Preservation for all. Transformation for new.

Sustainable rehabilitation in the North of Dongsi, Beijing

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Project Information

Project title:
Preservation for all. Transformation for new. Sustainable rehabilitation in the North of Dongsi, Beijing

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Chapter 1. Introduction
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1.1 Introducing the problem field

Heritage gives people identity and belonging within a community that direct connect with previous generations and guide to where we were from (Ahmad, 2006; Earl & Saint, 2015), since it has a deep and thrilling resonance for people compared to some soulless forests of modern architectures (Fig. 1.1 and 1.2). Accordingly, it plays an important role in promoting urban physical and cultural diversity, as well as social cohesion in a changing context.

According to the Report of United Nations Educational, Scientific and Cultural Organization (UNESCO) in 2004, heritage is not only contains all environmental elements of urban fabric, but also relate to the intangible elements like social structure, historic narratives and economic modality.

This definition guides how to identify and evaluate historic urban heritage, and provide guideline for heritage conservation and utilization.

Urban public space provides people opportunities to enjoy social interaction and diverse public life all along. With city development, urban structure has to be renewed to meet recurring new demands of modernization, like the growth of population and transportation.

However, cities, especially historic areas, are losing their original spatial characteristics and social structure during urban renewal. Uncontrolled redevelopment in historic areas has resulted in negative issues such as public space decline, less social interaction and cultural aggression.

Therefore, heritage preservation and rehabilitation could be benefit to deal with the aforementioned problems.

In the context of Chinese city, after 1949, in order to recover from the liberation war as soon as possible, economic development and urban reconstruction was taken as the main goal in national policy. The rapid development resulted in the growing pressure
of "population densities, employment, traffic and environment" (Wang, 2011).

In the context of Beijing, Hutong is the traditional residential area consists of regularly arranged courtyards (Fig.1.3). All buildings with slope roofs reflect the traditional Chinese architectural principles.

According to historic pictures (Fig.1.4 and 1.5), trees and micro green space are the main landscape of original "Hutong-courtyard", and they provide large amount of public space in good quality which can promote social interaction. The public space system is including public space, semi-public space, semi-private space and private space.

Accordingly, Hutong is not only a heritage object, but also a narrative of how public space transition in changing context. Moreover, it also helps to understand how public space effecting human approach in context of Beijing.

Hutong contains huge tangible and intangible value, since it is one of the most representative heritages in Beijing. Since its preservation is benefit to both physical and social sustainability.

However, booming population and inappropriate urban renewal policy had changed the original physical and social structure, resulting in Hutong demolishing (Fig.1.6).

Existing Hutong preservation are more focus on heritage object. This report tries to explore the new approaches of Hutong rehabilitation, the people, public space system of Hutong and their relationship will be seen as heritage.

Therefore, this report will be focus on people and space instead of only object, and provide them sustainable development in Hutong context.
1.2 The birth of Old City and Hutong

The birth of Hutong closely links with history of Old City (Fig.1.7). In feudal age (Year 1122 B.C.-1919), is also the stage of so-called "old Beijing".

The history of Beijing is over three thousand years, and the earliest record of Beijing was in around 1122 B.C. as the capital city of Ji, called "Ji city" (Shenting, 2016). Beijing became the cultural and educational center in Liao Dynasty in year 938.

The first city planning was formulated in Yuan Dynasty, and it has great impact on existing urban fabric of Old City. Because the layout was preserved in the latest two dynasties of Ming and Qing, and formed the existing Old City (Shenting, 2016).

Hutong was originally planned for citizens in Yuan Dynasty. The grey sea of regularly arranged courtyards formed the identity of "Hutong-Courtyard" fabric, and it is also the origin of existing urban fabric in Old City.

Yet after reconstruction in the Ming and Qing Dynasties, the old city of Beijing was shaped to serve for the empires as the masterpiece of planning (Wang, 2011), and the urban fabric of "Hutong-Courtyard" around the Forbidden City was intact.

Western architecture was introduced since 1720 in Qing Dynasty and started to change some part of the street pattern in old city because of the different building scale.

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**Timeline of old Beijing development**

<table>
<thead>
<tr>
<th>Year</th>
<th>Event Description</th>
</tr>
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<tbody>
<tr>
<td>About 1122 B.C.</td>
<td>The earliest city appeared in Beijing as the capital of Ji.</td>
</tr>
<tr>
<td>Year 938</td>
<td>Beijing as the cultural and educational center in Liao Dynasty.</td>
</tr>
<tr>
<td>Year 1153</td>
<td>Beijing started as the capital city since Jin Dynasty.</td>
</tr>
<tr>
<td>Year 1264</td>
<td>Hutong appearance and forming urban fabric</td>
</tr>
<tr>
<td>Year 1720</td>
<td>Western architecture appearance</td>
</tr>
</tbody>
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*Figure 1.7: Timeline of old Beijing development before 1919. Draw by author. Source: A Comprehensive Discussion of Beijing City Planning and Construction by Jinggan Zhang, 1997; photo by www.vcg.com*
Old City Planning

In urban scale, the physical characteristics of the old city of Beijing is identified by a 7.8-kilometer Axis goes south to north through the middle of old city, and all royal buildings such as the Forbidden city, the Drum and Bell Tower (Zhonglou and Gulou) are placed along the axis (Fig. 1.8).

"Possibly the greatest single work of man on the face of the earth is Peking (the old spelling of Beijing). This Chinese city, designed as the domicile of the Emperor, was intended to mark the center of the universe. The city is deeply enmeshed in ritualistic formulae and religious concepts with do not concern us now. Nevertheless, it is so brilliant in design that it provides a rich storehouse of ideas for the city of today," wrote American architect Edmund N. Bacon in 1976 (Bacon & Norwood, 1976).

Liang Sicheng, "the father of modern Chinese architecture", admired it as "an unparalleled masterpiece of urban planning".

Except respect to rituality and religiosity, the guidelines forming the old urban fabric of Beijing also include the consideration of nature and people activities. The original principles and modeling of Chinese royal city like Beijing can be went back to the years of 1066-256 BC, in the classic works for Chinese capital city building named The Artificers’ Record in The Ritual of Zhou (Zhou Li. Kao Gong Ji)(Wang, 2011; Fig. 1.9). Accordingly, the old city of Beijing could be considered as the "fossil" of city planning and building in ancient China.

Due to the hierarchy in feudal dynasties, the Taihe Palace in the Forbidden City is the highest building in Old City, and the red and yellow color can only used by palatial buildings. Strict rules on the height and form of residential building used by normal citizens shape the spatial character of Old City. It is identified by imperial constructions with golden roofs and red walls were highlighted by contrast to large area of grey courtyards. The bricks built walls and tiles covered roofs are all colored by grey in Hutong area, and there is the living area for citizens (Wang, 2011; Fig. 1.10).
Figure 1.10: The distribution of Hutong in Old City of Beijing
Dongsi photo by author, other from www.tukuchina.cn;
Public space system in Hutong

Hutong is the typical residential community in Old City. The word of “Hutong” comes from Mongolian in Yuan Dynasty (1271-1368), originally be translated as "path to water well", but now means the "narrow alley" in width of 4-8 meters in old city of Beijing.

The city planning shapes the Hutong pattern, and the parallel Hutong decide the form of courtyard. Hutong is deemed to residential agglomeration of courtyard along an axis. A series of rectilinear Hutong go east-to-west intertwining with streets and roads go south-to-north shape the original urban pattern like chessboard (Mao, 2005; Fig.1.11).

Hutong is not only a gift of theory of urban planning from previous generations, but also a treasure of traditional civic culture.

Streets and roads were used to transport and trade in the past, and Hutong used to be pavement, or sometimes for street vendor. Hutong and street work together to provide a system of public space, a series of public and semi-public space in the ordered arrangement of courtyards, provides much space public life, helps frequent face-to-face social interaction in traditional Hutong community.

As the representative identity of Beijing, Hutong contains huge tangible and intangible value, and its preservation is benefit to physical and social structure sustainable development.

Figure 1.11: A typical fabric of Hutong. Draw by author.
Atrium system inside of the courtyard

According to the book *A History of Chinese Architecture*, courtyard (Siheyuan) is the traditional housing typology of Hutong in Old City, and courtyard consist of front court, central court and back court is the most typical courtyard (Fig. 1.12 and 1.13).

Courtyard is extremely close and private, because it was design for single family in feudal dynasties. Buildings take the outline of the courtyard, and the interior is closed to outside. The internal accessibility is through a series of atriums, from entry court, on its southeast corner, to main central court and backcourt to end. These atriums become the private "public space" inside of the courtyard.

Atrium system provides different typology of "public space" meet different functions, for example, the open "public space" serves the room linked together and the semi-open public space is most for transport, so it quite appropriates for living and interaction between family members.

The open central atrium becomes the main feature within the courtyard, around which rooms are placed symmetrically, and a semi-open square veranda connects those rooms. The main central court plays important role in landscaping, natural lighting, ventilation, transport and outdoor activity for a courtyard.

Nowadays, those original private atriums have become existing semi-public space shared by several families who living together in one courtyard. Accordingly, courtyard provides space for direct social interaction between neighbors, and Hutong become very social space.

Figure 1.12: Typical courtyard layout. Draw by author.
Figure 1.13: The interior of typical courtyard. Draw by author.

A. Entry court
B. Front court
C. Festooned gate
D. Principal room (main room) and central court
E. Veranda
F. Back court
1.3 Motivation

To understanding the relationship between people and traditional public space, heritage rehabilitation as well as urban renewal in the context of Chinese city, Hutong is chosen as my study case in the thesis project.

On the one hand, both traditional public space and human approach in Hutong community are valuable heritage. Hutong is the spatial reference of social space that can promote urban vitality, social interaction and people public life (Fig.1.14).

On the other hand, understanding the previous experiences of Hutong renewal will guide the future Hutong rehabilitation even contributes to community development in a wider context in China. The complex incidents of population explosion, illegal constructions, courtyards crumbling and community deprived are really common in Hutong area (Fig.1.15), it is a exemplary case for deprived community development in the context of Beijing.

Personally, I am one of the original residents and forced to give up the Hutong life because the bad living conditions. My family had to pack in a crowded room less than 20 square meters and use the public toilets and bathroom outside our courtyards at all times. Although the inconvenient living annoyed me sometimes, the intimate relationship between neighborhoods and the "amusement park" in everywhere (a series of public space in courtyards) brought me a lot of fun. The experience of growing up in Hutong influences me a lot, and attracts me to do a project to contribute on Hutong development.
Chapter 2. Problem analysis
Chapter 2. Problem analysis

The context of Beijing was considered appropriate for the research of heritage preservation and urban renewal. For one, Beijing is a famous historic city with valuable traditional Hutong structure. For another, those Hutong is facing the problems of decline in social and physical aspects in rapid urban development, and wait for urban renewal.

2.1 Historic review of new Beijing

After the collapse of feudal dynasties in 1911, Beijing went into the expansion stage from 1949 to 2000. There were two phases of rapid urban expansion in Beijing, during the years of 1949 to 1957 and after year of 1979 (Fig.2.1; Dong, 1996).

Due to lack of enough money to reconstruction after the Liberation war ended in 1949, the municipal government forced to use the Old City as the new city center of Beijing. Slow city development in the initial stage have limited influence on urban expansion, construction have centered in the Old City and its surrounding area.

Chinese economic reform in 1978 pushed Beijing to a period of rapid development. As the "central cluster", rapid urban development attracted huge amount of talents. Hutong and courtyards in Old City were difficult to suit the pressure of modernization, since they were redeveloped to make room for large-scale service facilities.

In the last decade, people decentralization is one of the main goals of current planning for keeping a reasonable population density and reducing the pressure of central cluster, several satellite cities have been built in outskirt area of Beijing resulting in urban growth in the shape of "fingers" after 1993.

With the development of satellite cities, city development had moved to outskirt area recently, especially in Tongzhou new city, because it will hold the capital function in the future.

Figure 2.1: Timeline of urban expansion after 1950. Draw by author.
Source: Study of the Planning for Urban and Rural development of Greater Beijing Encompassing Beijing, Tianjin and North Hebei, 2001
2.2 Modernization of Beijing

Population explosion is one of main feature and problem of the modernization in Beijing.

Beijing is the capital city of China, the level of urbanization in Beijing had reached to 86.2% in 2014, and it is much higher than the national rate, 54.8% (data from National Bureau of Statistics of China). Accordingly, the rapid development resulted in people flooding into cities (Table 2.1 and 2.2).

Because of the unequal distribution of public service resource like employment, education and medical care in different clusters in Beijing (Zhao, 2011), especially in the central cluster, almost the best education and medical care and the capital administration are concentrate on Old City and its surrounding area, not only local residents, but also visitors and immigrants are prefer to stay here.

The average living density is 21000 people per square kilometer in the old city of Beijing. Dwelling narrowness, public space reducing, traffic jam and heavy public transport have become the most representative "urban disease" (Fig.2.2 and 2.3).

![Figure 2.2: Dwelling narrowness in central area of Beijing. Photo from http://www.sohu.com/a/26502760_114988](http://www.sohu.com/a/26502760_114988)

![Figure 2.3: Rush hours in Metro in central area of Beijing. Photo from http://bbs.yaolan.com/forum.php?mod=viewthread&tid=52047028](http://bbs.yaolan.com/forum.php?mod=viewthread&tid=52047028)
2.3 Historic review of Old City renewal

There is no denying on the value of the Old City of Beijing, but contradictions and arguments between presentation and development for Old City have never desisted since the foundation of the People’s Republic of China in 1949.

On the one hand, Old City is suitable or not for present situation. On the other hand, the improvement of living standards has shifted from private housing matters to regional development, from physics to spiritual values (Rowe, 2011).

The process can be divided into two stages, one is the irrational redevelopment before 2000 (Fig.2.4), and the other is careful metabolic renewal after 2000.

From 1949 to 1966, urban construction was concentrated on offices of national government in order to ensure Beijing could operate as capital city. It was the early stage of urban construction, and the old city renewal was in discussion.

Communism was the theme of new China, real estate market was abolished and government gave extreme low price for housing rent in well-established Old City until 1978, it caused pitiful fund in physical maintenance of courtyards (Martínez, 2016).

With the development of modernization, Beijing had faced the growing pressure of population booming, unemployment, traffic congestion and environmental deterioration (Wang, 2011), together with the earthquake in 1976, resulting in desperate circumstances in Old City, involving severe housing shortage and original urban structure destruction as well as living condition depravation by deluge of low-quality disaster relief buildings in early of 1980s in Hutong area (J. Zhang, 2002).

Courtyards had become compound occupied by many households and low quality construction, even public space disappearing in some courtyards (Wu, 1989).

Moreover, due to lack of urban management and planning during the time of the Great Cultural Revolution, infrastructure construction was stagnant, and urban operation had sunk into paralysis in that time (Xinkui, 2012).

In order to deal with the housing problem, the plan of “old and dilapidated housing redevelopment (ODHR)” emerged in the early of 1980s, and the extensive implementation of the plan was in late of 1980s to the early of 2000s. It is focus on dilapidated housing and housing shortage in Old City and surrounding area (Martínez, 2016; Rowe, 2011; Wu, 1989; Xinkui, 2012; J. Zhang, 2002), characterized by a large-scale real estate development, resulting in housing prices surging and original urban structure destruction (Fang, 2000; Fang & Zhang, 2003; Zhu, 2003).

Old urban structure had replaced by high-rise buildings such as department stores and shopping malls to achieve the highlighted profits goal of private developers, with over-scale urban infrastructure constructing, had changed Old City enormously in the end of 1990s (Fig.2.5). Over 58% of Hutong have been destroyed during 1960s to 2006 (Table 2.3; Mao, 2005; Ni, 2009).

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Figure 2.5: The disappearance of Hutong during the process of urban renewal in Old City of Beijing

Draw by author
The second stage of Old City renewal is dominant by careful metabolic renewal (Fig.2.6).

The success of application in 2008 Olympic Game in the beginning of new century was the “turning point” for revision of the urban renewal policy of Old City. Be guided by the spirit of Humanistic Olympics and thanks to the appeal of urban scholars, the latest plan and policies for Old City renewal named Conservation planning of 25 historic areas in Beijing Old City came out in 2002.

This transition has appeared from Wu’s helpful exploration on "metabolic change" to balancing Old City conservation and living condition improvement in Ju'er Hutong rehabilitation project in early 1990s (Li & Xu, 2008; Wu, 1989, 1991, 2011).

Wu first proposed the concept of "organic renewal" is the core idea of conservation planning, which is emphasizing "metabolic change rather than clearance and rebuilding" (Wu, 2011; see Chapter 4, Page 42). It has made dramatic advances in Old City renewal in a more careful way, and Old City conservation as heritage is here to be approved widely.

It marks the transition of urban renewal in Old City from large-scale real estate development to small-scale rehabilitation within holistic conservation in Hutong area.

Meanwhile, some relevant policies involving people decentralization and creative economy development also brings Beijing development into a rational era.

It led to rapid development of tourism and commercialism in Hutong such as Nanluoguxiang, Guozijian and Shishahai, new threats like massive tourism and commercial gentrification has become the new challenges for Old City conservation and development in existing context.

According to the problem analysis of Old City renewal, the aim of this graduation project is to understand the current approaches in Hutong regeneration and rehabilitation critically, and finally to preserve and improve a to be renewed Hutong community.
2.4 The case: The North of Dongsi

The North of Dongsi is one of the most representative residential area with well-preserved “Hutong-courtyard” structure in Old City. Meanwhile, it is a to be renewed Hutong community with aforementioned problems accompanied by Old City renewal (Fig.2.7).

The research area is the North of Dongsi Historic area, which located in the east of the Forbidden City in the Old City of Beijing (Fig.2.8). Unfortunately, because to deal with transport problem, the old city wall of Ming and Qing Dynasties was demolished and left some Gates such as Sun-Facing Gate (Zhengyang Men) and Desheng Gate since 1950s. Today, only the second Ring Road of Beijing can define the old city of Beijing.

In addition, this area is part of the designated area in the Conservation planning of 25 historic areas in Beijing Old City, so it is typical example to experiment and promote the "organic renewal".

Figure 2.7: The North of Dongsi Historic area. Photo by Author

Figure 2.8: The research area: the North of Dongsi Historic area. Draw by author
2.4.1 Historic review of Dongsi

The history of Dongsi closely relates to the development of Beijing, and it can be divided into three stages, initial stage, transformation stage and current stage (Fig.2.11). The initial North of Dongsi can be traced back to eight hundred years ago in Yuan Dynasty. It was a populous and alive community with rich social resources over the last hundreds years, due to the prosperous trade and business along the main street (Fig.2.9). Meanwhile, large amount of royal buildings and old homes of celebrities in political, military and cultural circles were left in Dongsi community (Fig.2.10), they are the monuments of traditional Chinese architecture and urban planning. Accordingly, Dongsi contains huge historic value in spatial, social as well as mental aspects.

