AN ANALYSIS OF BEIJING’S HUTONGS AND SIHEYUANS:
AN URBAN TREE APPROACH

A Thesis in
Landscape Architecture

by

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ABSTRACT

This study seeks to find an appropriate course of action designed to analyze the urban tree distribution in Beijing’s hutong and siheyuan. It aims to preserve and enhance Beijing’s hutongs and other elements of the traditional vernacular city and to thereby reinforce the city’s time-honored characteristics. The proposed action will draw on an urban tree approach to achieve an innovative preservation morphology by establishing procedures to both conserve the traditional identity of the city and provide new opportunities for growth and modernization.

Beijing’s hutongs comprise narrow laneways and vernacular courtyard houses arranged in a quadrangle style. As one of the characteristic physical forms of Beijing, hutongs are representative of Beijing’s distinctive identity and as such hold an important place in the collective cultural consciousness. Under the influence of China’s rapid economic development and radical urbanization, many hutongs have been replaced by an urban form that reflects the purpose of presenting a modern image. New apartments, offices, and government buildings have replaced thousands of hutongs, whose residents have been relocated to modern housing complexes. The external forces driving this transformation are modernization and globalization. Additionally, the inadequate development of public infrastructure within the old neighborhoods is a critical internal factor.

In order to determine the ways in which the hutong is structurally different from other neighborhoods, the study focuses on hutong neighborhoods in Beijing that exemplify various aspects of and processes relating to neighborhood change, decline, gentrification and stability. The study relies on data collected from visits made to three disparate types of hutong neighborhoods in Beijing. The central approach focuses on the contributions of trees to the urban environments of the hutongs. Other data was obtained through documentary reviews, on-site observations, and interviews with local residents. Ancient maps and satellite images are the primary methods for collecting data pertaining to the historical and current situation of the city’s hutongs.
# TABLE OF CONTENTS

LIST OF FIGURES ........................................................................................................... vi

ACKNOWLEDGEMENT ....................................................................................................... viii

Chapter 1. INTRODUCTION ............................................................................................. 1

1.1 Research Background.................................................................................................. 1

1.2 Significance.................................................................................................................. 3

1.3 Study Overview and Limitation.................................................................................. 4

Chapter 2. BEIJING’S HUTONGS AND SIHEYUANS ......................................................... 7

2.1 A Brief History of Beijing’s Hutongs and Hutong Neighborhoods ......................... 7

2.2 A Brief History of Beijing’s Siheyuan ........................................................................ 12

Chapter 3. QIANLONG MAP AND METHOD OF INVESTIGATION ......................... 18

3.1 Qianlong Beijing Map................................................................................................ 18

3.2 Investigation of Trees .............................................................................................. 20

   3.2.1 The Civilian Siheyuan ....................................................................................... 25

   3.2.2 The Imperial Siheyuan ................................................................................... 28

   3.2.3 Government Offices ....................................................................................... 30

   3.2.4 Altars and Temples ......................................................................................... 31

   3.2.5 Pathways and Streets ..................................................................................... 34

3.3 Hypothetical Tree Distributions................................................................................ 37
Chapter 4. TREES IN THE HUTONG NEIGHBORHOODS ....................... 41

4.1 Tree Species ....................................................................................................................... 43

4.2 Landscape Views .............................................................................................................. 48

4.3 Road Markers .................................................................................................................... 55

4.4 Public Space ........................................................................................................................ 57

Chapter 5. CASE STUDIES ............................................................................. 60

5.1 Qianmen District .............................................................................................................. 62

5.2 Yonghe Temple and Guozijian District .................................................................... 65

5.3 Wangfujing District ......................................................................................................... 68

5.4 Strategies for Implementation .................................................................................... 71

5.5 Framework For Subsequent Scholarship ....................................................................... 74

MAP REFERENCES ............................................................................................ 78

BIBLIOGRAPHY ........................................................................................................... 81
## LIST OF FIGURES

