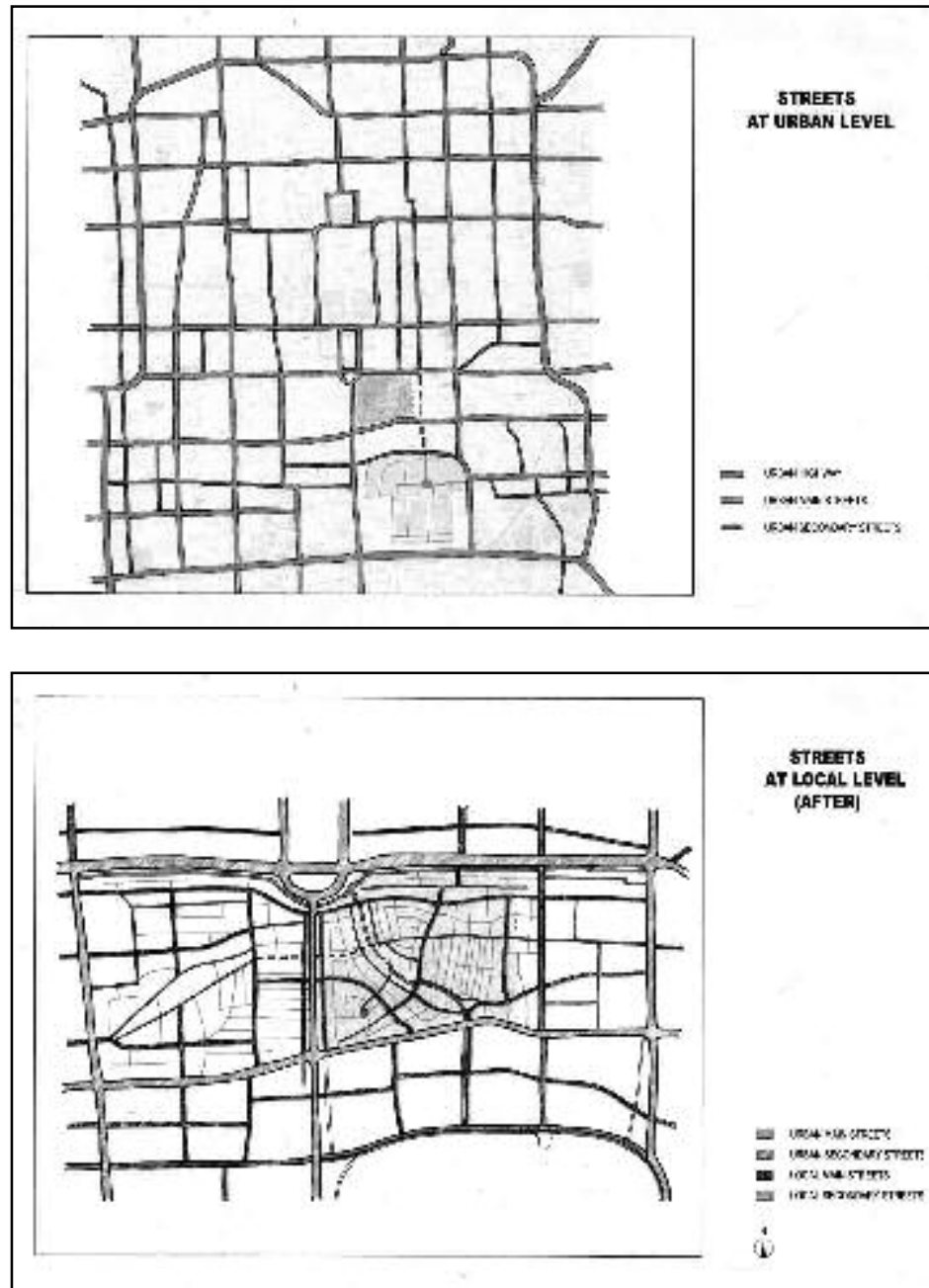


Fig. 5-11: Street network at urban and local level.

Add an urban secondary street leading to the Heaven Temple.

Develop a street category, widen some streets as local main streets and local secondary streets.

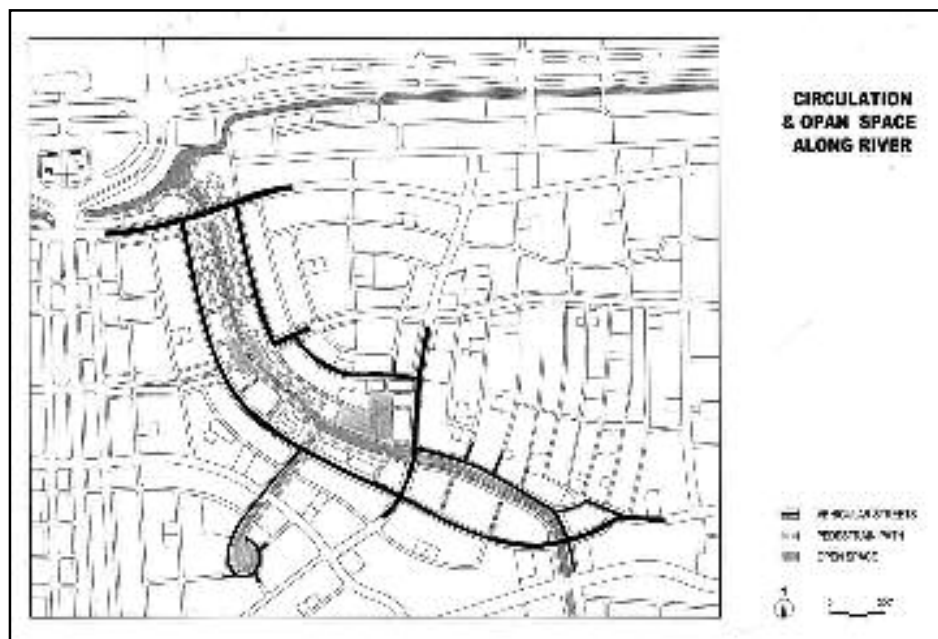
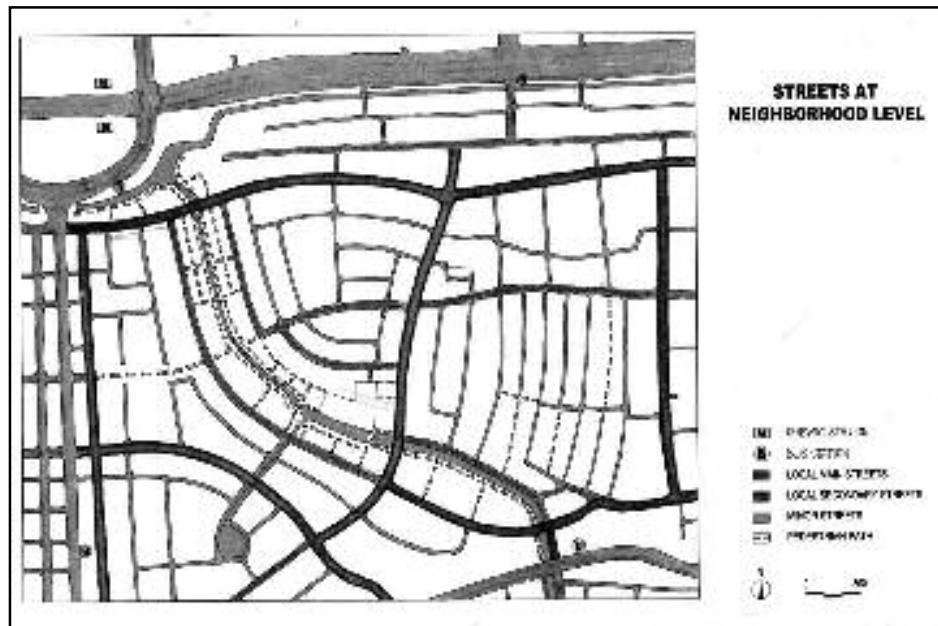