Transformation took place in the initial stage and rapid development stage of Beijing after establishment of new China. Although the main "Hutong-courtyard" structure was preserved, like any other Hutong are, there was still socio-spatial and program transformation in the Hutong and interior of most courtyards, such as the emerging of high-rise buildings, business increasing, car parking along Hutong and courtyard crumbling due to additional constructions. Dongsi is losing its historic style and features as well as original vitality. Existing Dongsi is a blend of the original street pattern and socio-spatial characteristics as well as program went through transformation.

Successful application of 2008 Olympic Game brought Dongsi into the "turning point" of metabolic renewal, and Dongsi has been waiting to embrace its new stage of urban renewal to save and promote its value in spatial, social as well as mental aspects.

Figure 2.9: Prosperous trade along the main street in Qing Dynasty.
Figure 2.10: Fu Wangfu, the old house of princes Yin in Qing Dynasty.
Hutong appearance
Old City forming
Year 1264
Feudal dynasty
Initial stage of Dongsi neighborhood

Establishment of "New China"
Year 1919
War time

Growing pressure of "population booming, transportation, employment", Hutong destroy
Year 1949
Rapid development of "New China"

Small scale metabolic rehabilitation
Year 1980s

Hutong still on the decline
Year 2000

Current situation of Dongsi neighborhood
Year 2000

Future trend
Year 2017

Figure 2.11: Historic review of the North of Dongsi. Draw by author.
2.4.2 Public life losing in transformation

According to the comparison between historic photo of Dongsi and existing site observation, it shows that the disappearing of traditional public life in street, Hutong and inside of courtyard (Fig.2.12).

Compare with past street, community center and public facilities in Hutong community, new transportation and program diversify people activities.

However, people activities in public space of Hutong and semi-public space inside of courtyard have been disappearing during the spatial transformation.

Specific people activities in existing context are showing subsequently.
Street life mostly happens on sidewalks, but due to lack of stop space, it mostly used for movement (Fig.2.13). Shops along sidewalk are the attractions, and bring vitality for the street.

Hutong was used to play the most important role in public social life and slow traffic (pedestrians and bikes movement), and there is a large demand of public space, but now, cars have become the priority in Hutong space (Fig.2.14). The changes of transportation in Hutong, it caused by the growing population and emerging programs, like offices and businesses.

Because of the conflict between people and cars, the amount and quality of public space is declining, accordingly, the traditional street life in the North of Dongsì is losing (Fig.2.15 and 2.16).
Public facilities like community center and some cultural institution provides public place for reading and communication. They have become new social space for residents, but there is spatial and time limitation, so the frequency of use is not high (Fig.2.17 and 2.18).

The entrance of courtyard is the connection between public and semi-public atrium space. According to the site observation, most entrance is used to be bike parking space, and bike is one of the main traffic in Hutong (Fig.2.19).

According to the aforementioned spatial structure of courtyard, there is gate connecting different atriums. But some residents like stacking old stuff, which occupy the gate space inside of courtyard (Fig.2.20).

Figure 2.17: Reading center in Hutong. Figure 2.18: Cultural institution.

Figure 2.19: Bike parking in gate sapce Figure 2.20: Old stuff in festooned sapce.
Similar to Hutong, existing atriums of the courtyard are disappearing, and they have become narrow alleys (Fig.2.21), resulting in less social interaction in the courtyard. Original central atrium is the main green space in the courtyard, but it has taken up by illegal additions (Fig.2.22).

Meanwhile, existing limited atriums still play the roles of utility, and some traditional activities are inherited, such as washing and hanging clothes as well as plantation (Fig.2.23 and 2.24).
2.5 Problem statement

The main problem of this thesis project is to deal with the issue of public space decline and Hutong conservation in the North of Dongsi historic area in Beijing (Fig 2.25).

"Hutong-courtyard" is the traditional residents area with series of public space, and they provides space for diverse social interaction and public life.

According to previous analysis, like all other Hutong areas, aforementioned incidents of public space reducing, illegal constructions, courtyards crumbling and population explosion are ubiquitous in the North of Dongsi (Fig.2.26-2.29). The relationship between people and environment as well as people and people is getting worse, because the deterioration of living condition and public space.

Moreover, uncontrolled environmental deterioration may result in original residents losing, and it may result in the losing of the good social interaction and civic culture.

According to the Conservation planning of 25 historic areas in Beijing Old City (Commission, 2002) and Urban Master Plan of Beijing (2016-2035), any demolition of courtyard is banned, and Hutong as the main public space should be improved toward traditional, green, comfortable and quiet space.

Therefore, the aim of my project is sustainable urban renewal both in environmental and social development in changing context. The North of Dongsi needs sustainable strategies and spatial interventions to help to restore the relationship between people and public space, as well as find back the original social interaction. The rehabilitation also needs to continue the historic value as well as consider the demands of different generations of users.

Figure 2.25: Problems statement structure
2.6 Research question

The main research question:
Which strategies and spatial interventions could provide the North of Dongsi for a sustainable rehabilitation and regeneration?

To answer the main research question, several sub research questions need to deal with:

1. What experiences can be learned from previous Hutong renewal projects and conservation policies carried on by municipal government?
2. What spatial, cultural and social values does "Hutong-courtyard" bring to the North of Dongsi?
3. What are the potentials for future development in the North of Dongsi?
4. What strategies and spatial interventions could promote in the North of Dongsi?
2.7 Relevance

At this section, it will be explained why the present project is important for research. The relevance of the project will show the societal and scientific point of view.

2.7.1 Societal relevance

Hutong regeneration and preservation has always been an important issue in Beijing city development, not only because Hutong contains huge historic, social and cultural value, but also it is a reference to study many complex problems related to immigrants, population explosion, gentrification and commercialization, which is common in other rapid developing cities.

For social cohesion, Beijing is the cultural and political center of China. Hutong takes the central location and its social space attracts growing new residents and visitors from other regions. This project will study how public space promote social interaction in Hutong, and social interaction is important for urban vitality and social cohesion, especially for cities with large amount of immigrants like Beijing.

For social and cultural sustainability, according to the result of previous Hutong renewal, some reconstructed projects have changed the original social structure, and result in gentrification and over-commercialization. It is against the sustainable development in urban renewal. In the present project, social structure and people approach are the part of heritage, since it will not only focus on the spatial improvement, but also preserve original social structure and civic culture. Consequently, the research could provide reference for social sustainable development during urban renewal in wider context even in other countries.

As a result, such a research on the topic was considered necessary for exploring sustainable development in urban renewal and heritage preservation.

2.7.2 Scientific relevance

The project will contribute to the methodology and integration of values assessment of heritage, and practice sustainable renewal in context of Beijing, even for wider context in China or other countries in different cultural background (Fig.2.30).

In the scientific context of Hutong conservation in Beijing, Hutong is more treated as aggregate of traditional courtyard buildings. In this project, Hutong is not only object, it is also the public space system, and both space and housing need to be deal with.

In wider scientific context of old city renewal in China and other countries, general approach in urban renewal is more concentrate on preserving heritage objects, restore them as traditional form and improving building environment itself, but lack of attention on how people use the space.

The approach of this project is an aggregation of historic, social and spatial analysis as well as restoring the relationship between people and environment. This project tries to understand how public space and heritage objects change overtime. Meanwhile, people approach influenced by space and how it transit in different time are also taken into consideration. Accordingly, it makes contribution on definitions of Hutong and heritage, and helps to provide sustainable social and spatial development for urban renewal in wider context.
Figure 2.30: The enhancement of existing approach of Hutong and heritage conservation. Draw by author.
Chapter 3. Methodology for research
Chapter 3. Methodology for research

This section explains the methods which have been applied for the research of the thesis project and their translation into the scheme of methodology.

3.1 Methodology

In order to answer the research questions, the methodology of the research will be integrated by the literature review, historic analysis, the case study, the mapping and GIS analysis, site observation and interview (Fig.3.1). In addition, according the conservation planning made by municipal government, the basic unit of this research is courtyard.

Literature review

The literature review will related to all questions. Firstly, books, academic thesis, governmental documents regarding the urban renewal progress of Old City in Beijing and existing policies “Conservation planning of 25 historic areas in Beijing Old City” as well as general theories of heritage and sustainable development will be reviewed, together with the findings of my theory paper, these conclusions will help me to inform my research framework and the approaches for further study and design (sub question 1). Secondly, books, historical maps, governmental documents, websites even video records regarding the design, history and stories of Hutong and courtyard will provide information from physical, social and cultural aspects, they can be visualized to support the quality analysis of my site (sub question 2). After that, governmental documents, statistical websites and city map can provide data for mapping and visualizing site analysis in spatial, social, and program aspects in order to find the existing problems (sub question 3). To solve the problems and preserve the quality of my site, strategies and spatial intervention will be proposed, and they should working under the existing urban renewal policies (sub questions 4).

Historic analysis

Historic analysis is also related to all questions. On the one hand, historic overview of the development of urban renewal in Beijing and western cities which influences today’s urban renewal policies in Old City of Beijing can help me to understand the existing “Conservation planning of 25 historic areas in Beijing Old City” and its core idea of “organic renewal” which will guide my design process (sub question 1). On the other hand, historic analysis is an essential method to understand the changes of Hutong and courtyard in physical, social and cultural aspects, which help me to study if and how Hutong and courtyard can suit for modern life less or more (sub question 2.3 and 4).

Case study

The case study of previous “Juer Hutong rehabilitation project” will provides me an example of the practice of Hutong rehabilitation base on the concept of “organic renewal”, it will help me to understand the current policy and contribute to my site interventions both in physical, cultural and social development (sub question 1 and 4). In addition, the case studies of Hutong regeneration projects focus on cultural-resource exploration, named Nanluogu Xiang and Guozijian will warn me the problems of creative economy and tourism development (sub question 1), but they still could inspire the spatial planning and what programme could be introduced in the North of Dongsi (sub question 4).

Mapping and GIS

Mapping provides visualized method that needs to cooperate with the data and information collecting from other methods (like literature review, interviews and etc.). On the one hand, maps can be overlapped with variety elements, which will help me to find the existing qualities and problems need to be solved. According to those findings, potential points in spatial, economic, social and mental aspects where the intervention and strategies could be worked on will be informed (sub question 2 and 3). For qualities study, maps are: the distribution of heritage objects and valuable courtyards, location of people activities and different types of public space, Hutong pattern and etc. In order to find potential space in Dongsi, maps are concentrate on: land-use, distribution of public service facilities, owner property, business types and location and etc. On the other hand, mapping is also a tool for expressing my conclusion of site analysis and ideas of further design (sub question 3 and 4). The conclusions of site analysis are several assessments of interventions typology maps involving living and business courtyards. Further spatial intervention and strategies will be matching with it.

GIS is a sub method of mapping, it will help to visualize the large amount of data in a time-saving way, like the population density and building height as well as building quality.

Observation and interviews

The observation and interviews are essential to find the qualities and problems in physical, economic and mental aspects, and to do assessment for courtyards (sub question 2 and 3). The method will be divided into physical and mental aspects.

For physical aspect, observing the situation of different courtyards, public space and businesses is a direct way to collection information for quality finding and typology assessment (sub question 2 and 3).

For mental aspect, interviewing on the perspective of residents and other stakeholders and observing their behaviors in Hutong will help to answer what kinds of intervention can promote the living environment (sub question 4). The target group will focus on residents who is living in the courtyards with bad living condition and shop holders whose shop need redevelopment, because they area closely relate to the main potential area for future renewal (sub question 2 and 3). In addition, visitors and new immigrants will be asked, because they represent the potential future generations and help to the lasting Hutong development (sub question 4). In order to increase the efficiency,
interviews will combine questionnaire and single group interview as well as group interview. Questions for interviewee are about their initiative act for housing improvement, dissatisfaction on environments, mental map of daily activities and so on (sub question 2, 3 and 4).
3.2 Research framework

The research framework explains the research contents involved in this project and the their relationships with the research questions (Fig.3.2).

This report consists of three parts. It will start from the theoretical research, and it will help to build the theoretical background relate to heritage, Hutong-courtyard, Hutong rehabilitation and public space.

The second part is the main component. It is the analysis of the values and limitations of "Hutong-courtyard". Both of them will consider the spatial and social aspects.

The third part will show some spatial strategies and interventions in specific sites, and try to provide design principles for future development.

Figure 3.2: The research framework of thesis project
Chapter 4. Theoretical framework
Chapter 4. Theoretical framework

The chapter includes all the theoretical notions and issues which are considered relevant with the topic and construct the framework on which the research will be based on. The framework is concluded as Figure 4.1 in page 48.

4.1 Heritage

The scope and definition of heritage in general context

In 1907, the notion of heritage was first defined in international law. Afterwards, international legal acts were constituted for heritage from 1950s, and it relate to organizations, namely the United Nations Educational, Scientific and Cultural Organization (UNESCO) and the International Council on Monuments and Sites (ICOMOS) (Ahmad, 2006; Blake, 2000).

With the development of modern societies, heritage contains more meaning in recent years. Although for its scope in terminology, there is no exact answer, heritage generally includes both tangible and intangible heritage as well as environments (Ahmad, 2006; Janssen, 2014).

According to Operational Guidelines For The Implementation Of The World Heritage Convention in 2005(UNESCO, 2005), urban heritage is not only contains all physical factors of the urban structure, but also includes the intangible elements like social characteristics, cultural memories and economic activities.

The notion of heritage has transformed and improving by changing context and appearing national identities, accordingly, heritage is not a product from past, but it is “a process” and “an ethical enterprise” (Harvey, 2001).

Consequently, heritage should to be redefined in specific context, and also combine with multiple temporal and spatial dimensions. Recently, heritage could be considered as physical heritage, cultural heritage, social characteristics and natural elements, such as architecture, urban and natural landscape, artwork, custom, lifestyle and so on. Meanwhile, existing physical and social structure of city will become heritage for future generation.

The threats and challenges of heritage conservation in general context

Heritage conservation is facing huge threats range from natural causes to issues related to development, including the urban sprawl, pollution, mass tourism, natural decay of heritage and unreasonable interventions (Palumbo, 2002).

Meanwhile, heritage conservation act only focusing physical manifestation will increase the danger that the conflict between governmental policy and diverse expectation in social, cultural and economic development (Steinberg, 1996).

Therefore, the complex threats and challenges of heritage conservation come from multiple fields, like technical, physical, economic and social aspects, since the heritage conservation should not only take care heritage objects preservation, but also be a part of city development.

Heritage in the context of Beijing

In the context of Beijing, essential palatial buildings that were used by imperial class should be preserved has been a common view since the establishment of new China, because they represent traditional Chinese royal culture.

In the Proposal on the Location of the Central Administrative Government in Beijing made by Liang and Chen in 1950s, Old City was suggested to be intact left and new central cluster could be built separately in the west of Old City but it was only stopped in theory, because the limitation of governmental fund in that time. In this proposal, heritage for Beijing has been extended from single heritage object to whole Old City contains historic business and residential area. Accordingly, they considered the cultural and social continuity in heritage conservation that is the urban fabric in Old City would keep the traditional aesthetic and convention of Chinese urban planning. Hutong, as the representative residential area contains civic culture, was suggested to be reserved.

To be conclusion, the notion heritage will be redefined and explained in my specific site, it not only means different scale of spatial elements like Hutong and courtyard, but also relate to socio-spatial characteristics, business type, people perspectives and thinking from previous generations. In addition, heritage conservation is not intact preservation, but make heritage to suit and benefit for existing and future development.

4.2 Urban renewal in western cities

Metabolism is inevitable for life continuity, whether a person, or a building, and even a city have to adapt to the changing requirements of development. For cities, this dynamic process did not cause obvious problems and controversy for historic urban area in the initial stage of city development, because of the little urban sprawl and the low level of social productive forces.

However, cities presented a remarkable expansion and development after the industrial revolution in the European context. During that time, people had no time to pay attention on conservation of historic remains. For example, to deal with the issue of public health, Le Corbusier considered 3th and 4th Zone of Paris as open space in his Plan Voisin for Paris (Wu, 1983).

During 1950s to 1960s, there were ambitious urban renewal activities in USA and European cities, they were focus on slum clearance and city center reconstruction as well as housing shortage solving, since original urban fabric was replaced by the high-rise “International Style” architecture and the great deal of post-war neighborhoods. It had resulting in growing criticism and dissatisfaction in academia, and many researchers advocated small-scale and flexible urban renewal. J. Jacobs criticized that it is a “wasteful way” and damages urban diversity. Meanwhile, there is no contribution for “unsluming” and just move slums
to other place. In addition, large-scale urban renewal provides much benefit for housing market speculators, and it had disturbed the market order. Accordingly, she proposed the concept of "Vital Little Plan" (Jacobs, 1961).

By the end of 1980s, a market-oriented urban renewal approach relate to sustainable development had played key role in European City, and concept of sustainable development had widely accepted and implemented after 1992 Earth Summit in Rio de Janeiro. Urban renewal transited to as a part of urban regeneration, and regeneration is a more sustainable and comprehensive action including social, economic, physical and environmental development, also considering the connection between different generations and the future demands. Meanwhile, the public participation in bottom-up planning meets the demands of different stakeholders, it contributes to social development in community building and renewal (Habitat, 2006; Roberts, 2000; Stouten, 2010; WCED, 1987).

Accordingly, urban renewal, also call urban regeneration in wider context, has becoming a key issue for urban planners. Roberts (2000: P17) defines regeneration as:

"Comprehensive and integrated vision and action which leads to the resolution of urban problems and which seeks to bring about a lasting improvement in the economic, physical, social and environmental condition of an area that has been subject to change".

4.3 Sustainable development

Urban regeneration should always work with in a sustainable framework, because one of the key points of regeneration is "lasting improvement".

According to Ravetz (2000: P274) and Stouten (2010: P28), strategies in urban regeneration within sustainable framework can be seen as combing physical, economic and social restructuring, re-engineering and the city-region:

- Physical restricting, continuous and city wide, to achieve strategic environmental targets;
- Diversification of employment and economy to counter risks generated by globalization;
- Social empowerment through community action and the third sector economy;
- Urban and environmental planning for the city-region.

According to the experience in Dutch context, the problems of polarization and social fragmentation in urban renewal is easier to happen in big city, because social housing lead to the concentration of people on social security benefit and low income as well as different ethic groups (Stouten, 2010). Social housing and welfare can help the social development in big city, but dealing with the distribution and allocation of social housing is also a problem related to sustainable urban regeneration.