Figure 1. Development of Urban Structure from the Yuan Dynasty to the Qing Dynasty .......... 9
Figure 2. Scale of Beijing from the Qing Dynasty to the Present Day .................................. 12
Figure 3. Siheyuan Layouts. (Orange tones are added by author in order to clarify the location and size of courtyard.) .................................................................................................................. 14
Figure 4. Drum Tower Site Map. (1) Map of 1914; (2) Qianlong Map ................................. 19
Figure 5. Shichahai Neighborhood Map. (1) Qianlong Map; (2) Google Map ....................... 20
Figure 6. Parts of the Ritual of Triumphant Return by Xu Yang, Qing Dynasty (1760) .......... 22
Figure 7. Beijing City during the Qing Dynasty (1750)..................................................... 24
Figure 8. Layout of a Siheyuan. (1) Layout of Laoshe’s Siheyuan; (2) Layout of Yuewei Studio; (3) Layout of Ke Garden .............................................................................................................. 27
Figure 9. Plan of the Forbidden City; (Right) Part of Imperial City in Spring by Xu Yang, 1767.
The author added the dotted lines for emphasis. The red line divides the inner and outer courts of the Forbidden City. The green line outlines the Imperial Gardens. The yellow line represents the Imperial Temple. The black line stands for the central axis ......................................................... 29
Figure 10. (Left) Guozijian painting by Wang Qiu Fang, 1750; (Right) Plan of the Guozijian and Confucian Temple .................................................................................................................... 31
Figure 11. Plan of Temple of Heaven. Red dot line is added by author in order to illustrate the area shows in the photo .............................................................................................................. 34
Figure 12. Trees in Drum Tower Site. (1) Photograph of Drum Tower in 1900; (2) Photography of Drum Tower in 2008 .......................................................................................................................... 35
Figure 13. Tree Distributions in Siheyuans ............................................................................ 37
Figure 14. Siheyuan Map of Guozijian District ...................................................................... 39
Figure 15. Tree Distribution Map of Guozijian District .......................................................... 39
Figure 16. Tree and Shrub Species .......................................................................................... 47
Figure 17. D/H Relationship in Architecture ........................................................................... 48
Figure 18. Photographs of Hutong Sections: (1) Yushuxiang Hutong (Elm Tree Hutong). (2) Zongshu toutiao Hutong (Palm Tree Hutong). (3) Xiaojingchang Hutong (Little Buddhist Text Depository Hutong). (4) Liuyin Jie (Willow Shadow Street). (5) An’Dingmen Nei Dajie (Anding Gate Street) ...................................................................................................................................... 50
Figure 19. Hutong Sections: Hutong Scaled Landscape .......................................................... 51
Figure 20. Hutong Section: Siheyuan Scaled Landscape ......................................................... 52
Figure 21. Hutong Sections: Urban Street Scaled Landscape .................................................. 53
Figure 22. Satellite Image from Google Map and Baidu Map ................................................... 56
Figure 23. Guozijian neighborhood structure map and photographs of daily street activities: (1) Old people sit under a tree in the hutong. (2) People chat under the tree. (3) A woman reads a newspaper in the front of siheyuan. (4) An old couple play chess. (5) Two men play chess in a demolished siheyuan. (6) Two men play chess in Houhai Hutong. ............................................. 59
Figure 24. Historical and Cultural Protected Area and selected sites ..................................... 62
Figure 25. Negative and positive urban pattern and tree composition maps of the historic Qianmen District compare to the contemporary Qianmen District............................................... 65
Figure 26. Negative and positive urban pattern and tree composition maps of the historic Yonghe Temple and Guozijian District compare to the contemporary Yonghe Temple and Guozijian District.......................................................................................................................... 68
Figure 27. Negative and positive urban pattern and tree composition maps of the historic Wangfujing District compare to the contemporary Wangfujing District................................................. 71
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1.1 Research Background