Fig. 5-12: Street network at neighborhood level and circulation along the river. Pedestrian path along Xian-yu-kou street and the river.

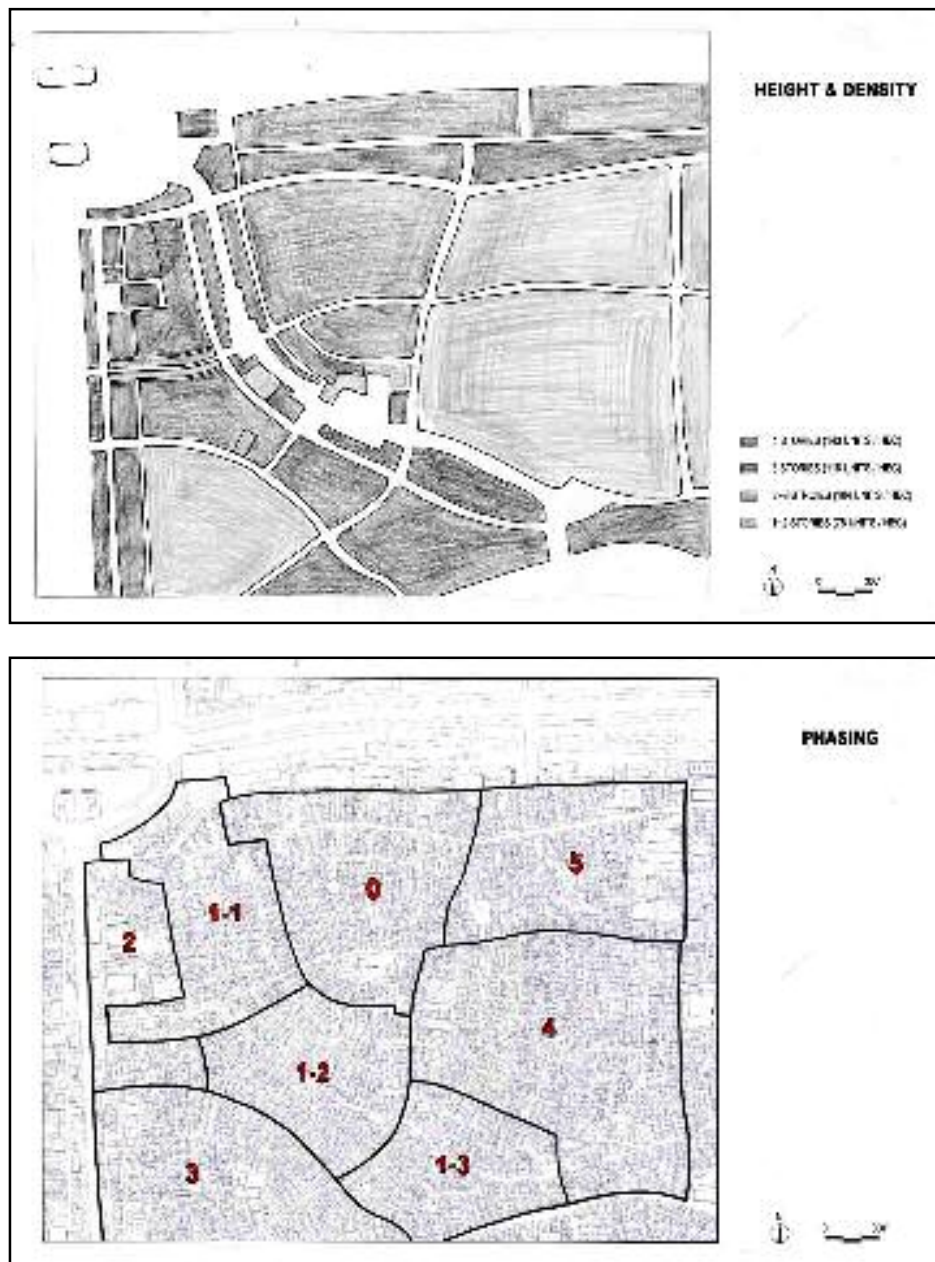


Fig. 5-13: Density and Phasing.

To keep the density while improve the living environment, I proposed 2-3 storied new court yard houses, and some 4 storied apartment along the main urban street, most commercial buildings are also 3 storied.

In order to keep most of the original residents, I proposed phased development. Before the development along the river, to develop a residential area first, with higher density, then residents can move in, for each step of development, keep this moving, so the residents can remain in the same neighborhood, but maybe not the same location.