To be conclusion, urban regeneration within a sustainable framework is "A highly complex task designed to achieve long-lasting positive effects and involving the integration of different aspects (economic, social and environmental), different participation (users, owners, policy markers and building industry), different levels of scale (neighborhood, city, region) and different disciplines (social, spatial, and technical)" (Reborts, 2000; Stouten, 2010).

Table 4.1: Aspects of sustainable urban renewal and sustainable community, source: Stouten, P.L. 2010. Changing Contexts in Urban Regeneration: 30 years of modernisation in Rotterdam
4.4 Spatial conditions for social interaction

Urban design quality

In the article of Measuring the Unmeasurable: Urban Design Qualities Related to Walkability, Ewing, Reid and Handy, Susan use five elements to rate the urban design qualities for several streets in the United States, and those elements named imageability, enclosure, human scale, transparency and complexity separately.

But what are the features could meet the five elements urban design qualities? The article also give the answer, to sum up, they are "long sight lines", "number of buildings with identifiers", "proportion first floor facade with windows", "proportion street wall", "number of pieces of public art", "number of people in a scene and presence of outdoor dining" (Ewing and Handy, 2009).

The form of construction in city space should meet the "desirable ratio for good street spatial definition" (Hedman, 1984), that is human scale.

Territory and public space system

Safety is the basic requirement for public space and housing, and privacy provides all group safety in different spaces. Privacy closely links with territory and public space system.

According to Newman (1972), the defensible space refers to "a range of mechanisms-real and symbolic barriers...that combine to bring an environment under control of its residents." The space system consists of public space, semi-public space, semi-private space and private space.

Maureen and Courtney (2016) summed up Newman's theory of territory:

- Public spaces include streets and sidewalks that not possessed by any individual. Semi-public spaces include those areas that may be publicly owned but are cared for by homeowners such as planted parkways. Semi-private spaces can include spaces owned in association.
- Private space is the interior of one's home or fenced areas within a yard.

A clear definition of border is important for establishing what part of space is private. Clearly marking differences between private and public areas is important in establishing territories.

Newman also suggests that it need buffers between private and public world is essential, since the design of semi-public and semi-private space could influence the quality of private and public space.

Pavement

In the book of the pedestrian revolution (Breines, Simon and William J Dean, 1974), the author mentioned streets in city, they not only occupies one third of city space, but also hold people moving and street life.

Jacobs, Peter, Gehl and other research all remind that safety is the basic requirement for a livable street. Jacobs suggested that 'Streets and their sidewalks, the main public places of a city, are its most vital organs', but pedestrian lose their priority in the automobile age (Jacobs,1961). Pavement hold the room for gardens and trees, they are also spaces for social interaction between residents.

'Comfortable benches invite people to stay' (2006, Gehl, J., Gemzøe, L., Kirknaes, S., & Søndergaard, B. S.), and street is a place for communication (1961, Jacobs, J.), accordingly, street furniture will contribute to create place life.

Moudon mentioned in Public streets for public use, the intervention for vehicle’s pollution is densely planted groves of trees and shrubs, and it will filter particulate to some degree.

Amenity

Venturi & Brown (2005) mentioned that variety of people activities brought by variety amenities. People's life shows variety on the commercial streets, and residential area should be quiet (2008, Peter, B).

Figure 4.4: Relations of different theories. Draw by author.
4.5 Past experience in Hutong conservation

Unsuccessful experience: “old and dilapidated housing redevelopment (ODHR)” from 1980 to 2000

Communism was the theme of new China in 1949, real estate market was abolished and government gave extreme low price for housing rent in well-established Old City until 1978, it caused pitiful fund in physical maintenance of courtyards (Martínez, 2016).

Apart from the preceding growing pressure of city development, such as population booming, unemployment, traffic congestion and environmental deterioration (Wang, 2011), together with the great earthquake in 1976, resulting in desperate circumstances in Old City, involving severe housing shortage and original urban structure destruction as well as living condition depravation by deluge of low-quality disaster relief buildings in early of 1980s in Hutong area (J. Zhang, 2002).

Accordingly, most courtyards had become compound occupied by many households and low quality construction, even public space disappearing in some courtyards (Wu, 1989) (Fig.4.5). Moreover, due to lack of urban management and planning, infrastructure construction was stagnant, and urban operation had sunk into paralysis in that time (Xinkui, 2012).

In order to deal with the housing problem, the plan of ODHR emerged in the early of 1980s, and the extensive implementation of the plan was in late of 1980s to the early of 2000s. It is the first real large-scale urban renewal for Old City after 1949, pays much attention on housing conditions improvement, and brings Hutong renewal in Old City into new era.

In the initial stage of ODHR, governmental developing sector was responsible for reconstruction act, since the form and function of new buildings were in controlled and they were matching to the atmosphere of Old City.

However, because the strapped government and slow schedule of ODHR were failed to solve the growing pressure of housing shortage (Fang, 2000), private developers were invited into take participate in, and government was forced to rely on their investment to guarantee smooth project moving (Table 4.2). It leads to ODHR trans to a large-scale of real estate market development (Table 4.3), due to the contradictory purpose and attitude between government and private development, and the compromise of government (Fang & Zhang, 2003; Zhu, 2003).

In the large-scale redevelopment, old urban structure had replaced by high-rise buildings such as department stores and shopping malls to achieve the highlighted profits goal of private developers, together with over-scale urban infrastructure constructing, had changed Old City enormously in the end of 1990s (Fig.4.6).

In addition, the surviving Hutong is facing the problems of living environment deterioration, due to the crowded and narrow living space as well as old infrastructure. To response to the increasing of people density, residents have to build new house in courtyards to enlarge their living space, and the illegal construction in low quality has nibbling the public space in courtyards.

Figure 4.5: The decline of the courtyard.
Figure 4.6: The "old and dilapidated housing redevelopment" plan in 1991, draw by author. Source: Fang, 1997, Appropriate Improvement: the exploration of organic renewal in residential area in Old City.

Table 4.2: Cost of old and dilapidated housing redevelopment, draw by author. Source: Fang, 1997, Appropriate Improvement: the exploration of organic renewal in residential area in Old City.

Table 4.3: Demolishing area of old and dilapidated housing, draw by author. Source: Fang, 1997, Appropriate Improvement: the exploration of organic renewal in residential area in Old City.
4.6 The current approaches for Hutong rehabilitation

Organic renewal in the context of Beijing

The notion of “Organic renewal” is the core idea in existing Old City renewal in Beijing, and it also play an important role in the existing conservation policy as well as in my project. It provides the general approaches for critical site assessment and choosing as well as spatial and social intervention, and those approaches could be improved, and together with aforementioned theories, to support the thesis project. The explanation of the approach is shown on Figure 4.7.

After learning the experience of urban renewal and regeneration and sustainable development in western cities, Wu proposed the concept of “organic renewal” according to Chinese context after the Ju’er Hutong rehabilitation project.

Ju’er Hutong rehabilitation is an experimental project made by Wu Liangyong in the ODHR in the early of 1990s. He did helpful exploration on how to combine Hutong physical and cultural conservation with living condition improvement to suit for modern life as well as looking for solutions for housing shortage (Li & Xu, 2008).

In his concept of “organic renewal”, he proposed the Old City renewal should accord to the natural law of city development that is similar to the concept of small-scale, step-by-step and sustainable urban renewal in western cities, he advised that the practices of Old City renewal may “start from a small area” proportionally and then “the scale of work may be expanded until it is self-sustainable”. Additionally, the work should be lasting solution to deal with the relationship between different generations, since he advocated to reserve the fabric of “Hutong-courtyard” in order to physical and cultural continuity, and to explore new building typology for new requirements like higher living density and sanitary facilities. (Wu, 2011)

Besides, base on the different context of Beijing, he indicated that rehabilitation strategies integrated physical, economic and social development should be matching the different types of environment in Old City. Consequently, the complex environment can be simplified by classification according to structure qualities and historic value of buildings. The classification can be generalized as preserving and repairing the heritage building and the good traditional building, redevelopment the quality of buildings in mixed or dilapidated, and utilizing the redeveloped multi-storey and high-rise buildings (Wu, 1989, 1991, 2011).
Organic renewal

Preserving typical “Hutong-courtyard” structure

<table>
<thead>
<tr>
<th>Type (Structural type &amp; quality)</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valuable building</td>
<td></td>
</tr>
<tr>
<td>Heritage building</td>
<td>Preserve and maintain by same form and material</td>
</tr>
<tr>
<td>Good traditional building</td>
<td>Maintain original look and allow to use new material</td>
</tr>
<tr>
<td>Mixed quality building</td>
<td></td>
</tr>
<tr>
<td>Need to be improved building</td>
<td></td>
</tr>
<tr>
<td>Dilapidated quality building</td>
<td>Repair and redevelop to restore traditional form</td>
</tr>
<tr>
<td>Redeveloped multi-storey and high-rise buildings</td>
<td>Redvelop to meet new demands</td>
</tr>
</tbody>
</table>

Assess the complex building environment by historic value

Rehabilitation work according to assessment on structural type and quality of buildings


Figure 4.7: The approach of small scale and metabolic “Organic renewal” by Wu Liangyong in 1990s. Draw by author. Source: Beijing Record: A Physical and Political History of Planning Modern, Wang, 2011. Beijing municipal government policies
Conservation planning of 25 historic areas in Beijing Old City in 2002

The success of application in 2008 Olympic Game in the beginning of new century was the “turning point” for revision of the urban renewal policy of Old City. Be guided by the spirit of Humanistic Olympics and thanks to the appeal of urban scholars, the latest plan and policies for Old City renewal named Conservation planning of 25 historic areas in Beijing Old City came out in 2002 (Fig.4.8).

According to the theoretical framework, "organic renewal" is core idea of this conservation plan. Besides, "courtyard" as the basic unit of all renewal work, and all constructive activities, which may damage the original fabric of "Hutong-courtyard", has been banned from 2002. It marks the transition from large-scale real estate development to small-scale rehabilitation within holistic conservation in Hutong area, and the Old City starts to be treated as cultural-resource.

Urban Master Plan of Beijing (2016-2035)

Old City conservation is further emphasized in the new urban master plan, any demolition of courtyard is banned in whole Old City. Hutong as the main public space in Old City should be improved toward ‘traditional, green, comfortable and quiet space’.

Meanwhile, rehabilitation projects will integrate environmental, social and economic development within a sustainable framework.
Sharing economy

According to Report of the development of sharing economy in China in 2016, the scale of Chinese sharing economy was 39450 billion yuan, and rate of growth is 76.4%. It has become a new engine for Chinese economic development.

Sharing economy weakens "ownership" and emphasizes the "right to use", resource could be used to the full according online transaction (Taeihagh, 2017), it not only focus on products, but also including space, fund, technique and service (Fig.4.9). Sharing economy benefits the high efficiency utilization of resources, especially for a situation of land scarcity in city center.

Meanwhile, sharing economy create social interaction by Internet even face-to-face among strangers, for example tourists hope to blend into the local culture by stay in Airbnb.

The lifestyle in Hutong community help residents build the the awareness of sharing. Shared space is the main living space for people living in Hutong community, except residents' own rooms, all semi-public space even toilet and bathroom are shared, it provides nice social interaction and an effective way for intensive living density in Hutong area in existing context. Accordingly, Hutong is a good experimental site for applying sharing economy for social mix and promote diverse social interaction.

Figure 4.9: The typology of sharing economy in Beijing, draw by author.
Creative economy development

Creative economy improvement and cultural-resource exploration are strongly encouraged in existing urban renewal, in order to contribute to culture and identity continuity for Old City especially for Hurong area. And creative economy development was getting more attention due to the advocacy in the 11th Five-Year Plan of Beijing after the 2008 Olympic Game, since cultural tourism had become more popular in Old City, especially Hutong tourism (Fig.4.10).

However, government ignored the authenticity of heritage in the practice, and lost in highlighted economic achievement. Refreshing and clean Hutong space only cater to visitors and new residents caused by massive tourism, new speculative real estate is dressed up by creative economy, original residents are force to move out due to the growing cost of living, and instead by ‘creative class’ like designer, artists and small enterpreneurs (Fig.4.11). Hutong is losing its original face due to commercial gentrification (Martínez, 2016). Take Nanluogu Xiang and Guozijian area as example, exotic atmosphere is designed to please tourists, bars, hotels, studios and shops try to provide belongings for foreigners and satisfy the curiosity of Chinese tourists (Fig.4.12 and 4.13).

Therefore, without civic culture brought by original residents, Hutong is only an “artificial” commercial street with traditional face.
People decentralization

According to the latest *Urban Master Plan of Beijing (2016-2035)* (Commission, 2016), people decentralization policy define that the population of Beijing should be controlled less than 23 millions in 2020. In the central cluster, population should decrease 2% to 3% per year from 2014, and finally the number should be reduced 15% in 2020 (Table 4.5). As a matter of fact, the policy has been mentioned firstly in *Urban Master Plan of Beijing (1991-2010)* (Commission, 1993).

Along with the policy, capital administration is moving to Tongzhou satellite city in the east of Beijing recently, and most inferior retail and service as well as storage had moved out of Beijing before 2016. With the development of satellite cities, high quality public service facilities like hospitals, schools and shopping plazas has been built in recent years. It provides much possibilities and feasibilities to implement the people decentralization policy in new context.

However, this policy may bring threats on socio-characteristics continuity. The target groups in existing implement of people decentralization policy are voluntaries, but more are practitioners who work for inferior industry, especially inferior retail and service, because of the industrial transformation from labor-intensive industry to knowledge economy in Beijing. Residents who rely on inferior economy force to change their lifestyle, and it may result in challenges on socio-characteristics maintenance. For example, the growth of express delivery is caused by the disappearance of the street food court and small retails in Hutong neighborhood, and it caused diversity of street life losing.

Table 4.5: Population change in Beijing since 1949. Draw by author.

Source: National Bureau of Statistics of China
4.7 Case study

New courtyard: Juer Hutong Rehabilitation Project made by Wu Liangyong

Juer Hutong is one of the brunch lanes of Nanluogu Xiang near the Axis of Beijing. Nanluoguoxiang is a commercial street with many exotic shops, bars and snack bars. The exotic atmosphere combine with traditional Hutong space attracts people from all over the world visiting and living in this area (Zhang, 2016; Wu, 2011).

Before the rehabilitation, Juer Hutong is a traditional residential neighborhood was suffering from the same problems as other Hutong areas, such as crowded living space, dilapidated physical environment and poor infrastructure (Wu, 2011; Fig.4.14).

The project “New courtyard” designed by Wu liangyong and his students was constructed since 1990s, and the construction was divided into four phases to reduce the negative influence for surrounding area (Wu, 2011; Zhang, 2016).

The prototype of “New courtyard” has “learned” the elements of Suzhou’s vernacular architecture, it is a group of 2-4-storey walk-up apartments and connecting with each other by several courtyards and corridors (Zhang, 2016; Fig.4.15).

This project persevered the historic physical value of Hutong, and achieved higher living density in courtyards as well as improved the physical living condition such as providing private sanitary infrastructure and enlarging living space (Zhang, 2016).

However, the 2-4-storey walk-up apartments have already changed the social-spatial features of traditional courtyard. It has reducing the connection between neighborhoods, because the social interaction was limited in vertical corridors and narrow yards (Zhang, 2016), unlike the easier and more direct interacting space in traditional courtyards.

To keep the original social structure, the portion of re-accommodated residents should take at least 1/3 in this project, but there is only 25 percent of the original households could afford the re-accommodation (Wu, 2011), and the portion reduced to 10 percent in 2007 (Chen Zhijie, Professor of Tsinghua/ Qinghua University and Resident at Juer Hutong, interview, 2007; Zhang, 2016).

Without subsidies from governments, developers of “New courtyard” were forced to get enough profit form the real estate consumers in such a central area (Zhang, 2016), and the original low-income even the middle-income class residents were defeated in the competition of housing price. Therefore, social structure destruction caused by gentrification and original household losing has become a main problem in Ju'er Hutong also in other rehabilitation projects.

Figure 4.14: No.41 courtyard in Juer Hutong before rehabilitation.
Source: http://www.chinanews.com

Figure 4.15: Aerial view of the Juer Hutong new courtyard housing
Source: Information Center, previously Resources Center, School of Architecture, Tsinghua/ Qinghua University
Current problem
Conservation policy
Practice in the North of Dongsi
Bad living condition
No private sanitary facilities
High living density
Dilapidated house
Crumbling courtyard
Illegal construction
Decline of public space
Weak transportation
Lack of car parking space
Obstructed car traffic
Conflict between pedestrian and cars
Small-scale redevelopment within holistic conservation
courtyard as the basic unit
Hutong-courtyard preserve
Bottom-up planning
Public space improvement
People decentralization
Creative economy
Sharing economy

Potential Future development
Conservation
Quality of Hutong and courtyards
Continuity
(Identity, ideology, aesthetic, urban fabric, socio-spatial characteristic, technology)
Diversity
(Users, public space, building typology, streetlife)
Pedestrian-friendly environment
Social cohesion

What are the potentials for future development in the North of Dongsi?

What interventions could promote in the North of Dongsi?

Potential
Current problem
Bad living condition
No private sanitary facilities
High living density
Dilapidated house
Crumbling courtyard
Illegal construction
Decline of public space
Weak transportation
Lack of car parking space
Obstructed car traffic
Conflict between pedestrian and cars

Quality of Hutong and courtyards
Continuity
(Identity, ideology, aesthetic, urban fabric, socio-spatial characteristic, technology)
Diversity
(Users, public space, building typology, streetlife)
Pedestrian-friendly environment
Social cohesion

What spatial, cultural and social qualities does Hutong bring to the North of Dongsi?

Figure 4.1: Theoretical framework.
4.8 Conclusions of the theoretical framework

Although it is certain difficult for Hutong to meet all new requirements of modernization, urban renewal of Old City in Beijing has shifted from "large-scale real estate development" to "organic renewal", from solving housing shortage to population decentralization. It seems that government has realized the importance of traditional community as heritage.

Reviewing of previous "organic renewal" project, whether focusing on housing environment improvement and housing shortage, or introducing new program to encourage the community economy, they have common goal that is to meet the new demands of users and keep the traditional "Hutong-courtyard" structure. However, these projects are not total successful, because it is difficult to balance the physical and social development.

Future development should consider higher-level policies. The vision of Hutong in Urban Master Plan of Beijing (2016–2035) is "traditional, green, comfortable and quiet space". In social dimension, people decentralization is the main policy to keep a reasonable living density.