To understand Beijing, one has to understand the hutongs—the little laneways that crisscross the city like veins. The hutongs are residences and neighborhoods that highlight the concept of “place legibility” (Lynch, 1960) in the ancient imperial capital. Hutongs, therefore, are valued as significant historical relics, and efforts to preserve them have gained prominence since 1949. The records show that the focus on the preservation of historic hutong sites has long been a concern for those interested in preserving architectural forms. Siheyuan, a traditional type of courtyard residence that was common in hutongs, is most often the focus of historical preservation efforts. Siheyuan literally means a courtyard surrounded by buildings on all four sides, and hutongs are formed within the siheyuan’s lines. Due to the transformation of Chinese society, the traditional hutong and siheyuan were faced with the challenges of modernization. Many of the old hutongs disappeared, replaced by high-rise buildings and wide boulevards. And, in order to address the problem of overcrowding, many siheyuans have been pulled down since the 1990s as part of a systematic process that also saw the demolition of many other old urban buildings.

This process of demolition made the idea of preserving Beijing’s hutongs difficult to put into practice. Here, the term “preserve” has different connotations in Asian civilization than in Western civilization according to Tung (2001). In Asia, to “preserve” often means to maintain the original aesthetic of great buildings but not to keep the physical building itself. In Asia, verisimilitude is critical. However, in Western
civilization, great value is ascribed to retaining as much as possible of the original physical fabric or materials of an old architectural form. For example, many hutongs include substantial historic relics constructed of brick-and-timber, which are difficult to maintain and preserve due to both natural processes and the impact of war. The preservation treatment accorded to hutongs usually entails rebuilding the buildings in keeping with the original aesthetic at the same location. In recent years, the Chinese government has placed a range of hutongs under protection, but the exact nature of this protection remains unclear. Most of the hutongs have been transformed into tourist destinations, as evidenced by sites such as Nanluoguxiang and Dashila. Further, though it may be necessary to help tourists understand a place, development aimed at the tourist industry has had devastating effects on China’s architectural forms. That is, the appearance of authentic buildings, objects, landscapes, and other artifacts of historic significance have been compromised such that protection has gone to the opposite of history.

In the wake of China’s modernization and its adverse effects on the country’s architectural forms, people are seeking a new approach to preserving buildings considered to be historically significant. One of the pioneers of a new approach to urban renewal in hutongs is Wu Liangyong. His Ju’er Hutong Courtyard Housing Project restored traditional siheyuan housing and avoided the need for the wholesale demolition of historic but dilapidated siheyuans. The project seeks to preserve the residential morphology as well as the philosophy of traditional neighborhood communication. However, when Ju’er Hutong applied experimentally to the rehabilitation of an historic urban district in the 1980s, the approach did not appear realistic. In practice, the plan does
not satisfy the needs of commercial redevelopment. That is, it has been found that the rehabilitation, rather than the re-development, of historic urban districts brings crucial and effective benefits in neighborhood planning and siheyuan design. Inspired by Wu, several small-scale renovation projects were put into practice, such as LYCS Architecture’s Beijing Courtyard in Nanchizi, and MAD’s Hutong Bubble project. The majority of these are siheyuan renovation projects that retain the façade of the architecture but modernize the interior and thereby aim to both meet contemporary living standards and preserve the cultural and social heritage. This architectural approach is particularly appropriate to a niche market, but its positioning as an approach to neighborhood preservation has been weak at least to date.

To be effective any given preservation initiative should encompass an effort to retain the contradictions and complexities of life as it was and as it is and an effort to envision those contradictions and complexities across time and place. The purpose of the present study is to reevaluate the hutong’s current neighborhood function and explore the site’s landscape features, to consider an urban tree approach as a historic preservation strategy designed to preserve the hutongs, and to adapt such a plan to the urban environment of Beijing as its population density continues to rapidly increase.

**1.2 Significance**

The present research investigates an appropriate course of action in regard to preserving and enhancing Beijing’s traditional vernacular scenario in order to reinforce the city’s characteristics. This project is a study of how landscape, as it relates to trees in particular, is part and parcel of the hutong’s significance, and how landscape can be acted
on in the modernization of Beijing. Based on a review of the current preservation strategies used by professional planners and architects, it is evident that no approaches taking urban trees as an aspect of central importance are being pursued. Drawing on historical inventory, notions of culture significance, and planning policies, the study explores the relationship between trees and hutongs from a number of perspectives and establishes ways in which the landscape architects and knowledge of landscapes can contribute to the work of historical preservation.