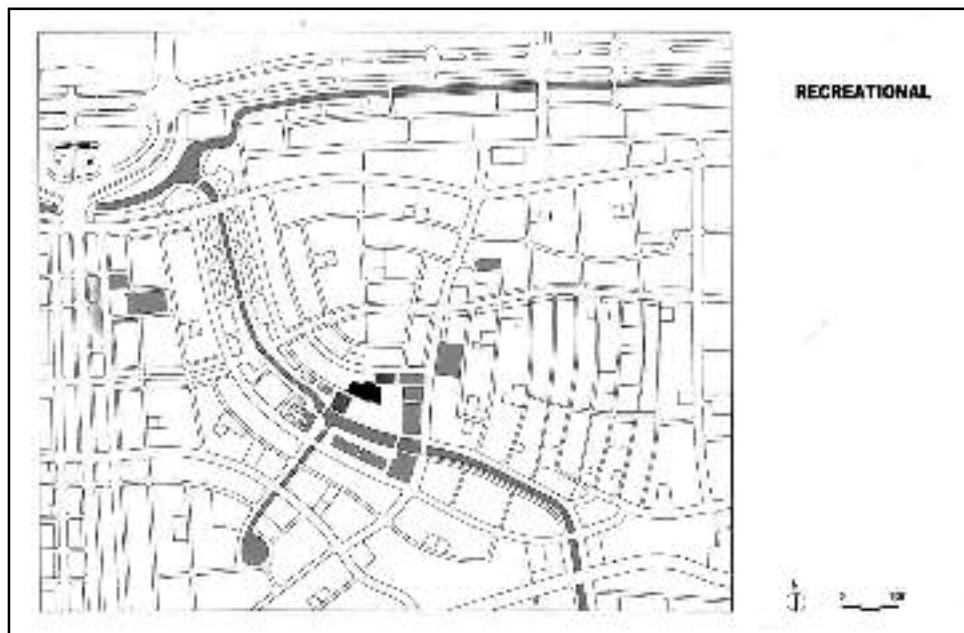
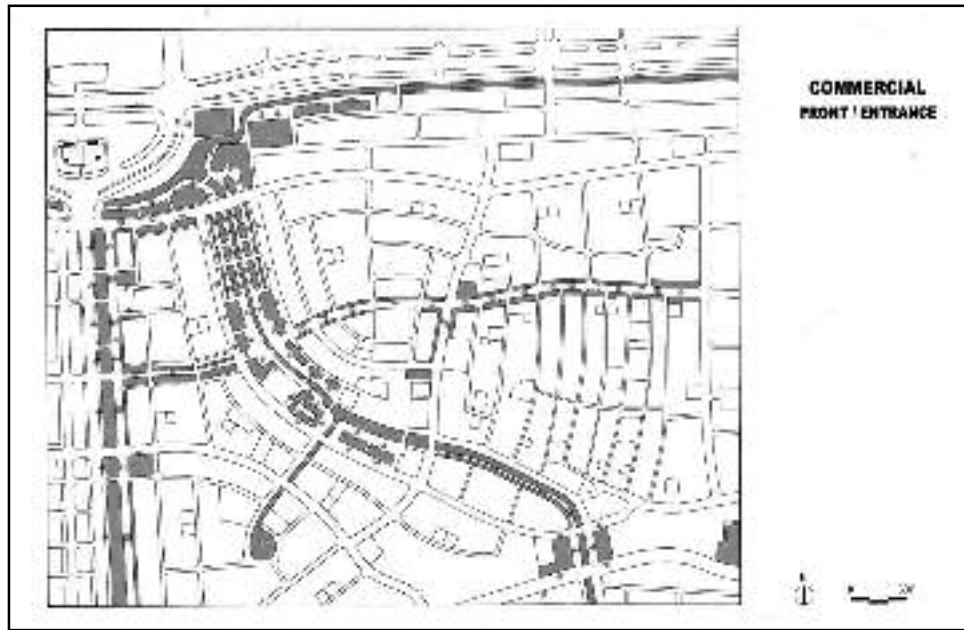


Fig. 5-14: Commercial and Recreational.

Develop the commercial potential along Front Gate Avenue and Xian-yu-kou street, while add a new pedestrian commercial streets along the river.

Around three historic courtyards to development a recreational center with open space, a museum, a new theatre and also a visiting center.

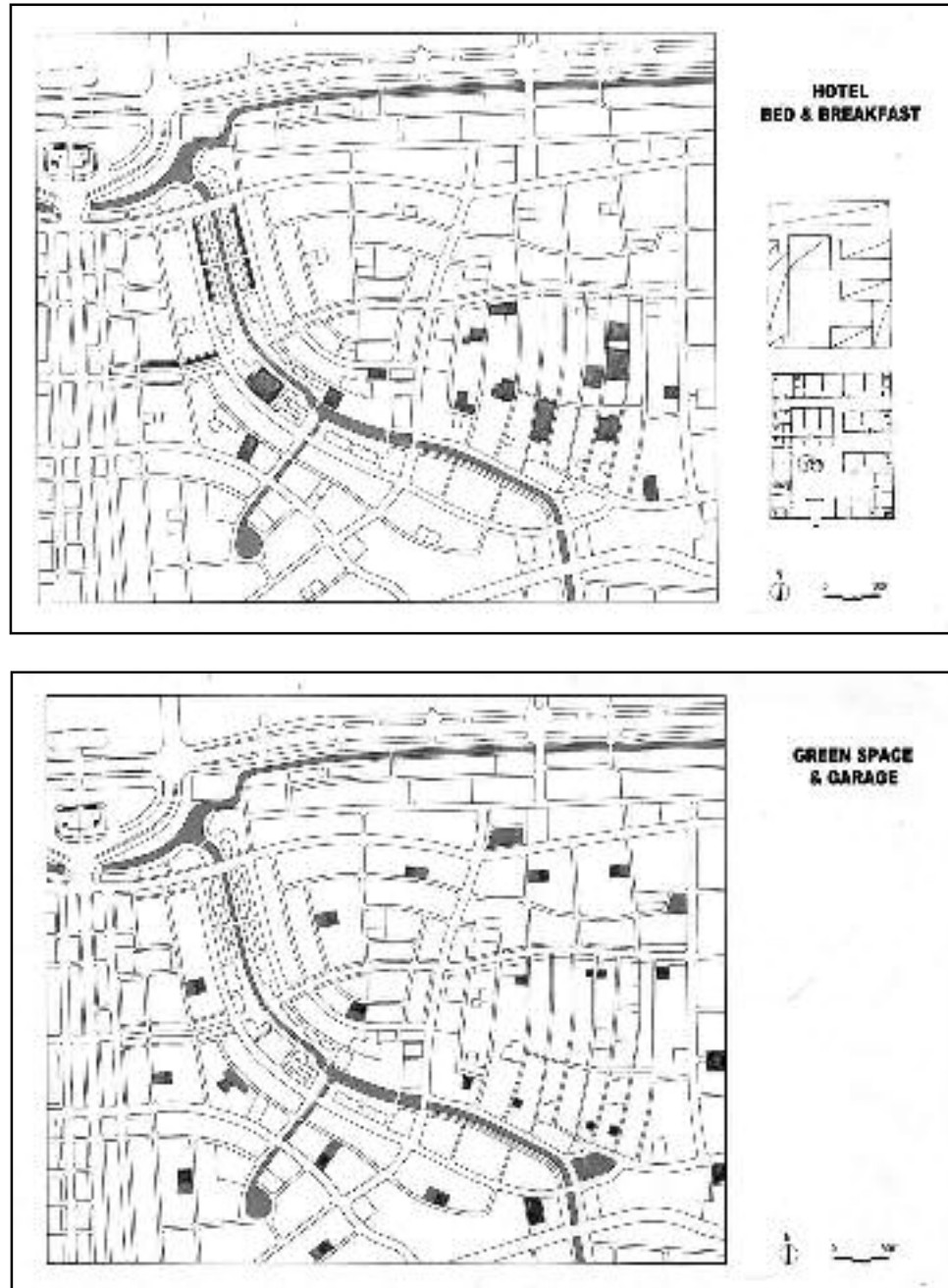


Fig. 5-15: Hotel and Garage with Green Space.