Therefore, the main aim of this project is providing strategies and spatial interventions for conservation-oriented sustainable Hutong renewal. It includes redefining the heritage in context of Hutong, assessment the value and limitations, finding potential and give solutions.
Chapter 5. Value of the North of Dongsi
Chapter 5. Value of the North of Dongsi

5.1 Defining exact methods and contents for value analysis

As a conclusion from the previous chapters, redefining the heritage in the context of Hutong community is the base of the project, it helps to clear what is the research object and what should be preserved and developed in this project.

According to the definition of heritage (see chapter 4), it contains tangible physical and spatial heritage like traditional architecture, Hutong and street. Meanwhile, diverse people activities and social interaction is essential and valuable feature for Hutong community, and is also the main attraction, so they are the intangible heritage of Dongsi.

In addition, in order to achieve sustainability, heritage should be considered in timeline and different scales. It helps to understand values from neighborhood to human scale (from macro scale to micro scale), as well as how values change over time.

The appropriate methods to redefine heritage are the following:

- **Historic analysis** includes the historic maps and pictures reviewing. Historic maps can provide an understanding of the time variable of the problem, and historic pictures can help to understand the social and spatial variable in dynamic context.

- **Literature review** is the method to understand the principle of "Hutong-courtyard" design, and helps to distinguish the value relate to traditional Chinese culture.

- **Site observations** at the study location are to understand the spatial and social variable of heritage in existing context. Meanwhile, they can provide visualization combining with spatialization of the incidents that will be mentioned by the interviewers.

- **Interview** is a method able to provide direct information regarding the value of the study location in mental aspect.

Base on those methods, this chapter will show their findings in the North of Dongsi. The heritages will be explained separately at the following sections, from tangible value and intangible value in different generations.

According to the definition of heritage and sustainable development as well as those methods, the content of value analysis in this chapter is showing in Figure 5.1.

Narratives of tangible and intangible value will both follow the timeline, from past to existing or future, besides, they will be talked in different scales in each stage.
5.2 Tangible heritage from past

5.2.1 Macro scale: Well-preserved street pattern

How street and Hutong pattern of Dongsi changed over time is showing in Figure 5.2. Historic map (on the top) is translated into diagrams (in the middle) to show the changes in each dynasty.

Main "Hutong-courtyard" structure in the north of Dongsi was well-preserved from Yuan Dynasty, but there are more branch lanes over time (see the middle diagrams in Fig. 5.2). That is because with the growing of the population in Beijing, large courtyards were divided into several smaller courtyards, and there were branch lanes to access to the new smaller courtyards (see the bottom diagrams in Fig. 5.2). After 1949, there is no obvious change in the urban fabric in the North of Dongsi.

Accordingly, the North of Dongsi is also a museum that exhibits the change of "Hutong-courtyard" in seven hundreds years, and it is also a miniature of traditional living area of Beijing.
5.2.2 Meso scale: The heritage object in the North of Dongsi

The north of Dongsi is in the plan of 25 designated historic areas in the Old City of Beijing, that is not only because the well-preserved "Hutong-courtyard" system, but also there are valuable historic sites in archeology.

There are two national historic sites and several heritages certified by government in the north of Dongsi (Fig.5.3), including old home of celebrities (Point A), Fu Wangfu palace (Point B) and old temple (Point C).

Fu Wangfu is largest heritage in this area, it is the old house of prince Yin in Qing Dynasty. The Wangfu culture is an important part of royal culture in Beijing, which is the bridges between imperial culture and normal citizen culture.

Figure 5.3: Heritage objects in the North of Dongsi. Draw by author. Source: Beijing Municipal Administration of Cultural Heritage, photo by author: old home of Chongli, Yanci Temple; photo of Fu Wangfu by Beijing Municipal Administration of Cultural Heritage
Besides the historic sites certified by government, there are courtyards witnessed many famous historic events, and there are old homes of celebrities that contains huge cultural value (Fig.5.4), such as the secret hideout of Japanese spy Yoshiko Kawashima (Point A), old home of Xu Shichang (Point B) and American school of old Beijing and old National Ministry of Culture (Point C). They provide a physical and spatial configuration that could be matched with people memory.
5.2.3 Meso scale: Traditional space as the value in courtyard

Habitable privacy and closeness

According to literature review on history of Chinese architecture and the design principles of courtyard, closeness is the main feature of courtyard. Enough privacy make people feel safe at home, and it is also meet the requirements of good private territory, since courtyard design is quite suitable for living function.

Old City is the densely populated area from ancient times, in order to keep privacy, buildings of courtyard are occupied the outline of the site, and atrium is in the central can shared by family members. It is different from traditional residential building in the European and American cities, their building is independent and surrounded by garden (Fig.5.5).

Enclosed building form and central atrium of courtyard provide principles in how to create semi-private and private space, and the transition between indoor space and outdoor space in private territory. Therefore, those valuable principles from previous generations can be learned and applied for existing and future urban design.

Figure 5.5: Traditional residential building in different cultural background. Draw by author.
Private atriums inside of courtyard

According to previous research, atriums are considered as the most important value and feature of courtyard, because they are the healthy public spaces that promote people communication in changing context.

Originally, courtyard was design for big single family, and it emphasizes the importance of rituality and hierarchy because of the feudal social background in the past.

In feudal dynasties, male host use the principal room (Zheng fang) at the middle of the axis, and his male descendants and guests are placed to the wing rooms at the east and west, in addition, his female descendants are living in the back court for privacy. The main central court is the main private garden for all family members, and the back court is the more private space for female members. Servants are place in the Daozuo room in front court (Fig.5.6).

But now most courtyards were shared by several families. One family takes one room in the courtyard, since private atrium become existing semi-public space for all families living together (Fig.5.7).

The semi-public space inside of courtyard promotes social interaction between neighbors, the same as the interaction between family members in the past. It is the valuable heritage should be preserved in order to a social space for residents.
Original spatial characteristics of atriums

In the past, limited by the feudal ideology and heirarchy, most social interaction is between family members inside of the courtyard. According to the originally design of courtyard, the most important value and feature is a series of atriums. They provide different service for people and also promote nice social interaction between family members.

Their spatial characteristics relate to original functions will be explained separately as following (Fig.5.8 and 5.9):

Entrance gives people the first impression of a courtyard, since it play the role of identity and transportation as well as buffer between Hutong and private home. The entrance is composed of entry gate, entry court and Yingbi wall. The spatial form of entry court try to simulate a "path" in order to guide people to enter the courtyard. Yingbi wall play the role of sheltering from the sight of strangers and passers-by. Interior is not visible through entry gate, even if the door is open. Besides, Yingbi wall integrating with the entry gate, they not only decorate the entrance of the courtyard, but also shown the aesthetic, qualities and social position of the master in the feudal age.

Front court is the first atrium after entering the courtyard, and it is the connection between main atrium and the entrance, since the festooned door try to guide people to continue their journey to next space. Meanwhile, front court provides a private meet point for host and guest, instead of meet in entry gate.

The spirit court with a small room next to entrance is the temporary reception area, it provides guests a private space for sitting and relaxing, though it next to the entrance. That should thank to the tiny semi-closed spirit court as the buffer between entry court and the room.

Similar to the spirit court, utility court is the buffer between the front court and the room it serves. So the some service could take place in utility court without disturbing the activities in front court.

Main central court is the heart of courtyard. It is the place for almost all interaction between family members and transport. The columns edge makes a transparent space and encourage people see and join in it. In addition, columns also make semi-opened veranda around the central court. It is a separate transportation space and also the buffer between private room and the central court.

Corner court is the tiny space serves the ear room, since it is an independent space apart from the central court.

The back court is extreme private court belong to the backyard room, thus it only one entrance and close to other facade.

Figure 5.8: A typical plan of original courtyard, draw by author.
Figure 5.9: Original spatial characteristics of atriums inside courtyard, draw by author.
5.2.4 Micro scale: Traditional architectural principle

Adaptation to local geographical condition

According to literature review on history of Chinese architecture, Confucianism and Taoism occupy the mainstream in traditional Chinese philosophy, they have great effects on Chinese city planning and architecture. Both of them claim that people should follow the laws of nature, to achieve the harmony between man and nature, that is the so-called "geomantic culture".

Yin-Yang, describing the two opposing principles in nature, is the core and basic idea of Taoism. Ba Gua (Eight Diagrams) comes from Yin-Yang, it describes the relationships of everything in the universe by eight elements. Courtyard design is the reflection of Taoism that is influenced by nature and climate, such as the orientation of courtyard, the location of gate, building height and slope roof.

According to Ba Gua, the main room takes the position of water, to expect to avoid fire. Gate is set in the position of wind, to indicate safe trip (Fig.5.10).

In addition, courtyard design follows the laws of nature. The temperature change in Beijing from summer to winter is extreme, courtyard sit with its back toward north can prevent from the cold wind in winter, and the open door can embrace the cool wind come from south in summer. Similarly, one-storey building touch the constant ground temperature also helps to keep building environment. Slope roof also contribute to comfortable ventilation in courtyard. Courtyard faces to south in order to get enough sunlight in daytime (Fig.5.11).

Therefore, the housing orientation and roof type as well as the door location are the adaptation to geographical condition of Beijing and the reflection of traditional geomantic culture. They are the architectural value of courtyard, and the idea of following the laws of nature is suitable in changing context.
Colors as identity

According to the description in introduction chapter, Old City is identified by imperial constructions with golden roofs and red walls were highlighted by contrast to grey courtyards, color is applied as a tool to identify different area and to guide people where they are in a city as well as influence on people activities in specific site.

In Juval Portugali’s book "Complexity, Cognition and the City", it stated that hippocampus in our brain could associate various cognitive tasks with space such as spatial behavior, navigation, way-finding and the like, and the visual sense is deemed to the most important. Meanwhile, each person has his or her own image, distinct and structured in a different way than others (Lynch, 1960) base on their cultural background.

The yellow and red color on imperial construction are aim to show the power of emperor, since Chinese rituality and hierarchy are deeply rooted in human ideology in the past. But now the traditional hierarchy has already been abolished, so the color becomes the historic image and identity of imperial construction.

In courtyard, similar as the royal building, color reflects the traditional hierarchy that is not concern existing and future generations. Besides, the color also reflects the good expectation on people's life in Chinese philosophy and the adaptation to Beijing geographical condition (Fig.5.12).

Those color principle is the valuable heritage should be inherited that still inspires existing and future generations.

![Image](image-url)

Figure 5.12: The color philosophy and principle in courtyard design, draw by author.
6.2.5 Conclusion of traditional value from past

At the conclusion of the analysis on the traditional value of "Hutong-courtyard", the valuable elements are showing on the figure 5.13 and 5.14.

Figure 5.13 shows all valuable elements icons from macro scale to micro scale in original Hutong. Traditional value is not only the different typology of space in urban scale, including private space, semi-private space and public space, but also the structure of "Hutong-courtyard" and architectural elements in architectural scale, including material and color.

On the one hand, they are the most representative physical and spatial characteristics that help to continue the traditional image of "Hutong-courtyard", because they come from the historic literature and photo, and they are also preserved in existing context.

On the other hand, according to previous analysis, those elements reflects the principles of traditional city planning and architecture design which can still inspire the existing even future generations.

Therefore, those traditional tangible values will be preserved as heritage in the future development in this project.
Figure 5.14: Conclusion drawing of traditional value in the North of Dongsi, draw by author.
5.3 Existing tangible heritage

5.3.1 Meso-scale: Positive transformation

According to the site observation, "Hutong-courtyard" have been transformed over time. Although some changes result in problems that I have explained in previous chapter, some reflect the demand and wisdom of existing generations. Therefore, transformation should be considered critically, and some of them should be preserved as the new value of the Hutong and courtyard.

The new value of Hutong-courtyard according to site observation will be explained following:

New building typology

The building technical innovation breaks the limitation on building material and typology. With growing density in Old City, multi-storey building with flat roof has emerged in Hutong community, and wood has been replaced by reinforced concrete. The new building typology can serve a higher density and provide more possibility for emerging urban functions. For example, flat roof is used as the playground of school in the North of Dongsi (Fig.5.15). Shops and restaurants as well as offices mixed in one multi-storey building provide much convenience and save time for customers and commuters (Fig.5.16).

Rising cultural economy

Traditional value of "Hutong-courtyard" was taken as rising cultural economy is considered to be effective for heritage conservation.

For example, some courtyards are restored the original form and used as hostel and cafe, and it brings shopkeepers great business success (Fig.5.17 and 5.18). Historic atriums, materials and colors were preserved in those courtyard, and become the attractions for contemporary. Traditional value revived by given new functions.
Spontaneous spatial transformation

According to site observation in courtyard, there are spontaneities of spatial transformation taken by residents for privacy and environmental improvement. That is because courtyard was designed for single families originally, but now is shared. Those spontaneities also reflect the demands of existing generations, which will guide future development.

Fences are popular in courtyard to create buffers between semi-public court and private room. Most fences are half person high, so they leave space for sight exchange and social interaction. Those fences reflect the residents’ aspiration of semi-private space and privacy (Fig.5.19 and 5.20).

Planation is considered as the effective and direct way to improve the environment inside of the courtyard. Residents’ potted plants can be seen everywhere inside of courtyards, they reflect the residents’ aspiration of semi-public space improvement (Fig.5.21).

Emerging miniature spaces with different functions built by residents can be found in Hutong and courtyard, they response to the demands of residents, and they make great contribution on existing image of ‘Hutong-courtyard” in the North of Dongsi (Fig.5.22).
Existing spatial characteristics of atriums

Looking to the spatial transformations in courtyard, they relate to emerging functions, which are explained separately as following (Fig.5.23 and 5.24):

Entrance space is declining due to some illegal additions. Showing hierarchy is not suit for existing society, but the preserved traditional gates still could be the identity of a courtyard in today’s Hutong community. Entry court is still the entrance of the courtyard, since it contributes to transport and privacy. Besides, green plants and old furniture made by residents help it become the new semi-public space for relax and stay.

Similar to entrance, front court is partly preserved after transformation. Due to semi-public space decline, it is used as traffic space instead of a meet point. Residents who live in the rooms linked together with front court, use some part of front court as semi-private space to hang their clothes and do potted plant.

The spirit court and utility court as well as corner court are almost disappeared and transfer to private room to respond to the growing living density. From another perspective, it shows that those courts may be not essential for existing situation.

Almost all original functions are preserved in main central court, it is still the most important place for social interaction between neighbors as well as transport. The semi-opened buffer between private room and the central court has been replaced by private room with self-built fences, due to the serious shortage of living space.

The back court is no longer extreme private court. It is used as the semi-private space to hang clothes and do potted plant, which is more private than front court.

Figure 5.23: A typical plan of original courtyard, draw by author.
<table>
<thead>
<tr>
<th>Courtyard space</th>
<th>Existing spatial characteristics</th>
<th>Original functions and their survival status</th>
<th>Emerging functions in existing context</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Plan</td>
<td>Space</td>
<td>Courts survival status</td>
</tr>
<tr>
<td>1 Entry court</td>
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<td>Identity</td>
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<td>Transit</td>
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<td>Privacy</td>
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<td>2 Spirit court</td>
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<td></td>
<td></td>
<td></td>
<td>Stay &amp; relax</td>
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<td></td>
<td></td>
<td></td>
<td>Privacy</td>
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<tr>
<td>3 Front court</td>
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<td>Transit</td>
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<td>Meet</td>
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<td>4 Utility court</td>
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<td>Service</td>
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<td>5 Main central court</td>
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<td>Stay &amp; relax</td>
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<td>Meet</td>
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<td>Transit</td>
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<td>Plantation</td>
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<td>6 Corner court</td>
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<td></td>
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<td>Service</td>
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<td>7 Back court</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Privacy</td>
</tr>
</tbody>
</table>

Figure 5.24: Existing spatial characteristics of atriums inside courtyard, draw by author.
5.3.2 Micro-scale: Efficient development

New material

New material is applied for preserving the traditional form as well as deal adequately with existing demands. For example, glass is transparent material and be widely used on annexes of the traditional buildings. It tries to minimize the influence and let people see the historic buildings through it (Fig.5.25).

Besides, permeable material of pavement cannot only simulate the traditional form but also to help the drainage, since it is widely applied in sidewalk and inside of courtyard (Fig.5.26).
Reuse of old stuff

According to the site observation, residents prefer to make good use of waste materials when they take spontaneities in semi-public space inside of courtyard and Hutong. For examples, most fences are made of old bricks and bamboo. Old furniture becomes the street furniture and contributes good public space, and waste sinks help to improve the green space (Fig.5.27-5.30).

It is intelligent method that not only can save money, but also old stuff can closely link residents' life with public space, and help to renew the image of "Hutong-courtyard" in existing context.

Figure 5.27: Reuse of bamboo. Photo by Hou Xiaolei.

Figure 5.28: Reuse of bricks. Photo by Hou Xiaolei.

Figure 5.29: Plants in old sinks. Photo by Hou Xiaolei.

Figure 5.30: Street furniture. Photo by author.
5.3.3 Conclusion of existing tangible value

At the conclusion of the analysis on existing value in the North of Dongsi, the valuable elements are showing on the figure 5.31 and 5.32.

According to the literature review, heritage is not only the product from past, but also it is a process can reflect the change of a place.

Consequently, all elements icons relate to positive transformation of the traditional value from macro scale to micro scale could be found in figure 5.31. They are the existing tangible value of Dongsi, including new building typology in urban scale, emerging semi-public space in meso scale, new material and color in micro scale.

Therefore, those emerging tangible values in existing context will be preserved as heritage in the future development in this project.

Figure 5.31: Collection of existing value at present, draw by author.
Figure 5.32: Conclusion drawing of existing value in the North of Dongsi, draw by author.
5.4 Intangible heritage from past

According to the definition of heritage mentioned before, different social activities in street, Hutong and interior of courtyard stimulated by spatial characteristics are the intangible heritage of Hutong community. Those face-to-face social interactions integrating with physical elements form the whole image of the North of Dongsi.

Similar to tangible heritage, people activities and social characteristics in Hutong community is also a dynamic process, so it will be studied in different generations and scales, including traditional life, contemporary life and new generations life in public and private space.

5.4.1 Meso-scale: Narrative of public life

Street life

In order to understand the traditional public life in the past, historic photos and literature will be studied. Meanwhile, the collection of historical memory from existing residents also help to understand the value of traditional life.

The cultural background of feudal society is not suitable for the modern context, since the study period of historic photos is after the end of feudal society in 1919 and before the spatial transformation stage, that is the initial and developing stage of new China.