Historically, “hutong” refers to the pathways that connect individual houses. Today, however, hutong refers to a neighborhood unit that consists of houses and pathways. In this study, hutong is used to refer to pathways, streets, and roads. The hutong neighborhood is used to refer to neighborhoods or communities.

1.3 Study Overview and Limitations

The Beijing municipality was selected for this study mainly because it is known to serve as a model for China’s urban planning policy. The study reviews primary and secondary source materials, which include Beijing’s formal master plan documents and historical city conservation projects from the Beijing Municipal Institute of City Planning and Design, as well as archival documents, professional journals from published scholarly materials and news in regard to Beijing’s hutong neighborhoods.

On the basis of location, history, function, management, and planning context, three types of hutong neighborhoods—a renovated and semi-renovated hutong, a protected traditional hutong and a new modern neighborhood where there was a hutong—were selected and on-site observations of each of these were conducted. A renovated hutong is
a type of hutong that is most integrated into the larger society. Hutongs of this type tend to have more dispersed and more casual neighbor networks. A semi-renovated hutong includes both modern and traditional architectural forms and exemplifies hutongs that are in the process of development in terms of social interaction and neighborhood integration. A protected traditional hutong neighborhood is used to represent another type of hutong in which dwellers, compared to those in the two previously mentioned kinds of hutongs, are less integrated into larger society and tend to have networks that are smaller, more intense, and more frequently engaged within the neighborhood. One modern neighborhood where there used to be a hutong will stand for a radical change effected through a process of urban transformation.

The research follows a three-stage approach: (1) the collection of background information for the selection and analysis of three neighborhood sites and the development of a research framework for exploration in the next stage; (2) fieldwork to collect empirical data via interviews and site inspections; and (3) an analysis and interpretation of the collected data on the urban tree approaches and cultural heritage management approaches.

The study is also supplemented with maps and photographs from both past and current hutongs as a way of illustrating the differences between the respective hutong neighborhoods and the work undertaken to preserve them during China’s urbanization process. In order to examine hutongs in structurally different neighborhoods and acquire data, I conducted fieldwork in Beijing’s historic hutongs. During this fieldwork, I collected data from visits to three designated study sites in Beijing. Contextual and historical information and original data were obtained at the research
site through documentary reviews, site observations, and interviews with local residents. Finally, the taking of photographs constituted an important method for collecting data about the current situation of the hutongs.

The Complete Map of Beijing during Qianlong Era will be used as a primary source to study the historical landscape of Beijing. Google Earth and Baidu Map are used as an essential technical tool for setting out the transition of the hutong neighborhoods from Qing Dynasty to nowadays, which includes traditional siheyuan compounds to modern buildings, and historic neighborhoods to contemporary communities, and contemporary features composed of contemporary architectural forms and sites renovated over time. The spatial analysis maps offer an effective illustration of the extent and nature of the preservation practices afforded to the hutongs during urbanization in different regions over time, as well as provides the spatial distribution of traditional neighborhoods within an urbanized region.

The study concentrates on the history and current situation of the hutongs and siheyuans with emphasis on urban trees, observations of three comparable study sites, personal assessments of current hutong neighborhoods, and self-defined smart and sustainable preservation strategies. To date, few research studies are available on the landscape approach to historic preservation in Beijing such that the present study lacks a context in that regard. In addition, due to limited availability of data in China it was necessary to make assumptions, which may over time be shown to need refining.
2.1 A Brief History of Beijing’s Hutongs and Hutong Neighborhoods