To reuse some historic courtyard as bed and breakfast hotel, while keeping the outside and change the plan.

Each group of houses has a garage with a green space.

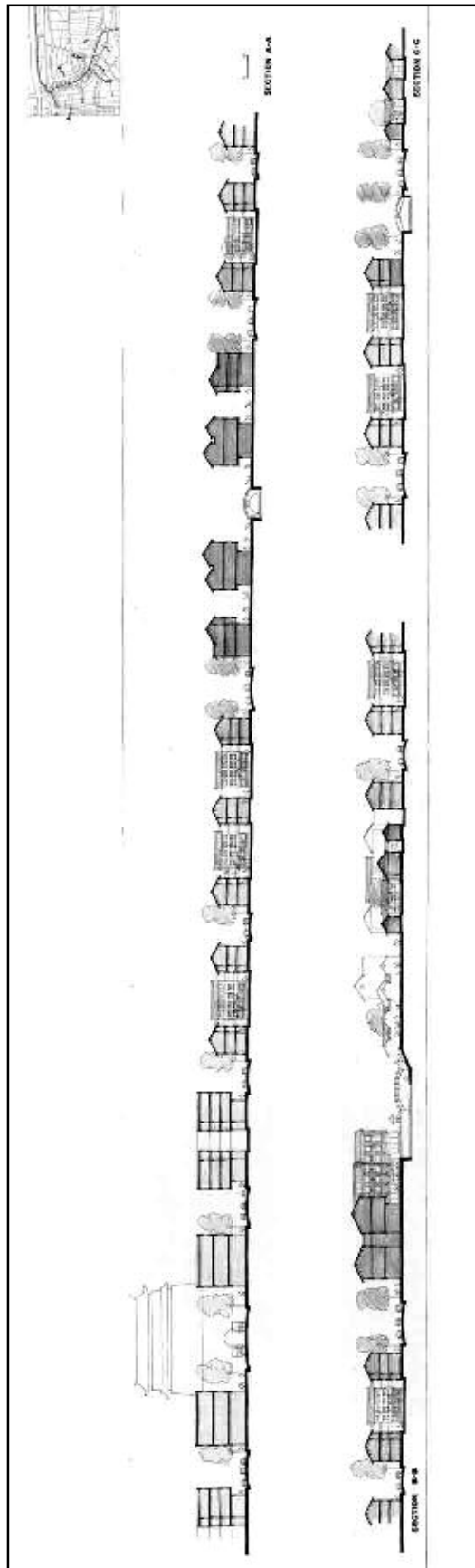


Fig. 5-16: Section.

Land use data:

Whole Area: 73.5 hectare

Residential: 46.67 hectare (63.5%), Density: 120 units / hectare; Average living area:
12.36 sqm / person; FAR: 2.36

Commercial: 6.02 hectare (8.2%)

Recreational: one old theatre, one new theatre, a museum, a library, a children centre

Hotel: 3.25 hectare (4.42%)

Schools: 1.52 hectare (3 middle-schools, 4 junior schools)

Community: 0.86 hectare (1.17%)

Hospital: 0.2 hectare (0.27%)

Green Space: 2.16 hectare (2.9%)

Garage: 0.6 hectare (0.8%)

Vehicular Streets: 15m~6m

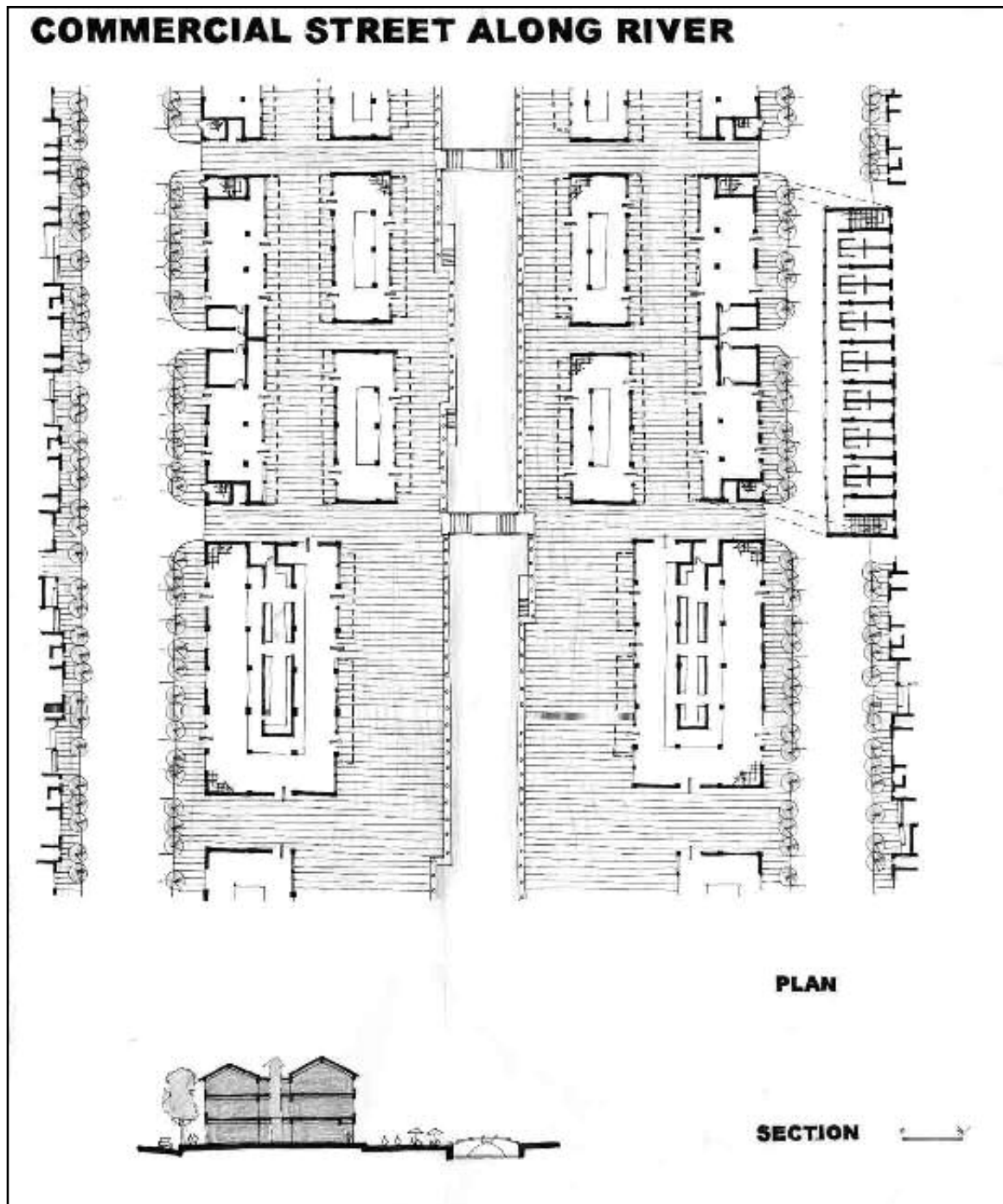
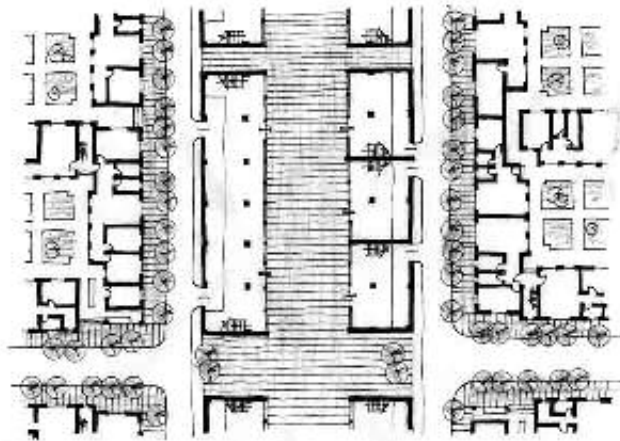