Main streets are where the visitors’ flow rate and traffic are concentrate on, and they are appropriate for business and transport. Non-motorized traffic street with sufficient space for stop and movement in the past is safe for pedestrians and promote social interaction between strangers (Fig.5.33). In additions, business rely on the high flow rate of visitors, but the sametime, it makes great contribution on improve vitality of street (Fig.5.34).
Hutong life

Hutong is more narrow and closed than main street, according to elder in the North of Dongsi, it was considered as more secure and familiar social space. Accordingly, people activities tended to more private, and social interactions mostly happened between neighbors and friends (Fig.5.35). Green space helped to improve the environmental quality of Hutong, and promoted outdoor activities (Fig.5.36). Different from main street, business brought many strangers was rare in Hutong.

Figure 5.35: Bird-keeping and communication. Photo in 1994. Photo from http://www.sohu.com/a/118734379_351293

Figure 5.36: Reading and children play in Hutong. Photo in 1990s. Photo from WeChat Subscription: Gudian Shucheng.
5.4.3 Micro-scale: Narrative of private life

According to the memory of elders and historic photos, courtyard was considered the same safe as home. It consisted of semi-private and private space, since it was the place for people daily life and social interaction frequently happen between family members and neighbors who lived together. Private rooms were directly connected by semi-private and semi-public space, so it built close link between neighbors and they lived together like a big family. Accordingly, people activities in courtyard were more private than Hutong, and the semi-private and semi-public court was the shared living room for all people living together (Fig.5.37 and 5.38).

5.4.4 Conclusion of intangible heritage from past

At the conclusion of the analysis on the traditional intangible value in the North of Dongsi, the valuable elements are showing on the figure 5.39.

The historic intangible value can be concluded as the traditional public and private life, they help to build the narrative of the North of Dongsi.

The representative people activities closely link with spatial characteristics that help to complete the traditional and social image of Hutong community. They come from the historic photos, and are perceived as valuable in existing context. Therefore, those traditional intangible values will be promoted by physical conditions in the future development in this project.
Figure 5.39: Conclusion of intangible heritage from past, draw by author. Play folk music photo by Lin Xili.
5.5 Existing intangible heritage

In order to study the intangible heritage in current situation, site observation and interview is appropriate to get spacialization and visualization in social and mental aspects. Methods and intangible value analysis will be base on the existing social structure in the North of Dongsi. Consequently, this action will start from the data of social structure, and following are the findings of field trip in Dongsi. Site observation and interview can provide perspectives of the intangible value both from author and residents.

5.5.1 Macro-scale: Social structure

The existing social structure (year 2015) has been changed after transformation stage, due to rapid growth of population mentioned before. Most of the population growth is immigrants from other part of China, and most of them are low-income workers and shop holders. They are used to frequent moving, because most of them do not have long-term work and they always move with work, since there is no enough time for them to get familiar with local residents. It results in less interaction even conflict between local and immigrants (Fig.5.40).

The social structure of original households in the block shows the characteristics of aging. The percent of the elderly over 65 years old takes 20% of total, and it is higher than the average of city (9%) and Dongcheng District (12%). In addition, people over the age of 45 are accounted for about 60% of total and the percent of retired residents reach to 40% (Fig.5.41).

Original residents have nice social interaction with neighbors and visitors, and their build strong community bond. Elder and retired residents in Hutong keep the traditional way of life, and they are also narrators of history and memory of the North of Dongsi (Fig.5.42).

Figure 5.40: Social structure in the North of Dongsi in 2015. Draw by author. Source: Age structure and living time are National Bureau of Statistics of China.
Figure 5.41: Social structure of original residents in the North of Dongsi in 2015. Draw by author. Source: Age structure and living time are National Bureau of Statistics of China.

Figure 5.42: Retired group. Photo by Guiyatou. Source: http://dp.pconline.com.cn/photo/2363411_11.html

- How many generations living together?
  - 4 Generations
  - 1 Generation
  - 3 Generations
  - 2 Generations

- How long have the residents lived in Dongsi?
  - <5 years
  - 6-10 years
  - 11-20 years
  - >20 years

- Age of residents
  - <14 years old
  - 15-30 years old
  - 31-45 years old
  - 46-64 years old
  - >65 years old

Main group of locals in Dongsi
5.5.2 Meso-scale: Social cohesion

The following scenes show how people live in the North of Dongsi at present. They are the intangible value in the view of author, because they reflect the social cohesion of the neighborhood.

Street

The same as past situation, the main street is still where the visitors’ flow rate and traffic concentrate on and appropriate for business and transport, and it is unrealistic to create non-motorized traffic in main street in modern context. Accordingly, safe sidewalk sufficient space for stop and movement is quite important for pedestrians. Shops try to provide smooth transition from sidewalk to inside of the shop, since restaurants along streets are still attractive in existing Dongsi community (Fig.5.43).

In addition, outdoor activities need bigger field than past, since children find the good public space along street to do sports (Fig.5.44). That also shows that there is no enough public space for sports in Hutong.

Figure 5.43: Street food court. Photo from http://blog.sina.com.cn.

Figure 5.44: Children do outdoor activities. Photo by author.
Hutong

Car traffic has changed the spatial condition in the North of Dongsi, and much Hutong space is taken up by car parking, but Hutong is still a social space for neighbors' interaction and entertainment, and traditional life still can be found during site observation.

Emerging business in Hutong area provides new typology of public space, and it brings new people activities like shopping and eating, since Hutong become a more public space than the past. Old furniture and trees make great contribution on keeping traditional life and promoting people activities in Hutong (Fig. 5.45 and 5.46).
5.5.3 Micro-scale: Leisure life in courtyard

High living density brings much decline on court space, since it partly limited the direct social interaction between neighbors. However, personal life has been playing in court space, leisure image of people's daily life inside of courtyard is the continuity of the traditional life from past. Residents also try to preserve the leisure lifestyle, such as setting old furniture for stay and plantation (Fig. 5.47 and 5.48).

Figure 5.47: Sit in the sun. Photo by Xiaoyu.

Figure 5.48: Hang clothes and gardening. Photo by Xiaoyu.
5.5.4 Existing intangible value in locals' perspective

Interviewees include local residents, immigrants from other part of China and tourists, they are requested to talk about their daily life and demands, and the reasons of living in Hutong as well as their perception of Hutong and its conservation. The following is the findings of interview in locals and immigrants as well as tourists. More information of interview can be seen in the Appendix.

Most locals have witnessed the transformation of Dongsi, and they think Hutong is getting worse. They show great dependence on familiar neighbors and remembrance of traditional life in the past. Although they fail to learn the value of historic building in Hutong, they are satisfied with residential mode of 'Hutong-courtyard', because they think it is exactly the reason of good social interaction between neighbors.

On the face of it, whether the housing was in traditional form or not does not influence locals' daily life, but imperceptible effects by tangible heritage can be found in the conversation with them. They are used to use the elements of tangible heritage, which are shown in last section, to talk about their rooms or courtyard. It shows those historic elements help to build perception and image of their home.

Summing up the view of locals, the good social interaction between neighbors is also considered as intangible value of "Hutong-courtyard", and the spatial characteristics are prerequisite for preserve it (Fig. 5.49 and 5.50).
Subject: Mrs. Wu
Description: Retired and live in Dongsi over 20 years
She said, "...I have much spare time and I like to grow flowers in our courtyard...Here is city center, and it is so convenient to go anywhere..."

Subject: Mr. Li
Description: Elder living alone and live in Dongsi over 50 years
He said, "...I feel lonely!...I hope to live with my family and friends...I like children..."

Subject: Mr. He with his wife
Description: Retired couple and live in Dongsi over 25 years
Mr. He said, "...I miss the old "local" life...There are too many immigrants, even we all don't say hello..."
Mrs. He said, "I really refuse to part with my old neighbors, so we don't want to leave our courtyard."

Subject: Mrs. Zhang
Description: Retired and live in Dongsi over 20 years
She said, "...I'm used to going to large park to exercise, because there is less public space in Hutong..."

Subject: Mr. Li with his son
Description: Live in Dongsi over 20 years
Mr. Li said, "...There are more and more strangers in our community, so make me feel worried about my son..."
His son said, "...Hutong is our playground, but the passing vehicles always disturb our game in Hutong!..."

Figure 5.50: Existing Hutong life in local's perspective. Emoji show their attitudes toward Hutong neighborhood and exact issues.
5.5.5 Existing intangible value of Hutong in immigrants’ perspective

Different from local residents, immigrants from other part of China are more concerned about improving the living conditions, and they expect Hutong community could provide the similar condition as newly built community. Their demands represent the new generations and the potential residents of Hutong community, and provide some ideas for future development.

Some long-stay immigrants have same feeling with local, think that social interaction is precious. They enjoy the friendliness from the neighbors that is rare in modern community, since Hutong attracts them a lot.

Tourists and visitors are the only group attracted by both spatial and social characteristics of "Hutong-courtyard", because they are spectators, so they have comprehensive impression on it.

Summing up the view of immigrants and visitors, some lifestyles at present have been changed by different context, and they should also be included in the intangible value of “Hutong-courtyard”, meanwhile, the spatial condition also need transfer to meet emerging demands (Fig.5.51 and 5.52).

5.5.7 Conclusion of existing intangible heritage

At the conclusion of the analysis on the contemporary intangible value in the North of Dongsi, the valuable elements are showing on the figure 5.53.

The existing intangible value can be concluded as social cohesion and leisure personal lifestyle, which is so attractive in the fast pace of urban life.
Subject: Ms. Zhao
Description: Work as office clerk and live in Dongsi only one year
She said, "...It is very convenient living in such a central area, I will spend several hours to commute everyday otherwise..."
"...All service facilities like restaurants, shops, hospital and schools are in high quality, they meet all my demands...
"...The room I am living is quite narrow and dilapidated, but living in Hutong is much cheaper than a flat in city center, flat is too expensive for me...I feel entangled to live there, should I go on or give up ?..."

Subject: Henri
Description: Tourist from France, the first time to Beijing
He said, "...I like photography, I think Hutong and courtyard is the real Beijing. The building, people's lifestyles and their accent, they give me much inspiration and they cannot be found in other area...totally different from my home city...I love there so much!...It's amazing!..."
"...I think it is easy to make many friends if I lived in Hutong, so it is attractive for me...
"...The imperial palace are great, but they area lackluster and unimaginative by comparison...

Subject: Mrs. Liu
Description: Shopkeeper, run her shop and live in Dongsi for six years
She said, "...Most of our guests are residents living nearby, some old and retired people comes frequently, even so we became friends...
"...Similar conditions can be found in other restaurants and shops..."
Social cohesion and leisure personal lifestyle

Figure 5.53: Conclusion of intangible heritage at present, draw by author. Play folk music photo by Lin Xili.
5.6 Intangible heritage in the future

According to the scope of sustainable development, urban renewal should provide lasting improvement, since the potential activities of new generations should be included in the intangible value. In this section, the potential generation’s activities will be studied, and they will help to build the image of the North of Dongsi in the future.

5.6.1 Macro-scale: Future trend of social characteristic

Aforementioned higher level policy states that the creative and high-tech economy will be encouraged in Old City in the future. Meanwhile, the competition of talent resources has lied in the strategic position in today’s world. Consequently, the main potential generation of Dongsi are students, creative class and commuters work nearby (Fig.5.54).

Figure 5.54: New generation group in the North of Dongsi.
Photo from: www.aluminiumstock.com (left), www.tupianzj.com (middle), www.tuxi.com.cn (right)
5.6.2 Meso-scale: Stylish urban life

The tangible value in the future is the stylish urban life which is attractive for new generations.

Random interview and observation in school, business area and art zone are considered to be appropriate to find the interests of students, creative class and commuters. Meanwhile, new generations enjoy to share their life in social media, and it help to build the image of their life. The representative stylish urban life and activities are showing by several photos (Fig. 5.55).

5.6.2 Conclusion of intangible heritage in the future

At the conclusion of the analysis on the future intangible value in the North of Dongsi, the valuable elements are showing on the figure 5.56.

Potential activities are picked according to the life of new generations, includes students, creative class and commuters. Some activities represent the most emerging lifestyle of young generation, but they are spread quickly, since they will not be exclusive small group. The image of Hutong community will be hybrid and dynamic in the future, instead of a product from a particular era.

Figure 5.55: Stylish urban life and activities. Photo by author.
Stylish urban life and activities.

Figure 5.55: Conclusion of intangible heritage in the future, draw by author.
5.7 Conclusion of value analysis

The value of the North of Dongsi involves spatial value and social value.

For spatial value, on the one hand, the traditional typology of public space is the agent of traditional life and social interaction. On the other hand, some principles can be learned from traditional public space. They could be applied to clear the demarcation between public and private space in order to deal with the insufficient privacy space.

For social value, people activities in different context is valuable to study the relationship between people and environment, they provide criteria of good public and semi-public space, which could be applied in design proposal.
Chapter 6. Limitations analysis

After the completeness of the value analysis, it is important to analyze the current problems need to be improved in the North of Dongsi. This chapter produces the findings of limitations in program, traffic, courtyard and building environment. They are the results of site observation, literature review as well as interview on residents and visitors.

6.1 Program

Community program has changed in new context, and it is one of the main reasons to result in the spatial and social transformation in the North of Dongsi. Thus, three products will be produced in this section: map of land-use, public service facilities and the utilization of heritage objects.

6.1.1 Existing land use

The original residential function has been changed by the growth of office and business, and urban fabric has also been change by emerging programs (Fig.6.1). Office and business bring employment opportunities, and a large amount of immigrants followed. Meanwhile, little green space is difficult to satisfy the residents’ outdoor activities.

Therefore, Dongsi is invaded by business, and it is facing the losing of original residential functions.

Figure 6.1: Land use in the north of Dongsi in 2015. Draw by author. Source: Planning authority of municipal government.
6.1.2 Public service facilities

Most of the public service facilities can well respond to the demands of the residents (Fig.6.2), and it should be ascribed to central location of the community.

However, some facilities like school, medical care and administration have exceeded the community level, they bring extra pressure of traffic caused by visitors.

In addition, according to minimum requirements of the Allocation of residential public service facilities in Beijing in 2015, the sports facilities need five extra, and the aging service need to add two extra. In order to meet the existing social structure, the aging service should exceed the minimum requirements.

To be concluded, Dongsi is a convenient community with diverse facilities, and they can meet the demands of different groups.

Figure 6.2: Public service facilities in the North of Dongsi in 2015. Draw and photo by author. Source: Planning authority of municipal government.
6.1.3 Utilization of heritage object

Most heritage objects in existing context were continued the original residential function (Fig.6.3), but the damage of residential heritage is the most serious compare to other categories. Meanwhile, heritage objects as offices are closed to public, people tend to forget the stories of those heritages.

Accordingly, introducing new programs and sharing with public to those historic buildings will help to physical preservation and memory continuity.

Figure 6.3: Land use of heritage object in the north of Dongsi in 2015. Draw by author. Source: Planning authority of municipal government.
6.2 Traffic

Traffic in the North of Dongsi has changed from non-motorized to car-dominated during transformation. Since traffic analysis will include the width of Hutong, public transportation, and the traffic of cars, bikes as well as pedestrians in the North of Dongsi.

6.2.1 Width of Hutong

The flow of traffic in outline of the block is larger than Hutong area. Dongsishitiao Road and Chaoyangmen Road are the main urban streets of Beijing, and the North of Dongsi Road and the North of Chaoyangmen Street are the sub urban streets.

The Hutong in the block mainly goes from east to west, and the narrower Hutong goes north to south are mostly branches alley. The width of Hutong from east to west are 5 to 7 meters, and the width of the branch lanes are mostly below 5 meters (Fig.6.4).

Therefore, the narrow Hutongs restrict the development of traffic.
6.2.2 Car traffic

Urban streets can meet the requirements of motor vehicle, since the streets with several lanes can provide large flow of car traffic and connect with urban road system.

However, most Hutong in Dongsi is too narrow to suit for car traffic, only main Hutong can allow the car to pass through in single way. Due to the limitation of the width of Hutong, the one-way traffic lanes decide their weak traffic capacity in the North of Dongsi (Fig.6.5).

Figure 6.5: Car traffic in the north of Dongsi in 2017. Draw by author. Base on site observation and map study. Source: Google map.
6.2.3 Car parking

According to the statistics from municipal government, there are 0.2 to 0.25 cars in per family, since the total amount of car parking is about 650 to 700 cars. However, base on map study and site observation, compare to surrounding neighborhoods, car parking system can not respond to the demands in existing context. Since roadside parking is common in Hutong because there is no enough car parking area (Fig.6.7).

According to the interview on residents, most of the interviewees expressed dissatisfaction with car parking and car traffic. They also thought that the illegal car parking is also the main reason of public space decline in the North of Dongsi (Fig.6.6).

Therefore, without enough legal car parking space, public space may will continue to decline.

Figure 6.6: Interview on car parking. Draw by author.
Figure 6.7: Car parking in the north of Dongsi in 2017. Draw by author. Based on site observation and map study. Source: Google map.
6.2.4 Bike traffic

Bike traffic has been the main transportation in Hutong area all along, because not only it is convenient way for short journey in inside of neighborhood and to surrounding area, but also bike can perfectly suit the spatial condition of Hutong. Since bike traffic is no limited in any Hutong area, and it is more accessible than car traffic (Fig.6.8).

According to site observation, most residents have private bike but they are always worried about steal. Sharing bike system cannot respond to existing demands, because the limited amount of bikes and lack of sharing bike point inside of neighborhood.

To sum up, Hutong is suit for bike traffic, and the public bike system should be improved to encourage the bike traffic.
6.2.5 Pedestrian traffic

Hutong was originally designed for pedestrian, since pedestrian enjoy the highest degree of accessibility in the North of Dongsii (Fig.6.9). It is accessible to surrounding neighborhood on foot, because there are large amount of zebra lines, pedestrian overpasses and underground passages to access.

According to the previous literature review, trees and green space are considered as one of most important factors in improving the walking environment, since the landscape in the middle area of the community need to be improved in order to promote the walking environment.

Figure 6.9: Walking system in the north of Dongsii in 2017. Draw by author. Base on site observation. Source: Planning authority of municipal government and google map.
6.3 Building environment

According to the theory of "Organic renewal" (Chapter 4), building environment analysis is the base of potential area assessment, since Professor Wu assessed the quality of building structure and historic value.

In the context of Dongsi, historic value has already been explained in chapter 5, building environment analysis will be produced in this section. Besides building structure, analysis will include living density, illegal construction and building height.

6.3.1 Living density

According to municipal government, the population density is 30000 people per square kilometer, and it is much higher than the average level (21000 people per square kilometer) of the old city of Beijing. And more than the half of the residents living in the courtyards, which living density is more than 30000 people per square kilometer (Fig.6.10).