Beijing was first mentioned as China’s capital city during the Mongol-led Yuan Dynasty of the 13th century. Since then, the city has retained its imperial dignity and classic ancient city morphology. The basic structure of the Imperial City of Beijing dates back to the Yuan Dynasty, when the city’s designers followed the planning principles of “nine vertical axes, nine horizontal axes” and “palaces in the front, markets in the rear,” (Kaogong Ji, Spring and Autumn Period) in addition to adhering to a strict street-width code and generating a chessboard-shape urban pattern. Roads with a width of 24 steps (120 ft.) were referred to as main streets, those with a width of 12 steps (60 ft.) were referred to as side-streets, and those with a width of 6 steps (30 ft.) width were referred to as hutongs. Courtyard houses (siheyuan) are connected by the hutongs, and the distance between two hutongs is usually 50 steps (253 ft.), which is equal to the depth of a regular courtyard house. According to the historical records, 384 hutongs were built during the Yuan Dynasty. The prototype for the Imperial City of Beijing was formed on the basis of hutongs built in a scattered fashion as well as hundreds of closely arranged courtyard houses.

In the early 15th century, the Ming Dynasty continued Yuan’s city pattern but enlarged its scale (see Figure1). The Emperor of Ming built the Forbidden City along the Central Axis, surrounded with the concentric circles of the Inner City and the Outer City. The hutong forms were further developed such that they have an orderly appearance lined by spacious homes and walled gardens. During Ming Dynasty, there are records showing
that 1,236 hutongs were in existence. In the meantime, siheyuans were defined as standard residential houses. High-ranking officials and wealthy merchants would live in large siheyuans that often featured beautifully carved and painted roof beams and pillars and carefully landscaped gardens (Wang, 2007).

The overall layout of the Imperial City of Beijing remained intact throughout the Qing Dynasty and was further developed during this period. The Inner City was defined by a structure whereby the majority of hutongs went the direction of east–west and most Dajies followed the south–north direction. Some of the hutongs were diagonal by virtue of the physical geography. The Inner City was planned according to etiquette in order to guide social behavior and reinforce ceremonial ritual. Most of the citizens of high social status such as aristocrats, high-ranking Manchu officials, and wealthy merchants were allowed to live in the Inner City. However, the Han officials and civilians were expelled to the Outer City, which was the center of commerce. With no regulated or planned management, the hutongs in the Outer City were erratically distributed. During the period of the late Qing Dynasty, the erosion of the government’s political power forced large numbers of Manchus to sell or rent their houses, which brought a large population to the Inner City of people who had hitherto been outsiders. An enormous number of hutongs were built within existing ones, resulting in narrower width and unusable pathways. The shortest hutong is 32 ft. long, and the narrowest is only about 3.2 ft. wide. Some hutongs have more than 20 turns. By the 1920s, the number of hutongs had increased to 3,200. In the meantime, to accommodate the population boom, the single-family-owned siheyuans became housing complexes with newly developed courtyards in order to provide sufficient living space for multiple families.
The historic area of Beijing is laid out on a rectangular grid pattern, bisected by a 7.8 kilometer north–south axis, and grouped in two main areas, the Inner City and the Outer City. The Inner City covers 38 square kilometers and was originally contained by the city walls. These city walls were eventually displaced by a second ring road built in the 1960s. Located to the south of Qianmen, the Outer City sprawls over an area of 24 square kilometers. Most of the hutongs afforded government protections are located in the Inner City, between the Forbidden City and the northern part of the second ring road. Beijing is a dynamic metropolitan area that has never ceased to evolve since the first brick was laid on the ground of the ancient city during the Shang Dynasty.
Following the 1949 Communist revolution, the capital city expanded and became more industrialized, and in this process the hutongs and siheyuans began to disappear. During this time, Beijing’s population rose such that housing came to be in short supply. The hutongs became much more crowded and dilapidated as the government ordered the classic brick-walled, tile-roofed siheyuans, which had typically been occupied by a single family, to be partitioned in order to become multi-family dwellings. The living conditions in the hutong neighborhoods declined dramatically as did the hutongs’ social function. In the late 20th century, China began a dramatic transformation due to powerful globalizing and modernizing influences. At that time the physical remnants of the past were bulldozed every day to make way for glass-walled skyscrapers and high-rise apartment buildings. And, these practices continue into the present day. The traditional urban form has been destroyed by an architectural form characterized by wide streets and tall buildings. Since the 2008 Olympic Games, Beijing has become urbanized at an unparalleled rate and the outcomes of modernization has almost entirely ceased working to maintain a connection with its past. Numerous hutong neighborhoods, of many regarded as slums, were razed to make way for extensive real-estate development. A total of 6,000 alleys existed in Beijing when the New China was founded in 1949, and 1,330 of them were referred to as hutongs at that time (Chen, 2008).