Fig. 5-17: Commercial streets along the river.

Small scale shops with entrance on both sides, restaurant in the end of the street with central kitchen. Two main service routes are behind each pedestrian street, with service area at each entrance.

XIAN-YU-KOU STREET --- A

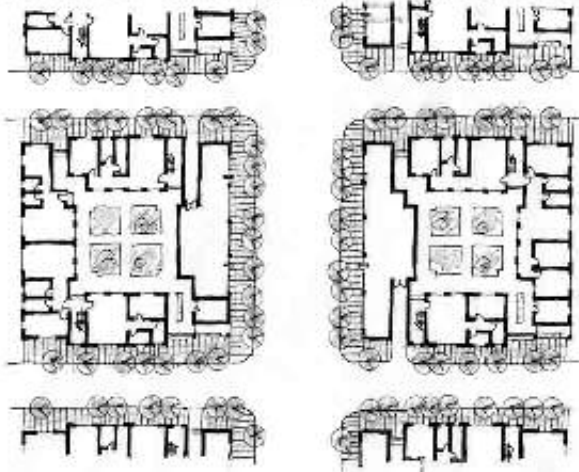


PLAN



SECTION

XIAN-YU-KOU STREET --- B (MIXED USE)



PLAN



SECTION

Fig. 5-18: Commercials along Xian-yu-kou street.

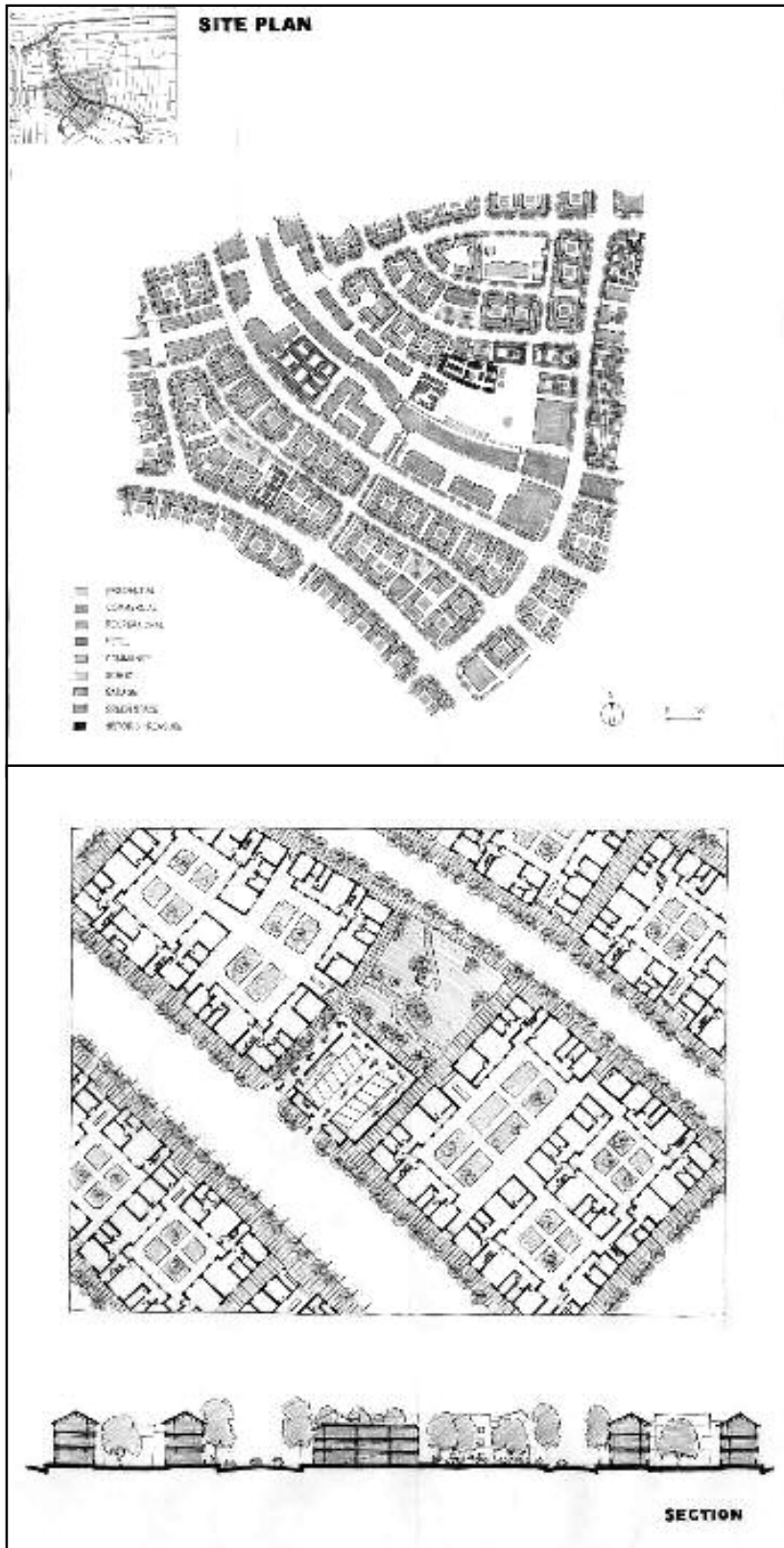


Fig. 5-19: Prototype neighborhood and Garage with green space.