Therefore, the high living density in Dongsi is too high to ensure the basic quality of life. More than the half of the residents are suffering from the humble abode.

Figure 6.10: Population density in the north of Dongsi in 2015. Draw by author. Source: Planning authority of municipal government
6.3.2 per capita living space

Integrate the data of living density and housing area, the average of per capita living space in Dongsi is about 13 square meters per person, and the most of the courtyards are difficult to reach the normal level (Fig.6.11).

People living in the courtyard signed by black and dark blue are the target group who need to be decentralized, and most of them also area suffering from no public space in their courtyard and danger of fire using.

To sum up, decentralizing the residents in humble abode and make the per capita living space to average is essential for security reasons.
6.3.3 Illegal construction

The distribution map of illegal construction from municipal government (Fig.6.15) shows those diverse illegal construction resulted in urban fabric changed during the transformation stage.

Base on visual analysis by author in the neighborhood, most illegal constructions are taken up the semi-public space in the courtyard. Add second floor on the top has become the new trend of illegal construction (Fig.6.12 and 6.13).

In order to find the reason why residents build self-construction, author did stochastic interview on 20 residents in the North of Dongsi. Only 5% residents feel satisfied with their living conditions, over 70% complain their tiny living space and inconvenient sanitary facilities. Accordingly, about 75% residents have built extra construction to enlarge their more room space (Fig.6.14). The function of the new room mostly are bedroom, kitchen and storage room, and add a separated bedroom for growing child is very common for the three-generation family.

Residents also admitted that illegal construction has become the main reason of more and more neighborhood conflicts currently.
Figure 6.15: Distribution of illegal construction in 2017. Draw by author. Based on site observation and map study. Photo by author in 2017.

Source: Planning authority of municipal government
6.3.4 Structure quality

According to the building structure assessment by municipal government, as well as visual analysis by author in the neighborhood, the structure quality building structure quality shows close relation to the illegal construction. The legal housing in Hutong has experienced periodic maintenance by housing companies or governments, since they have safe or good structure, but most building structure of illegal addition are unsafe (Fig. 6.16).
6.3.5 Building storey

Based on visual analysis by author in the neighborhood, building storey is an important criterion for evaluating historic value of a courtyard, and whether it is in traditional look (Fig. 6.17). Traditional courtyards consist of one-storey buildings, and there are some multi-storey historic royal and public buildings appearing after the Qing dynasty.

6.4 Conclusion of spatial analysis

At the conclusion of the analysis on spatial analysis in the North of Dongsi, limitations and problems are concentrated on three aspects:

First is the excessive programs in Dongsi community. They bring pressure of car traffic and immigrants as well as visitors from nearby, which disturbs the original residents’ life.

Second is the weak traffic capacity of Hutong, because the spatial condition of Hutong limits the car traffic.

Third is illegal construction resulting in public space decline. It has become the limitations on the living condition improvement and social interaction in the North of Dongsi.

Figure 6.17: Building storey in the North of Dongsi. Draw by author. Base on site observation and map study. Source: Google map.
CHAPTER 7. POTENTIAL AND CONCEPT
Chapter 7. Potential and concept

As a result of site analysis, it is important to find the potential area for future development, which will integrate with the values (chapter 5) and the limitations (chapter 6) of this area. Base on the potential, design concept will be generated.

7.1 Courtyard assessment: Typology of courtyard renewal

The courtyard assessment will guide different typology of renewal on different type of courtyard, it will overlap the previous site analysis, including value maps of heritage objects, and limitation maps of program, traffic, courtyard and building environment (Fig.7.1).

The following solution will relate to different categories of courtyard assessment (Fig.7.2):

The preservation elements are heritage objects and courtyards with well-preseved traditional courtyard form as well as the courtyard which are already renewed.

The renewal elements are bad quality building, illegal construction, high living density courtyard and courtyards that are mismatch with traditional Hutong-courtyard form.

The target group for future development are some traditional courtyard, the discordant redeveloped courtyard as well as mix quality and ordinary courtyard.

The original form could be recognised and valuable architectural elements could be found in traditional courtyard normally. But the atriums in some of those courtyards are occupied by illegal construction, so the intervention on the traditional courtyard is concentrate on restore their original form.

The discordant redeveloped courtyard and mix quality and ordinary courtyard are the compound with less historic value, therefore, they could be demolished and rebuilt without limitation.

Figure 7.1: Courtyard assessment in the north of Dongsi. Draw by author.
<table>
<thead>
<tr>
<th>Type</th>
<th>Semi-public or semi-private space solution</th>
<th>Building solution</th>
<th>Introduce new program</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heritage courtyard</td>
<td>Maintain original look</td>
<td>Preserve and maintain by same form and material</td>
<td>Allow</td>
</tr>
<tr>
<td>Traditional historic courtyard</td>
<td>Maintain original look or could be renew according to demands</td>
<td>Maintain original look and allow to use new material</td>
<td>Allow</td>
</tr>
<tr>
<td>Modern times historic courtyard</td>
<td>Maintain original look or could be renew according to demands</td>
<td>Maintain original look and allow to use new material</td>
<td>Allow</td>
</tr>
<tr>
<td>Concordant redeveloped courtyard</td>
<td>Renew according to demands</td>
<td>Maintain or could be rebuilt to meet traditional form</td>
<td>Allow</td>
</tr>
<tr>
<td>Mixed quality and ordinary courtyard</td>
<td>Renew according to demands</td>
<td>Redvelop to meet traditional form or demolish</td>
<td>Allow</td>
</tr>
<tr>
<td>Discordant redeveloped courtyard</td>
<td>Renew according to demands</td>
<td>Renew facade to meet traditional form</td>
<td>Allow</td>
</tr>
</tbody>
</table>

The target group for future development:

- **Repair**
  - Good traditional courtyard
- **Repair combine demolish and renbuild**
  - Discordant redeveloped courtyard
- **Repair combine demolish and renbuild**
  - Mix quality and ordinary courtyard

Figure 7.2: Renewal typology base on courtyard assessment in the north of Dongsi. Draw by author.
7.2 Chosen site

In order to achieve sustainability in different scales, this project will work from neighborhood scale to human scale, since a site is chosen to zoom in the spatial interventions in meso-scale and micro-scale.

Based on site assessment, the chosen site is marked in figure 7.3, and there are two reasons to choose it.

The one is its critical location. It is surrounded by different type of street, including urban street (the North of Chaoyangmen street), main Hutong (Dongsi 6th and 7th Hutong) and narrow Hutong (Shiqiao Hutong).

The other is most to-be-renewed courtyards are concentrated on this area, as well as mix with other to-be-preserved typology, since it is appropriate as the example of meso-scale renewal work.
7.3 Merging conclusions of analysis

The conclusions of the analysis of values and limitations in social and spatial aspects indicated that the North of Dongsi is a valuable traditional Hutong community which is waiting for certain strategies and spatial interventions in order to rehabilitate the value of "Hutong-courtyard" and the notion of sustainable urban renewal.

Specifically, value and limitations analysis in spatial aspect revealed that the traditional system of public and semi-public space, produced by the transformation of "Hutong-courtyard" in changing context, is considered to be essential for promoting social interaction and vitality of a community. However, the insufficiency of privacy space (private and semi-private space) results in decline of public and semi-public space. Social analysis do also confirm both social space and privacy are pressing need for not only the original residents, but also new immigrants who form the future of the North of Dongsi.

Therefore, the design goal of the present project is to restore the relationship between people and environment, create social space in the neighborhood. Specifically, is to preserve and improve the traditional public space system, which can be shared by all groups, in order to continue and promote the social value of Hutong.

7.4 Theoretical criterion of social space

Theoretical research (Chapter 4) helps to achieve the design goal in the context of Hutong.

Literature suggests that a safe, car free, ecological public space system, including public service facilities, is the way to promote social interaction and diverse public life. It will become the main potential in Hutong renewal. Meanwhile, transition between public and private space is important for better living environment. Accordingly, diverse and good public, semi-public, semi-private space could be the agent of social interaction.

In order to achieve sustainable development, urban renewal should be integrated in regional development, and renewal should include future generation for lasting solution in changing context.

Sustainable development in new program should concentrate on serving local residents instead of bringing new pressure of immigrants, and diversification of employment is considered to be effective. It could work with people decentralization and help to influence the social structure.

For sustainable social development, the public life and social interaction are considered as the feature of Hutong. Social continuity needs to rely on spatial development, since the research of the relationship between people and physical environment in different generations is essential for sustainable development.
7.5 Collage of design goal

Future Hutong

The collage reflects the design goal of the future Hutong space (Fig. 7.4).

"Traditional, green, comfortable and quiet space" is the vision of future Hutong in the latest *Master Plan of Beijing*, in order to meet those requirements, remove the car and create a pedestrian-friendly public space are considered effective.

In the future, Hutong with green and comfortable environment will regain the vitality in the past. Meanwhile, emerging people activities of new generations and new way of social interaction are also promoted by social space.

The reaction between traditional historic space and modern life will form the new socio-spatial characteristic for Hutong, and it will become the future heritage in changing context.

Future courtyard

The collage reflects the design goal of the future courtyard space (Fig. 7.5).

Differ from Hutong, courtyard is the more private space for housing, since the privacy is the first requirement. According to the theory of territories, clear fence and buffer between private room and semi-public courtyard space should be introduced in the future.

The nice social interaction between neighbors who live together is considered as the value of courtyard, hence good quality atriums (semi-public space) of courtyard could help to preserve the value.

Beside traditional value, courtyard should also serve the modern life. New and flexible housing typology could suit for diverse demands of new generations and changing context. Trendy people activities like urban farming could emerge in courtyard space in the future.
Future courtyard

The collage reflects the design goal of the future courtyard space (Fig.7.5).

Differ from Hutong, courtyard is the more private space for housing, since the privacy is the first requirement. According to the theory of territories, clear fence and buffer between private room and semi-public courtyard space should be introduced in the future.

The nice social interaction between neighbors who live together is considered as the value of courtyard, hence good quality atriums (semi-public space) of courtyard could help to preserve the value.

Beside traditional value, courtyard should also serve the modern life. New and flexible housing typology could suit for diverse demands of new generations and changing context. Trendy people activities like urban farming could emerge in courtyard space in the future.
7.6 Generation of design concept

In order to meet the design goal, preservation and transformation will work together. Preservation is not absolute, the aim is not to reconstruct an Old City, but is to promote the value of "Hutong-courtyard" to adapt to existing context. Traditional spatial principle of "Hutong-courtyard" will be preserved and enhanced critically to meet the new requirements of modern life and new groups.

In social dimension, promoting social interaction is the main aim, especially the face to face interaction for different groups (Fig. 7.6), including original elder and retired group, as well as the new generations of creative class, students and commuters. Since there is demands of different public, semi-public and semi-private space for diverse social interaction.

The program transformation can make great contribution on social structure adjustment, including attracting new generations and population decentralization. Program will give priority for the original and new residents of Hutong, instead of visitors.

Summing up these ideas in spatial and social aspects, a concept for the project can be formed (Fig. 7.7):

"Preservation for all. Transformation for new."

Figure 7.6: Way of social interaction of locals and new generations, draw by author. Base on interview.
Figure 7.7: The concept of the project, draw by author.
7.7 Scale system of the design proposal

The concept for the North of Dongsi is an application of the theory of “Organic renewal” as well as theory of territory (Chapter 4). “Organic renewal” is the way to build scale system of the design proposal, and theory of territory is a way to promote a social interaction.

“Organic renewal” suggests that “start from a small area” proportionally and then “the scale of work may be expanded until it is self-sustainable”, it is considered as the way of bottom-up in built the design system of the graduation project. Besides, an up-down planning will help to achieve the concept in macro scale (Fig.7.8).

More specifically, in macro scale, preservation and transformation will be integrated to provide good public space system for all groups, including programmatic plan and transportation system. That is the process of up-down.

In meso scale, planning concept will be zoomed in chosen site, including restructuring programs and traffic as well as courtyard preserving and transformation according to typology of site assessment. Meanwhile, the public space system of Hutong will be explained in this scale.

Zooming in to interior of courtyard is the micro scale. In this scale, two typical courtyard will be chose to explain two types of spatial intervention in order to serve different target groups. Both type will play with territories in order to promote social interaction between different groups.

One is dominant by preservation, combining with partly spatial transformation. The target group is original residents who lives in courtyard with good traditional form.

The other is dominant by transformation, to show how the value of "Hutong-courtyard" to be applied and redefined in transformation process. The target group is new generations and small groups of original residents live in the courtyard in mix and ordinary quality as well as discordant redeveloped buildings.

Specifically, the two typical courtyards are following:

- **Original Hutong-courtyard renewal**: The traditional courtyard renewal for original residents living and having social interaction between neighborhoods. The semi-public space of the courtyard will be restored to traditional form, and renewal work will be concentrate on atrium system, in order to continue the traditional lifestyle and promote living conditions.

- **New generation community**: The north part will be renewed as multi-functional land for future generations, like creative class or students. The new case will be rebuilt on the existing mix-quality and ordinary courtyard. It is the example of how spatial and social value of "Hutong-courtyard" to be enhanced in adapting the urban modernization in new context.

Those small works could be expanded to whole neighborhood guided by the previous site assessment, that is the process of bottom-up.

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Those small works could be expanded to whole neighborhood guided by the previous site assessment, that is the process of bottom-up.
Figure 7.8: The scale system of the project, draw by author.

- **Process**
  - Top: Planning guide design
  - Bottom: Typology of courtyard renewal

- **Scale**
  - Macro-scale: Dongsi neighborhood
    - Planning: Spatial structure and regional connection
  - Meso-scale: Chosen site
    - Urban design: Restore urban fabric and improve the programs
  - Micro-scale: Courtyard
    - Urban design: Users' perception on public space system

- **Map**

- **Scheme**
Chapter 8. Neighbourhood planning
8.1 Population trend

Future social structure (Fig.8.1) comes from the people decentralization policy in the Urban Master Plan of Beijing, and it is enhanced by author base on the original social structure in the North of Dongsi.

The municipal policy states that "In the central cluster, population should decrease 2% to 3% per year from 2014, and finally the number should be reduced 15% in 2020." It is considered as an effective way to deal with the high living density in Hutong area, since the population trend of this project reflects the people decentralization policy.

Additionally, some programs like business and offices in Old City will move to the new administrative center in the east of Beijing, and Old City will make room for creative and hi-tech economy. Meanwhile, most inferior retail and service as well as storage had moved out of Beijing before 2016.

Those issues will influence on the social structure in Hutong neighborhood. The population in Dongsi neighborhood will decrease 15%, the main group of decentralization is immigrants from other part of China. They will move out with programs changing, new immigrants will be students, creative and hi-tech class. But the amount of immigrants will be limited below 25% in order to preserve the social sustainability.

In order to avoid the threats of gentrification and over-commercialism in residential neighborhood, visitors and tourists will also be limited.

Original residents decentralization will rely on voluntary. According to the interview, only small number of residents who lives in the housing with bad living condition shows the willing of moving out, since there is little decrease of original residents.
Decentralize immigrants from other part of China: Shop holders & low-income workers

Decentralize visitors: Residents nearby & Tourists

Conflict

63%
Main group of locals: Retired people & Elder & Middle age people

>75%
Main group of locals: Retired people & Elder & Middle age people

Population decrease 15%

Existing social structure

Future social structure after people decentralization

37%
Imigrants from other part of China: Shop holders & low-income workers

<25%
Imigrants

Attract new generations: Students, creative class, people working nearby

Figure 8.1: Future social structure of the North of Dongsi.
8.2 Programmatic layout
8.2.1 Programmatic structure

In order to achieve the sustainability in the North of Dongsi, the programmatic layout of the neighborhood is mainly inhabitation.

According to existing land use, the non-residential area will concentrate on several axes to serving the residents and visitors. They are consists of two commercial streets, two community service axes and two office axes. The functions of specific axis are following:

Commercial street will be the aggregate of retail stores and catering, and any growth of new shops can only locate along the axes. Business combing with creative economy will be encouraged, such as crafts stores, courtyard cafe, private museum and so on.

Office axes will give priority for Hi-tech and creative economy office, in order to contribute the Master Plan of Old City.

Community service axes will preserve the most commercial program relate the residents’ daily life, like supermarkets, technical support and restaurants, and improve their facades to traditional form.

Other area of neighborhood should reserve for residents, other non-residential function will be banned. Meanwhile, the building facade in residential area should be in traditional form, in order to preserve the "Hutong-courtyard" structure.
8.2.2 Land use transformation

Based on the programmatic layout, several parts of land use should be adjusted.

For area along the axes (Fig. 8.2), land use in office, dwelling and business will transform to multi-functional land, in order to increase density and open the facade. Specifically, multi-storey buildings are allowed in this area, and the lower floors along street and Hutong could be business or office, and upper floors could be housing.

In residential area (Fig. 8.3), non-residential land like business will be restored to traditional courtyard for dwelling.
Figure 8.3: Planning of business land trans to dwelling land. Draw by author.
8.3 Car traffic and parking system planning

Car-free and enough parking lot are the main content of the car traffic and parking system planning (Fig. 8.4).

In order to create safe public space, most Hutong will become car-free area, only preserve two one-way traffic to connect with urban street. Kick-up block will be introduced to restrict the car accessing.

Logistical, medical and other serving profession vehicles as well as local residents can use the induction pass to access but not allow to parking in Huotng. Temporary access cards are issued in special circumstances.

Underground car parking in the outline of the neighborhood will cover 115% of existing demand, in order to leave space for future development. Besides the legal parking lot, car parking is prohibited in whole neighborhood, and there will less than ten temporary car parking in the two one-way traffic Hutong.
Figure 8.5 shows the walking distance to underground parking in each area. Most offices and modern residential community will directly connect with underground parking, people could access to underground parking from their building and the walking entrance nearby.

For traditional courtyard, only less than 10% courtyards are apart from the entrance over 150m. Most residents could get their cars in 150 meter away their home.
8.4 Bike traffic planning

Base on the analysis of bike traffic, the main aim of bike traffic planning is to promote the sharing bike system and bike parking space (Fig.8.6). The amount of sharing bicycle rental point will be increased 6 extra inside of neighborhood, to ensure the service radius can be less than 200 meters. Meanwhile, concentrated bike parking facilities will proportionately introduce to street and Hutong.
8.5 Green space planning

According to literature review, walking environment is closely linked with the quality of public space and landscape. Based on the value and limitation analysis, trees and small micro green space along Hutong and inside of courtyard is main landscape of "Hutong-courtyard", and they also improve the quality of public space.

In regional scale, there is no large scale green space nearby, since the new planning will include preserving the existing trees and green space, introducing new community parks, micro public and semi-public green space along Hutong and inside of courtyard (Fig.8.7).
8.6 Walking system planning

According to literature review, besides the quality of landscape, accessibility is also essential for improving the walking environment.

The walking system planning is including reconnecting the discontinuous Hutong, and broadening the sidewalk to increase the connection between building and street (Fig.8.8).
Chapter 9. Designing of the chosen site
Chapter 9. Designing of the chosen site

This chapter is the meso-scale design proposal on the chosen site. It will start from site analysis in social and spatial dimension, and then spatial strategies will be generated. Final part will be the explanation on design proposal.

9.1 Analysis of chosen site

Social dimension

Base on site observation and previous social analysis, inhabitancy pattern of the choosing site is shown on figure 9.3. It explain group of residents live in different typology of courtyard.

In the chosen site, most local residents are living in traditional historic courtyard, and most of them are two generations living together, since they preserve the traditional inhabitancy pattern of courtyard, that is each generation living in one room and sharing the semi-public space inside of courtyard with other families (Fig.9.1).

For courtyards with mixed and ordinary quality, they are the homes of massive immigrants and small amount of locals (Fig.9.2).

Therefore, courtyards with mixed and ordinary quality are more appropriate for introduce new immigrants and traditional courtyard could be preserve for locals.

Figure 9.1: Typical local’s courtyard. Photo by author.

Figure 9.2: Typical immigrants’ courtyard. Photo by author.
Figure 9.3: Inhabitancy pattern of chosen site in 2017. Draw by author. Base on site observation and map study.
Spatial dimension

According to site observation, the existing spatial conditions of land-use, public space and road system are showing from figure 9.4 to 9.6.

For land-use in chosen site, it is a mix functional area including office, commerce and living (Fig.9.4). The residential area is surrounded by commercial buildings and office. Meanwhile, some part of "Hutong-courtyard" has already replaced by multi-storey buildings, since the urban fabric is also mixture of old and modern.
The public space (Fig.9.5) shows close relationship with program. Original courtyards are closed to public area, and Hutong and street are the traditional public and social space.

However, the office and modern residential courtyard is quite private, and it takes up large amount of public and semi-public space, since social interaction is not common in this area.

Semi-public space in courtyard is decline due to the illegal construction. Commercial building along street and Hutong could be used as semi-public space only during the open time.

Accordingly, open the large private space is essential for promoting social interaction in the chosen site.

Figure 9.5: Public space in chosen site in 2017. Draw by author. Base on site observation.
For road system (Fig. 9.6), the private office and modern residential courtyard as well as some traditional courtyards become the obstacle of accessibility. Accordingly, except the buildings along the main street and main Hutong, other area is less accessible.
Merging Social and spatial dimension

In order to create social space in chosen site, a new public space system should be introduced.

There are different types of social interactions in this site, including visitors and residents, immigrants and locals as well as people who live together, since diverse public, semi-public, semi-private space need to adapt different demands.

Program and building typology are related to each other, and they can be applied to guide and attract different groups to live and stay in specific area.
9.2 Future inhabitancy pattern layout in chosen site

The concept of future inhabitancy pattern tries to respond to different types of social interactions in this site (Fig.9.7). They are:

**New generation community**: New immigrants will be introduced to the existing immigrants' area. The private modern courtyard with multi-storey buildings will be opened, in order to create semi-public space can shared with new immigrants, since it will become the new generation community which mix the locals and new immigrants.

**Community center**: Visitors need accessible and attractive public space, but they should be separate to private living space. Since the existing private office will be opened and become community center and public park. It will provide big public space for social interaction between all groups.

**Traditional community**: The residential area for locals will be enlarged with existing immigrants moving out. In those area, illegal construction will be demolished to restore and preserve the traditional valuable, and more semi-public and semi-private space will be provide for interaction between neighbors.

Base on the concept, the layout (Fig.9.8) is generated, and it also reflects the future social structure in macro-scale.

![Figure 9.7: Concept of future inhabitancy pattern of chosen site. Draw by author.](image-url)
Figure 9.8: Future inhabitancy pattern of chosen site. Draw by author.
9.3 Spatial strategies on chosen site

Base on the future inhabitancy pattern, three spatial strategies for each schemes are generated (Fig.9.9). The core idea of spatial strategy is the transformation between public space, semi-public space, semi-private space and private space. Specifically, they are:

**New generation community (Fig.9.9-Strategy1):** Open the private modern courtyard with multi-storey buildings and trans the private space to semi-public space which is shared with new immigrants live around it. According to macro-scale planning, the large amount of to-be-renewed courtyards can provide more intensive and multi-functional land use, since new building typology will instead the courtyard in poor quality.

**Community center (Fig.9.9-Strategy2):** Open existing private office, trans the original car parking space to public green space. Meanwhile, the groundfloor of the community center will be introduce new programs like cafe, Hutong museum and library, they will trans from private space to semi-public space.

**Traditional community (Fig.9.9-Strategy3):** Demolish illegal construction and restore the traditional form of courtyard, especially the atrium system. Introduce semi-private space as buffers between semi-public and private space, because enough privacy can promote social interaction in semi-public space, and it is also to preserve the value of courtyard.

The three strategies are the main idea on each schemes in meso-scale. In micro-scale, they are not strictly correspond, but they will be integrated.

Figure 9.11 (Part1): Spatial strategies on chosen site. Draw by author.
Figure 9.11 (Part2): Spatial strategies on chosen site. Draw by author.
9.4 Design proposal of chosen site

The layout of choosing site (Fig.9.10) is the spatial application of spatial strategies, meanwhile, it also zoom the macro-scale planning in meso-scale.

According to the programmatic planning, multi-storey buildings are arranged in the area along the main street and Hutong, and they provide spatial conditions for multi-functional land use, others courtyards are restored to the traditional form (Fig.9.11).

Transformation mostly takes place in poor quality courtyard, but in traditional community, it is dominant by preservation. Most of the illegal constructions have been demolished to make room for semi-public and semi-private space. Only a few additions that are less disturb on the traditional features are retained, because they could provide more living space to a certain degree. New-built hallway is the emerging buffer between atrium and private room, which is based on the traditional value analysis of courtyard.

According to the macro-scale traffic system planning, discontinuous Hutong has been connected (Fig.9.12).

Bike traffic (Fig.9.13) become more accessible due to new connection, but bicycles are banned in public green space and inside of sub community, in order to keep the safe pavement. Concentrated bike parking is mainly concentrated in new generation communities and community centers, because people in multi-functional area have more demands of bicycle traffic. Local residents are more accustomed to park in their own homes.

For walking system (Fig.9.14), public and semi-public green spaces are distributed in Hutong and inside of courtyards, forming a new green space system, which improves the accessibility and quality of walking environment in this area. The new community center is the most accessible in order to attract visitors and reduce the impact on other residential area.

The entrances of underground parking are along the street and main Hutong, and walking entrance of underground parking is convenient for car using, and
Figure 9.10: Layout of chosen site. Draw by author.
Figure 9.11: Program layout of chosen site. Draw by author. Text description in page 144.
Figure 9.12: Road system layout in chosen site. Draw by author. Text description in page 144.
Figure 9.13: Bike traffic layout in chosen site. Draw by author. Text description in page 144.
Figure 9.14: Walking system layout in chosen site. Draw by author. Text description in page 144.
Figure 9.15 shows the walking entrance to underground parking. Except the direct connection between multi-storey building and underground parking, several entrances are uniformly distributed in the site. They are serving the people who live in surrounding courtyards.

The entrances are in traditional form. Some of them are combined with landscape and green space, and others become a part of courtyard.
Figure 9.16 shows how cars enter the underground parking. The two entrances of underground parking by car are along the street and main Hutong separately, both of them are combination of entry and exit. The Hutong is for one-way traffic, since the entry and exit will not meet with each other.

The entrances are located next to the border and be separated with walking entrances, in order to provide car free public space system inside of the community.

To be conclude, two bird views of chosen site in the existing and future are shown in Figure 9.17 and figure 9.18.

They give the explanation of how public space system be improved in the chosen site. One is the increasing of public space, including the public, semi-public and semi-private space, by demolishing illegal construction and opening private space. The other is the environment of public space improved by green space, which was the main value of Hutong in the past.

Hutong and main street is the more public, and courtyard and inside of the new community is semi-public and semi-private. The different typologies of public space are in different colors in the future bird view.
Figure 9.17: Existing bird view of chosen site. Draw by author.
Figure 9.18: Perspective of bird view of chosen site in the future. Draw by author.
Chapter 10. Designing of the typical courtyard
Chapter 10. Designing the typical courtyard

10.1 Typical chosen courtyard

In order to explain the preservation and transformation in micro-scale, two typical courtyard are chosen to zoom in (Fig.10.1). One is in the traditional community, which is focus on restoring the traditional value of courtyard. The other is in the new generation community, which is dominant by how values of “Hutong-courtyard” could be enhanced in new urban fabric.

In micro scale, the relationship between people and environment will be zoomed in to human scale, since the design proposal will try to respond people activities in different area.

Therefore, this chapter will start to explain the specific spatial interventions for each group in micro-scale, and show how to apply those schemes in each courtyard separately.
10.2 General concept in micro-scale

According to the social value analysis and the interviewing on locals and immigrants, interventions for each group are on different focus in micro-scale.

For locals who live in traditional courtyard, the main aim is to improve the semi-public and semi-private space inside of courtyard in order to preserve their leisure life and social interaction between neighbors as well as family members (Fig.10.2).

For new immigrants who will live in transformation courtyard, they not only are attracted toward traditional leisure life and social interaction in Hutong, but also need to enjoy the stylish lifestyle (Fig.10.3 and 10.4). Since create a system of public, semi-public and semi-private space for mixing new immigrants and locals is the main aim in new immigrants community.

Base on those concepts, the findings of social and spatial values in chapter 5 can be preserved and promoted in specific areas.

Figure 10.2: Focusing on traditional leisure life in courtyard, draw by author.
Figure 10.3: Existing new generations life in a weekday in general context, draw by author.
Aim

Combining work with relaxation in Hutong

Legend

Private  Semi-private  Semi-public  Public

Figure 10.4: Future weekday of new generations in the neighborhood, draw by author.
10.3 Traditional courtyard design

10.3.1 Existing situation of the traditional courtyard

Base on courtyard observation (Fig. 10.5), most of the traditional features of courtyard, like festooned gate, slope roof and brick walls, are well-preserved, since the original form of the courtyard could easily be recognized.

But the illegal construction has resulted in the decline of semi-public space in interior, especially in the front court and back court.

There are 13 local families lives in this courtyard, most of them are suffering from lack of enough living space. It is also the main cause of the illegal construction.

Some additions like coal storage have been abandoned and could be demolished, because the heating system in Dongsi has changed from coal burning to electric power.

Figure 10.5: Existing situation of the traditional courtyard. Draw and photo by author. Base on site observation.
Figure 10.6: Existing residential pattern of traditional courtyard. Draw by author.
10.3.2 Analysis and research on original form

Base on the courtyard assessment and solutions in macro-scale, the spatial interventions on traditional courtyard should dominant by preservation, since the original layout of the courtyard (Fig.10.7 and 10.8) is reproduced, in order to guide the further design. The reproduced map reflects the aforementioned traditional features and principles of typical courtyard (See Chapter 1, Page 10-11).

Figure 10.7 shows the original private "public space" inside of the courtyard. A series of internal atriums are closed to Hutong, from entry court, on its southeast corner, to main central court and backcourt to end. Differ from typical traditional courtyard, the back court of this courtyard is on the right side, since there is only one corner court, and the other one has become the transportation space to back court.

Meanwhile, all buildings and constructions are in traditional form, since all aforementioned traditional architectural heritage elements (See Chapter 6, Page 64-65) could be found.

The semi-opened veranda is not only the transportation of north, east and west room as well as the festooned gate, but also the transition from indoors to outdoors (Fig.10.8).

Therefore, future development of the traditional courtyard should follow the spatial principles, in order to preserve the structure of "Hutong-courtyard".
Figure 10.8: Original groundfloor layout of the courtyard. Draw by author.
10.3.3 Giving social value to traditional courtyard

According to the value analysis, besides the traditional spatial value from the past, social value of each stage is considered as the essential factor to build the relationship between people and courtyard.

Based on site observation and interviewing, courtyard is appropriate for micro-scale activities which are not so public as the street and Hutong life, since those values can be preserved in traditional courtyard (Fig.10.9), like eat together in courtyard, hang clothes, plantation and so on.

Therefore, the choosing social values can build connection between people and space system in their courtyard (Fig.10.10).
Where are those social values in a courtyard?

Figure 10.10: Connection between social value and environment inside of traditional courtyard. Draw by author.
10.3.4 Spatial interventions in traditional courtyard

To respond the social value in courtyard, spatial interventions in each atrium are formulated (Fig.10.12).

According to the meso-scale spatial strategies, semi-private space will be introduced, since the reduced semi-public space taken up by illegal constructions will be replaced by new buffers, they are the emerging semi-private space in traditional courtyard.

The micro-scale and meso-scale spatial value comes from transformation stage will contribute to the new buffers (Fig.10.11). In this way, traditional features, emerging spatial value as well as social value will be preserved in traditional community.

Figure 10.11: Preserved traditional features and emerging spatial value in traditional courtyard. Draw by author.
<table>
<thead>
<tr>
<th>Courtyard space</th>
<th>Original spatial characteristics</th>
<th>Existing spatial characteristics</th>
<th>Future spatial characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>space</td>
<td>Plan</td>
<td>Space</td>
</tr>
<tr>
<td></td>
<td>Plan</td>
<td>Space</td>
<td>Spatial intervention</td>
</tr>
<tr>
<td></td>
<td>Space</td>
<td>Scheme</td>
<td>Scheme</td>
</tr>
<tr>
<td>Entry court</td>
<td><img src="image1" alt="Image" /></td>
<td><img src="image2" alt="Image" /></td>
<td>Preserve</td>
</tr>
<tr>
<td>Spirit court</td>
<td><img src="image3" alt="Image" /></td>
<td><img src="image4" alt="Image" /></td>
<td>Partly restore and change reduced area to buffers</td>
</tr>
<tr>
<td>Front court</td>
<td><img src="image5" alt="Image" /></td>
<td><img src="image6" alt="Image" /></td>
<td>Change reduced area to buffers</td>
</tr>
<tr>
<td>Utility court</td>
<td><img src="image7" alt="Image" /></td>
<td><img src="image8" alt="Image" /></td>
<td>Partly restore and change reduced area to buffers</td>
</tr>
<tr>
<td>Main central court</td>
<td><img src="image9" alt="Image" /></td>
<td><img src="image10" alt="Image" /></td>
<td>Restore traditional form and add buffers</td>
</tr>
<tr>
<td>Corner court</td>
<td><img src="image11" alt="Image" /></td>
<td><img src="image12" alt="Image" /></td>
<td>Preserve private room</td>
</tr>
<tr>
<td>Back court</td>
<td><img src="image13" alt="Image" /></td>
<td><img src="image14" alt="Image" /></td>
<td>Partly restore and change reduced area to buffers</td>
</tr>
</tbody>
</table>

Figure 10.12: Connection between social value and environment inside of traditional courtyard. Draw by author.
10.3.5 Layout of traditional courtyard

Base on the generation of spatial interventions in each atrium, the layout of traditional courtyard can be formulated (Fig.10.13 and 10.14).

According to the layouts in meso and macro scales, the courtyard is restored to the traditional form, which includes not only the facade of the buildings (Fig.10.14), but the valuable semi-public space (Fig.10.15). Meanwhile, emerging semi-private space as the buffers between semi-public space and private space is introduced (Fig.10.15). On the one hand, privacy is enhanced, and it is benefits for social interaction between neighbors. On the other hand, it could undertake some functions of indoor space, such as learning, dining and meeting friends, which is flexible to expand the living space, since several tables and seats are set in front court (Fig.10.13).

The central court is still the main semi-public space for all residents. They can sit and chat or grow vegetables and eat together in central court (Fig.10.17). The original hallway is transferred as the semi-private space for sitting and hanging clothes (Fig.10.18, point B), and a new circulation around the central atrium plays the role of hallway.

Urban farmland, trees, pot plants and flowerbeds provide different typology of landscape, and the last two are mainly planted in semi-private space (Fig.10.18, view point A).

According to the future social structure, locals are mostly preserved, since enlarging the indoor space is essential for promoting the living conditions. Corner court is less contribution for atrium system, since it becomes private room (Fig.10.13). The interior of building was changed to two storeys (Fig.10.16), and the skylight on the slope roof is to the better lighting in second floor.

To be conclude, a bird view of the traditional courtyard is shown in figure 10.19, and it could explain how spatial values be preserved and how people use the space in new context.

Figure 10.13: Groundfloor layout. Draw by author.
Figure 10.14: Traditional courtyard layout. Draw by author.

Reference image: No.8 courtyard design in Chaer Hutong (top), typical hallway photo from http://blog.sina.com.cn/s/blog_1413075a40102w1bx.html
Figure 10.15: Layout of public space system. Draw by author.
Figure 10.16: Layout of section A-A. Draw by author.
Figure 10.17: People activities in courtyard. Draw by author.
Figure 10.18: Future image of courtyard. Draw by author.
Figure 10.19: Bird view of central atrium. Draw by author.
10.4 New generation community design

10.4.1 Existing situation of the new generation community

The new generation community is to explain how values of "Hutong-courtyard" could be preserved and enhanced during spatial and social transformation.

Courtyards in area are mainly in poor and mix quality (Fig.10.20), most of the buildings are illegal construction with unsafe structure. Except for a well-preserved traditional courtyard in the middle, the rest buildings are no historic value to be preserved. Most shops along the street are low-end retailers, which do not meet the requirements in programmatic plan in macro-scale, since new multi-function land combining working, living and business is introduced along the main street for new immigrants.

Figure 10.20: Existing situation of the new generation community. Draw and photo by author. Base on site observation.
10.4.2 Bringing social value to new generations community

According to the meso-scale design, closeness of traditional courtyard will be broke in new generations community. Local residents and new immigrants will share an open public space. The multi-functional building will provide shops and office as well as housing.

Base on the interviewing on new immigrants and the meso-scale plan, people activities in new generations community will be combine working and living, as well as public and private.

Accordingly, social values of leisure and stylish life are considered to be matched with new generations community, like street food court, party, outdoor activities and so on.
Where are those social values in?