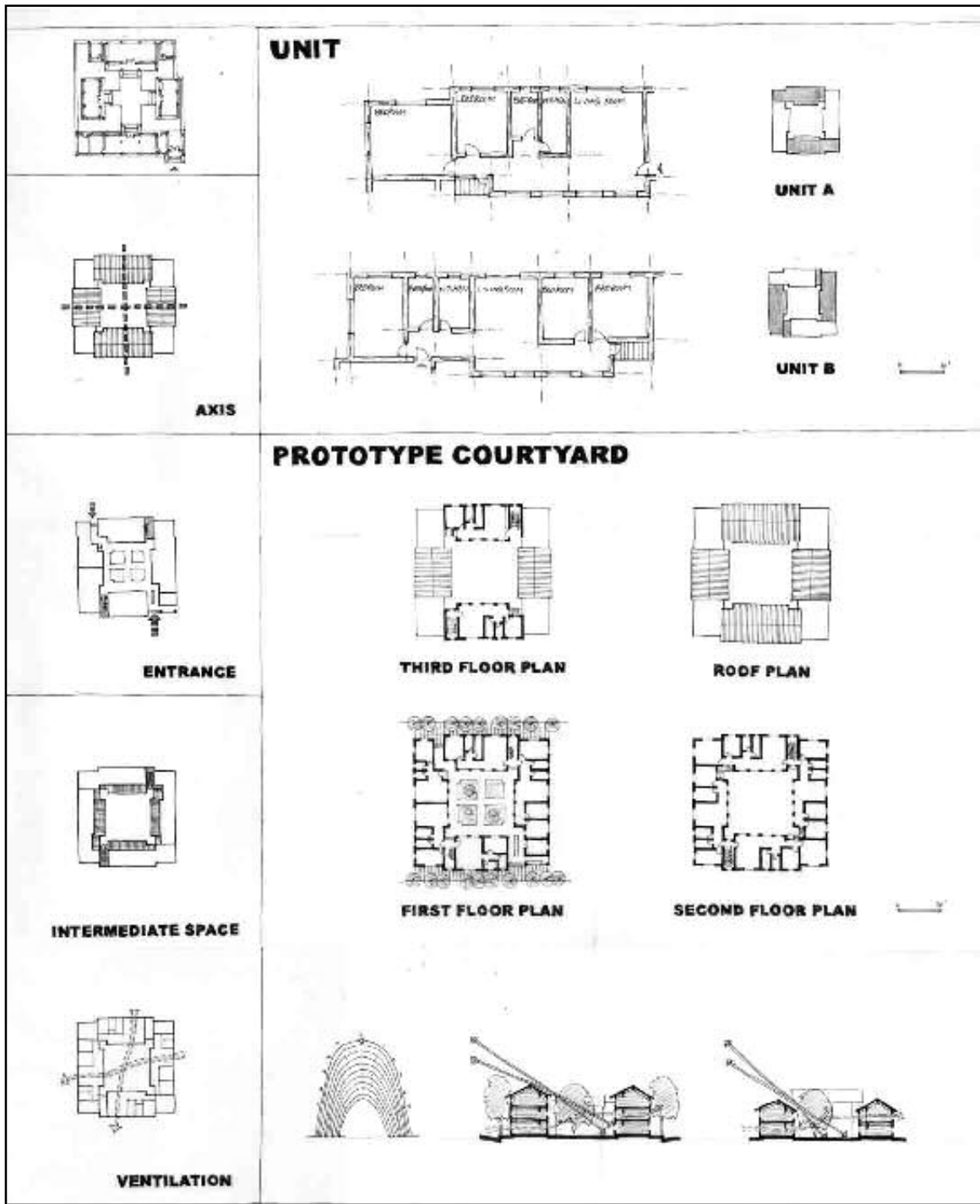


Fig. 5-20: New courtyard-type housing. Keeping some principles in the traditional type.