Figure 10.22: Connection between social value and environment in new generations community. Draw by author.
10.4.3 Spatial concept: Enhancing spatial values in new generations community

According to the meso-scale design, new buildings in this area are mostly multi-storey buildings, since the urban fabric is no longer the intact traditional pattern of “Hutong-courtyard”.

New public space system will improve the traditional principle of public space of “Hutong-courtyard” (Fig.10.23), to adapt to a higher density land use and demands of new users.

In the new spatial logic (Fig.10.24), the enclosed courtyard atrium system will be split into the higher-level public space system, and the original hierarchy is broken, in order to create more public and semi-public space. The “original” atriums will be linked by several semi-Hutong space, which is comes from the original spatial characteristics of Hutong.

In addition, to respond to the requirements of higher density and multi-functions in multi-storey buildings, the atriums will be organized not only on plane, but also in vertical.

Figure 10.23: Traditional spatial logic of “Hutong-courtyard”. Draw by author.
Figure 10.24: Concept of spatial logic in new generations community. Draw by author.
10.4.4 Layout of new generations community

Base on the concept, the layout of new generations community can be formulated (Fig.10.25 and 10.26). The layout explain how the values be enhanced in specific area (Fig.10.27), and the new public space system is serving for social value (Fig.10.31).

According to the layouts in meso and macro scales, the good traditional courtyard in the middle is preserved, and office is new introduced. People working and living can do urban farming and other activities in the central court in this courtyard. Meanwhile, the central court is opened and connecting with the multi-storey building by steps, and the steps can be used as stay or party space (Fig.10.28, view point A).

The southern two-floor building is in traditional form but using new material, and its front court between street and the building, it will provide seats and green space for playing card and chatting. Due to the housing is nearby the main street, since an entrance garden as the semi-private space is built for the household. The spatial values during transformation in micro-scale are applied in entrance garden, like the bamboo fence and brick plant beds (Fig.10.29, view point B), in order to bring new tenants the leisure life of courtyard.

Multi-storey building is in half slope roof to create a sense of border for the community. In order to adapt the traditional form, the grey brick walls will be applied in the facade.

There are two entrances to multi-storey building inside of the community, and they simulate the entrance of traditional courtyard. Yingbi walls are applied to obstruct the sight from outside, and provide separate sunken central court for people working and living in multi-storey building.

(Next page to be continued)
Figure 10.26: Layout of ground and underground floor. Draw by author.
Meanwhile, the sunken central court can directly connect with underground parking and contribute to more intensive land use (Fig.10.30). In addition, some bricks of old buildings are preserved and be reused to build permeable fences to create several separate sitting places for meetings and having rest in the central court.

Several shops and cafe are opened to the main street but be separated with community, since the outdoor food court and cafe make smooth transition from street to interior as well as increasing the vitality of street. Office in ground floor can enter the community, because the central court of multi-storey building is also a business area for office workers.

In the upper floors, private rooms will be arrayed along corridors. The corridor imitates the concept of the hallway in the traditional courtyard, since it is the semi-private space for people living in upper floors. Meanwhile, it is also more private space, which is similar to the back court of courtyard.

To be conclude, a bird view of the new generation community is shown in figure 10.32. It could explain how the traditional spatial logic works in this area, and it is also the design reference for other Hutong area in Dongsi.
Figure 10.28: Perspective of central court. Draw by author.
Figure 10.29: Perspective of entrance garden. Draw by author.
Figure 10.30: Layout of section B-B. Draw by author.
Figure 10.31: People activities in new generation community. Draw by author.
Figure 10.32: Bird view of new generation community. Draw by author.
Chapter 11. Conclusions and reflections
Chapter 11. Conclusions and reflections

At the end chapter of the project, all findings will be concluded to answer the research questions which are raised at the beginning of the project (Chapter 2). Meanwhile, reflections could help the project to go further in the future.

11.1 Conclusions

"Which strategies and spatial interventions could provide the North of Dongsi for a sustainable rehabilitation and regeneration?"

The main research question showing the main purpose of the project, it is to give a sustainable urban renewal and preservation to the North of Dongsi neighborhood. Accordingly, establishing the methodology base on the context of Hutong is the first step. It is the aim of the first sub research question.

"What experiences can be learned from previous Hutong renewal projects and conservation policies carried on by municipal government?"

As historic residential area, Hutong renewal is closely related to its social and cultural background, since deriving experiences from the previous Hutong renewal project and higher-level policy is considered as the effective method. It provides a practical basis on methodology, which is rooted in context of Hutong.

The findings of experiences can be concluded in several points:

a. Large-scale redevelopment will damage original urban fabric and social structure, since it is not sustainable. Hutong renewal should be dominant by preservation.

b. Metabolic “organic renewal” respects the natural principle of Old City development, since it is an effective way to protect physical urban structure.

c. People decentralization in order to control reasonable population density is necessary for old city renewal.

However, According to case study and project review, existing Hutong renewal projects cannot balance physical and social development. New problems like gentrification and over-commercialism has become the new challenges in social development.

Past experiences need to be enhanced in this project, and the new approaches can be concluded as redefining the heritage in Hutong context. It helps to clear what is the research object in this project.

Hutong is not only the object, but also the people approach and public space system. Consequently, the core idea of this project is to understand how public space transition in changing context, meanwhile, to study how public space effecting human approach in Hutong.

According to the methodology, the main aim is to find what should be preserved and what should be promoted, since the second sub research question is to find the value to preserve.

"What spatial, cultural and social values does "Hutong-courtyard" bring to the North of Dongsi?"

The value research is according to the definition of heritage and sustainable development in Hutong context. The values of “Hutong-courtyard” are:

a. Tangible heritage in macro-scale is the urban structure of "Hutong-courtyard". In meso-scale is including the heritage objects, the public space system from street to Hutong and to courtyard, and how these spaces changing over time. In micro-scale is including all architectural elements like material and colors and how these renewing in existing context.

b. Intangible heritage in macro-scale is the existing social structure and the future population trend. In meso-scale is the historic narrative of public life and the existing social cohesion as well as the stylish urban life, which attracts new generations. In micro-scale is the historic narrative of private life and existing leisure life in courtyard as well as new lifestyle of new generations.

Those are the values of “Hutong-courtyard” and are worth to preserve in changing context.

After finding the values, how to preserve it is the main mission, since to find the potentials in the neighborhood is third sub research question.

"What are the potentials for future development in the North of Dongsi?"

Potentials need base on the existing limitations, they are the problems need to deal with. They can be concluded in:

a. Irrational and overfull program brings massive immigrants and visitors.

b. Weak traffic capacity for car traffic.

c. Public space decline caused by illegal construction and car traffic.

Integrating the findings of the values and existing problems, a map of renewal typology becomes the conclusion of analysis. After that something should be done for promoting this neighborhood. Since the last question is:

"What strategies and spatial interventions could promote in the North of Dongsi?"

Base on research, the design goal is combining preservation with transformation in spatial development, in order to restore the relationship between people and environment and to promote the social value of Hutong. Design proposal integrate social and spatial development from macro-scale to meso-scale and to micro-scale. They can be concluded:

a. In macro-scale, it starts from the new social structure, which becomes the base of further design. Others are including the new programmatic plan and layout of car traffic and bike traffic as well as walking system.

b. In meso-scale is focusing on the urban fabric restoring and transformation. It zooms in the new programmatic plan, traffic system and renewal typology of courtyard as well as social structure. A public space system for visitors, locals and new immigrants has been built.

c. In micro-scale, two typical courtyards are zoomed in to explain two types of renewal. One is traditional
courtyard, focusing on restoring the traditional semi-public and semi-private system. The other is new generation community, to show how the traditional public system work in new urban fabric and how the value of "Hutong-courtyard" to adapt the new context.

From macro-scale to micro-scale is the up-down process of the interventions on the neighborhood. In addition, the micro-scale works can be spread according to renewal typology of courtyard. It is the process of bottom-up. Two processes work together can build the complete design system of the graduation project. It can answer the main research questions.

Hutong has been transformed constantly over time, but changes had no damage on its value, even the transformation itself has become the value of "Hutong". All this is because the relationship between people and the public space of "Hutong-courtyard" has never been cut off. Whether the people, the building or the streets are part of the city that can not be lost at any time.
11.2 Reflections

The relationship between research and design

The aim of the project is to achieve the sustainable rehabilitation and urban renewal in the North of Dongsi in Beijing. It is a traditional Hutong neighborhood with great historic value, which is considered as the heritage of Beijing, but it is suffering from the environmental deterioration and public space decline. In order to achieve the sustainable rehabilitation and renewal in a historic area, research contributes to the design in the following aspects:

Firstly, theories of Hutong and heritage help to redefine heritage in Hutong context, and contribute to the new approach of research and design in this project. Understanding what are the values and limitations of Hutong neighborhood is the base of design proposal generation. Because values and limitations decide what should be preserved or improved, and they closely link with the different spatial interventions in design process. Literature review, historic analysis, site observation and interview help to redefine the spatial and social values of heritage in the context of Hutong, and those values become the design objects.

The research is focus on the Hutong objects, public space and people approach, since the design tries to restore the relationship between people and public space.

Secondly, theory of organic renewal and sustainable development contribute to find the potential area for design. Meanwhile, they inspire the planning proposal in macro scale, and help to build the scale system of this project.

Thirdly, research on the principle of ‘Hutong-courtyard’ construction and people activities as well as theory of public space system give understanding on how spatial and social elements support to each other and the criteria of good public space. It provides inspirations for design proposal in meso and micro scale.

Finally, interviewing and observation provide perspectives of residents. Their activities and demands make great contribution on the pertinent design in context of Hutong in dynamic time dimension.

The relationship between the theme of the graduation lab, the Urbanism track and the subject study chosen by the student within this framework (location/object)

Compare to products from past generations, it is more accurate to consider heritage as a process. ‘The History and Heritage’ studio provide the view that study a site in changing context. Hutong, the traditional residential neighborhood preserved from eight hundreds years ago in Old City of Beijing in China, is considered to suit for the graduation lab theme.

The North of Dongsi is a representative residential area with ‘Hutong-courtyard’ structure, and it has experienced transformation both in spatial conditions and social structure caused by modernization, and the original good social space is disappearing in dynamic context, since it is a good example of to-be-renewed Hutong community to apply the sustainable urban renewal. Additionally, historic residential community is the suitable object to redefine the heritage in spatial, cultural and social dimension in changing context. It meets the main concern of the research group. Finally, as urbanism student, research should work in different scales. To understand the role of heritage in regional sustainable development, this project will also talk about how could the historic urban structure respond to the new requirements of urban development in three scales, including human scale, neighborhood scale and urban scale.

Elaboration on research method and approach chosen by the student in relation to the methodical line of inquiry, reflecting thereby upon the scientific relevance of the work

The ‘History and Heritage’ research group suggests various methods combining historic analysis to approach the graduation project, since several methods are integrated in my research.

Firstly, the aim of the project is the sustainable urban renewal in a historic residential area, since redefining the heritage in context of Hutong, find the values and limitations in spatial and social dimension are the main issues of this topic.

Secondly, historic analysis combing with literature review helps to redefine the heritage in changing context of Hutong, and it is the base of the project. Thirdly, Historic analysis combing with literature review as well as observation is widely applied to find the spatial value and limitation of Hutong.

Additionally, for social dimension, besides the previous methods, interview is necessary to find the value of social interaction. Meanwhile, interview also provides ideas in defining the spatial value and limitation in residents’ perspective. Besides, mapping and GIS analysis help to visualize and spatialize the findings during research.

Finally, historic analysis combining with case study and literature review helps to critically review and discuss the previous experiences of urban renewal, and provide ideas for design proposal.

Elaboration on the relationship between the graduation project and the wider social, professional and scientific framework, touching upon the transferability of the project result

The aim of my project is sustainable urban renewal both in environmental and social development, since it pays more attention on the relationship between people and public space in changing context.

In wider social context, Beijing has grown as the cultural and political center of China, and it welcomes increasing migrants from other regions, since Hutong regeneration is important issue for improving the identity of Beijing. Meanwhile, Hutong has been very social space and provides much possibility in social mix, since it could be the agent to deal with the issue of new immigrants for regional development.
Additionally, Hutong renewal is an example to discuss the old neighborhood regeneration in wider context. On the one hand, Hutong can provide different spatial conditions from modern community, since the study of people activity in Hutong context can contribute to the typology of urban fabric. On the other hand, deal with the aging social structure in Hutong is significant for social development in other aging neighborhood. Additionally, heritage redefining and preservation are the main concern of my project. It could help to sustainable cultural and social development in wider context.

In wider professional and scientific context of old city renewal in China, general approach in urban renewal is more concentrate on preserving heritage objects, restore them as traditional form and improving building environment itself, but lack of attention on how people use the space. In this project, Hutong is not only object, it is also the public space system, and both space and housing need to be deal with.

My approach is an aggregation of historic, social and spatial research as well as restoring the relationship between people and environment. Specifically, this project tries to understand how public space and heritage objects change overtime. Meanwhile, people approach influenced by space and how it transit in different time are also taken into consideration. Accordingly, it makes contribution on definitions of Hutong and heritage, and helps to provide sustainable social and spatial development for urban renewal in wider context.

As a result, such a research on the topic was considered necessary for exploring new sustainable possibilities for the old neighborhood regeneration and heritage preservation.

Discuss the ethical issues and dilemmas you may have encountered in doing the research, elaboration the design and potential applications of the result in practice

The thesis project provided a design proposal to restore the relationship between people and environment, as well as preserve and promote the social interaction in Hutong community, in order to achieve the sustainable renewal and development in historic Hutong neighborhood. Accordingly, preserving the value of Hutong, which is redefined in changing context, and doing spatial transformation to respond to emerging requirements are the main concerns of my project. However, several issues should take into consideration and do further research, including threat and potential of this project.

First is the threat of gentrification and changing social structure, just like other Hutong renewal project in Beijing. The original residents are the main intangible value of Huotng, but with the improvement of living conditions, the value of housing will go up in the real-estate market, it may results in gentrification in renewed Hutong community. Although there were some interventions to deal with the threat of gentrification in my project, such as introducing low-income groups like students and provide them social housing, it is interesting to do further research on what housing policy could help to preserve the social structure during urban renewal in the future.

Second is the potential to deal with the traffic issue. The width of Hutong is difficult to meet the demands of car traffic, but people cannot live without a car. Accordingly, in this project, on the one hand, enough car parking can provide convenience for car traffic in exterior of Hutong. On the other hand, interior traffic will rely on walking and bike, since public bike are introduced to promote the non-motorized traffic. Their aim is to provide a good and safe public space in Hutong neighborhood. However, the still cannot perfectly to deal with the problem, for one thing, people need healthy public space and it is also the value of Huotng, for another non-motorized traffic is difficult to meet all demands of a neighborhood with aging social structure. As a result, further research on the location of aging people and their movement should be continued.

From the program dimension, if there was other potential programs for Hutong community. Hutong development is closely link with cultural economy in existing context, and it is similar in my project, because there is great historic and cultural value in traditional urban fabric. But there are still ambitions of examining other possible programs in Hutong area like ecological function or smart community.

The research of the graduation project is easily to transfer and apply in other project. Firstly, the project is talking about the relationship between people and environment, including how public space transfer in changing context, how people use public space in different context as well as what spatial condition could promote the social interaction, they are essential for creating good public life, since it could be widely applied not only in Hutong area. Secondly, considering in the historic view and study the site transformation is the main approach of my project, and it is significant not only for historic area. Because understanding the spatial, cultural and social transformation in changing context will help to the notion of sustainability in any project. Thirdly, the design proposal tries to respond to different groups, not only the original residents but also the new immigrants, since this urban regeneration project could be considered as ‘the design for people’. It shows that each urban generation project is quite different, because the diverse social and spatial context, but concern of people could be widely applied in other generation process.

All in all, this project tries to express a value: both people and environment are changing processes, and sustainability is to understand and learn from the changes.


Questionnaire for interview

Part I: Impression & perceiving (Residents & Visitors)
- Do you know that the North of Dongqi is historic reserves?  
- If there were conflict between demolition and preservation in historic reserve, it should be preserved or not?
- Impression of the North of Dongqi (function)  
  - For visitors: Commercial Area, Tourist Area, Living area, Other
  - Impression of the community you are living in  
    - For residents: Good maintenance, Little maintenance, Dilapidated

Part II: Housing improvements (Residents)
- Your ideal re-settlement way for this area: in site, re-settlement, other site
- Your ideal house without thinking housing price: courtyard, small apartment in Old City, big apartment in outskirt area
- Do you feel satisfied with your house now?
  - Satisfied, Just so so, Unsatisfied
- In order to improve your living conditions, have you did addition in your courtyard?
  - Used examples to show
    - fences, family members change

Part III: Public space & activities
- What do you do out door activities?
  - Big public parks (outside), Community park, Along main street & Road, Hutong, Courtyard
- The existing public space & semi public space in Hutong is enough for your activities or not?
  - Yes, Almost, No
- In your opinion, the lack of public space is caused by?
  - The original fabric of Hutong, courtyard, Occupation (cars, addition), Unreasonable spatial planning, Others
- Your ideal location of the activities facilities?
  - uniform distribution in Hutong, concentration in Hutong, in each courtyard

Part IV: Public service facilities
- Satisfied with the public service facilities (hospital, school, market)?
  - Satisfied, Just so so, Unsatisfied
- Evaluation
  - Education (School), Medical care, Culture Library, museum, Aging service, Sport & Fitness
Part V. Infrastructure

- Problems with ? [Engineering]
  - Water, electricity, heat, gas, sanitation

  How does

  - Car Parking influence your daily life?

  - Which way is better for car parking?
    - New Metong. Underground parking in Huting.
    - Public Park area near main street. Combine with surrounding public building.
Interview results of public space and parking system

**Public space**

What are outdoor activities?
- A. Public pool (Tou) 38%
- B. Community park 15%
- C. Walk along street 11%
- D. Hutong 14%
- E. Courtyard nearby 9%
- F. In own courtyard 6%

Enough public space in Hutong community?
- A. Enough 2%
- B. Just so-so 13%
- C. Not satisfied 86%

Your ideal public space (for outdoor activities and social interaction)?
- A. Community park in Hutong 49%
- B. Small public space distribute in Hutong 51%
- C. In courtyard 1%

**Parking system**

- 0.2-0.25 per families → 650-700 cars

Do parking influence your life?
- A. No influence 7%
- B. Traffic jam in Hutong 48%
- C. Noisy 22%
- D. Unsafe pedestrian environment 20%

Your ideal parking space?
- A. Underground parking nearby 69%
- B. Room in Hutong 19%
- C. Ground or underground carpark in the surrounding public facilities 19%