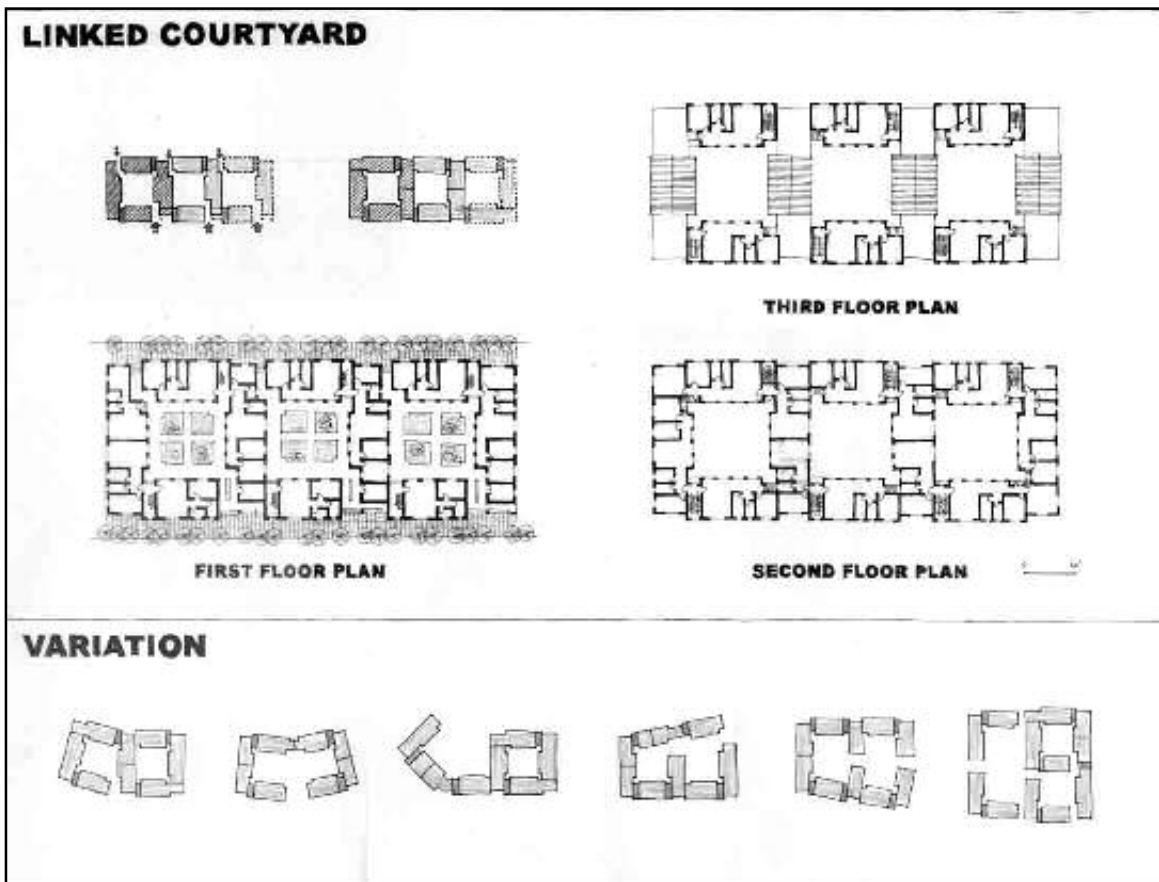


Fig. 5-21: Courtyard type variation.

PERSPECTIVES

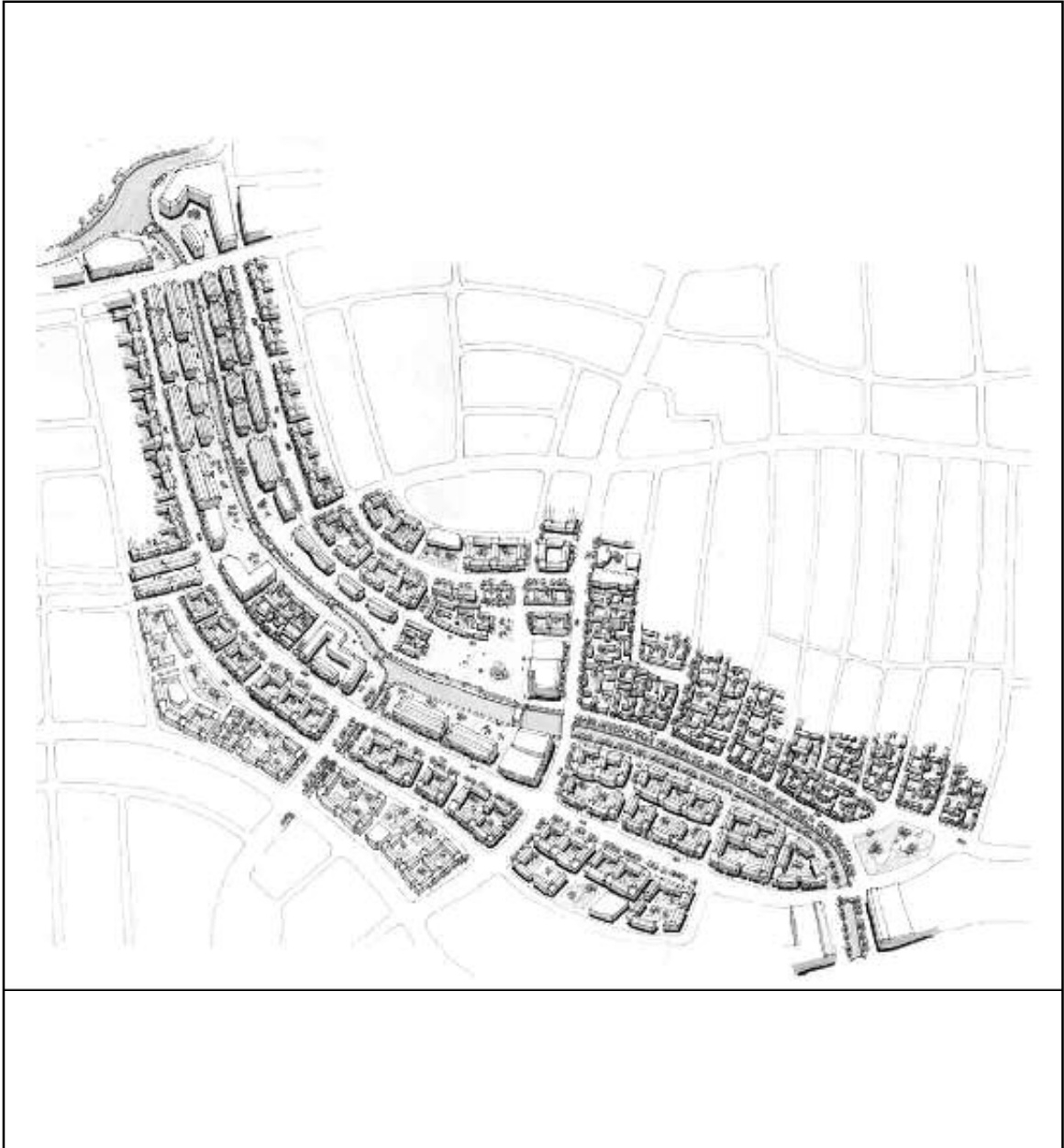


Fig. 5-22: Aerial view perspective.

Pedestrian commercial streets along the river connect to the commercial buildings around the Front Gate.

Three historic courtyards form one side of the plaza, two new courtyards help to make connection of the historic neighborhood to the open space. The museum serves as a symbolic building.

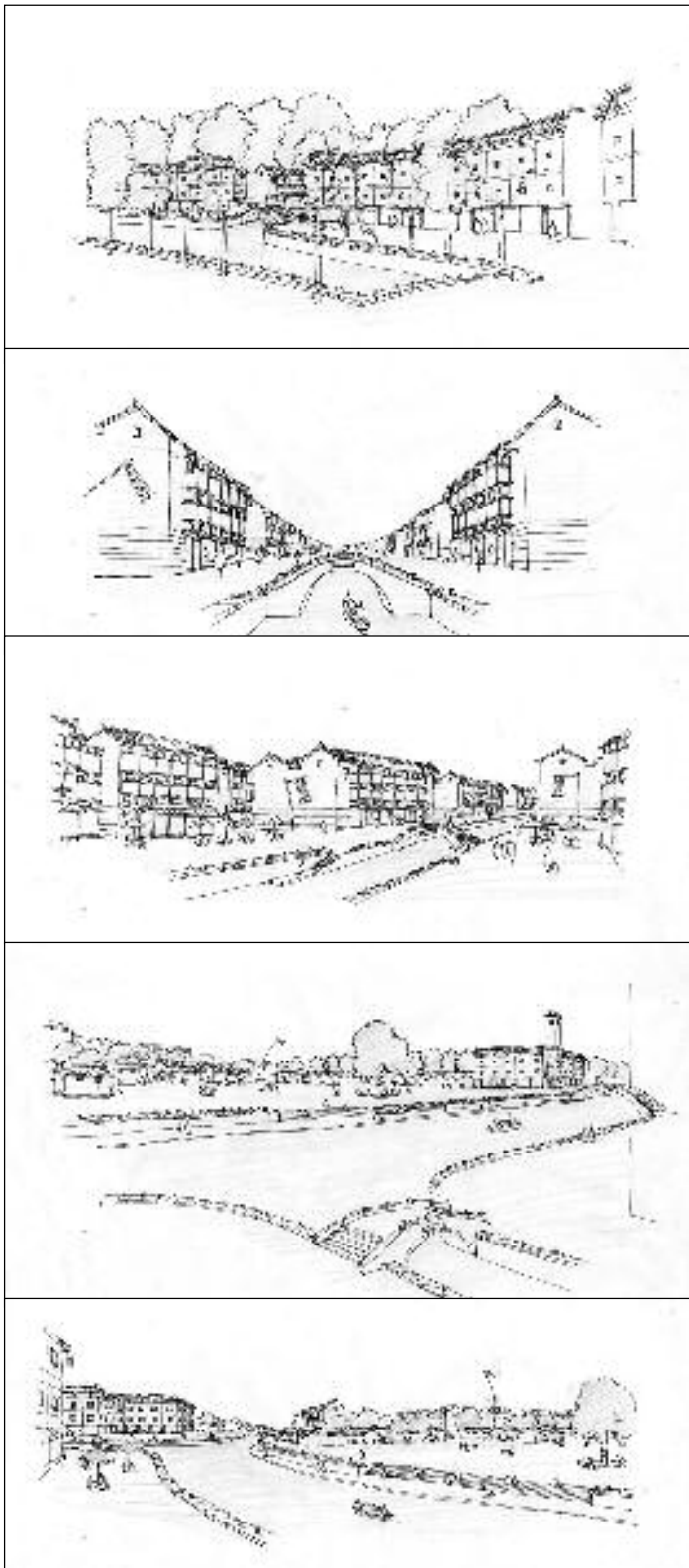


Fig. 5-23: Perspectives of river walk.

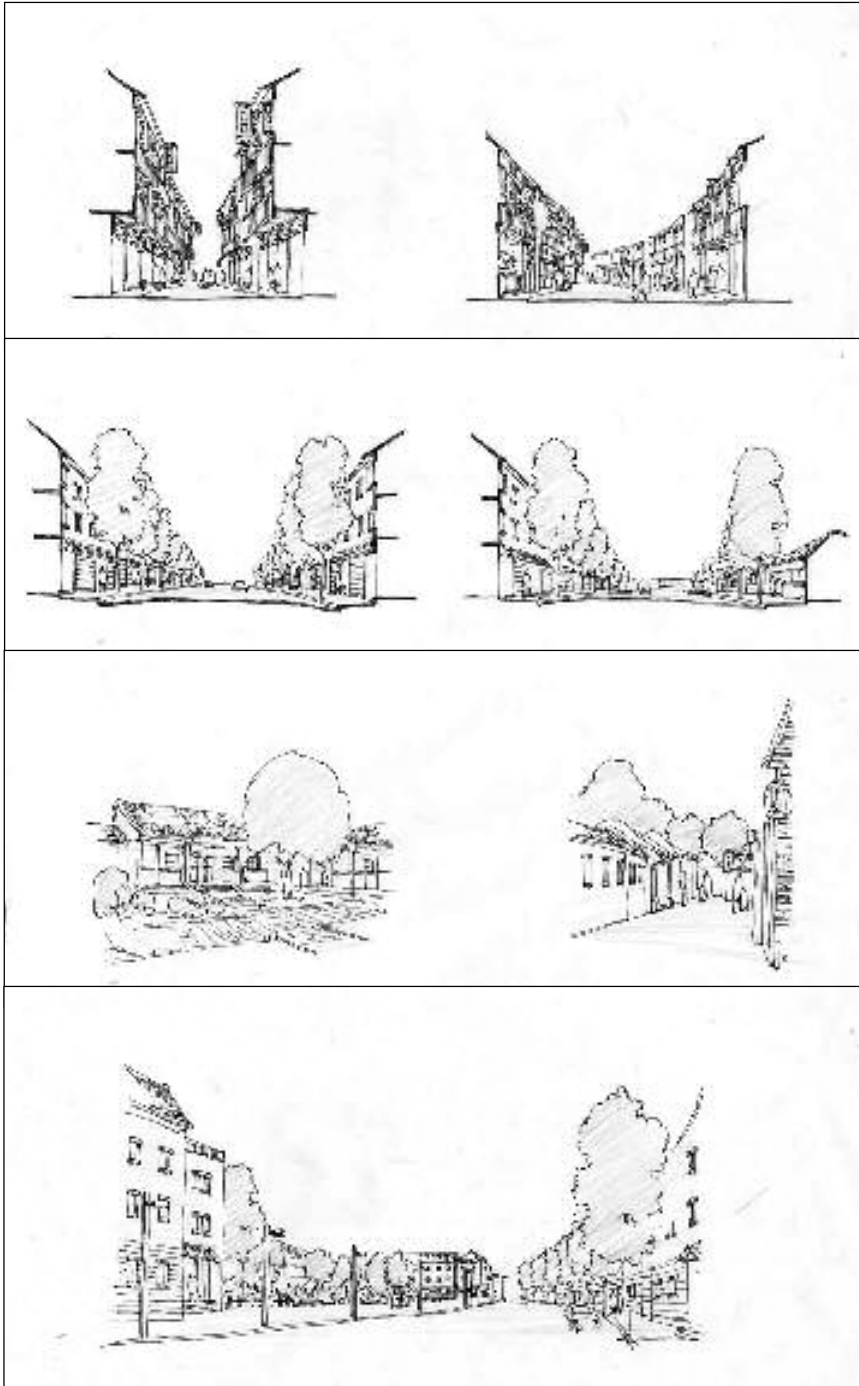


Fig. 5-24:
Perspectives in the
neighborhoods.

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