According to records from the Beijing Municipal Place Name Office (2002), the 3,200 recorded hutongs listed in 1944 had been reduced to 1944 by early 2002. Further, according to these records, 250,000 square meters where siheyuans with 20,000 households were located were demolished in 2004. Based on these records, it is estimated that from the early 1990s to 2013, a third of Beijing’s hutongs were demolished and
another third were renovated to the point that they no longer retained their original appearance (Chen, 2013). The majority of the hutongs were either renovated to attract tourism or razed to make way for new construction. As of 2014, over 500 historic siheyuans are preserved in the Cultural and Historical Protected Area as important cultural monuments. Between 2000 and 2003, the capital spent 360 million dollars preserving sites popular with tourists—an amount nearly equal to that spent during the same period on preservation nationwide. Another 73 million dollars was budgeted for heritage protection from 2003 to 2008 (Chen, 2008).

Beijing’s built-up area has expanded outward more than 500 square kilometers in the past 65 years and now takes up 8 times as much space as the old city area does (Figure 2). Approximately 1.75 million people (10% of the city’s total population) currently live in the heart of Beijing, an area that covers 62 square kilometers (Yan, 2004). In 2004, Beijing’s New Master Plan (2004–2020) proposed an overarching agenda designed to preserve the city’s historical and cultural heritage. The Conservation Plan targets about 30% of the remaining hutongs, designating those protected historic districts and pledging not to make any substantial alterations to those areas. In a city so rich in culture, the hutongs stand as witnesses and representations of an ancient civilization. Although the hutongs no longer serve as the city’s lifeline, they continue to embody China’s heritage. They stand as a milestone in China’s development as a nation.
2.2 A Brief History of Beijing's Siheyuan

The term “siheyuan” refers to the traditional Beijing family quadrangles, or courtyard houses, which each consist of a rectangular courtyard surrounded by single-story houses on four sides. The Siheyuan has survived through 3,000 years of history since the Zhou Dynasty (1122 B.C. to 256 B.C), but it was employed most extensively and perfected during the Yuan Dynasty. Moreover, this housing type continued to be developed and, indeed, it had a good reputation nationwide. It is an undisputed vernacular architectural art form in China. Beijing’s numerous hutong neighborhoods have served as residential environments for generations. The complex urban form of hutongs and siheyuans has retained its cultural significance through centuries of history.
As a reference to Confucian ideology, the symmetrical layout of the typical siheyuan is rendered in a simple and well-designed way. The majority of the siheyuan face south in order to take in more sunshine and hold off cold winds from the north. This arrangement also manipulates the East-to-West orientation of the hutongs in general. Siheyuans usually have an invisible north–south axis, like a city’s central axis, and the main gate is placed at the southeast of the house. The master of the family resides in the room located at the north of the siheyuan facing south. This is also the only room that lies on the central axis. The side rooms adjoin the main room and face east and west. To indicate its importance as a central gathering place, the courtyard is always located in the middle of the siheyuan (see Figure 3). All the rooms have a window that opens onto the courtyard, although the rooms have either no windows or at most a very small window on the wall facing the hutong. The Siheyuan protects the hutongs entirely from public interference although the structure does offer some private open space at its center. Thus, the central courtyard usually serves as a natural, comfortable, and harmonious common space where family dwellers can interact and enjoy landscapes complete with trees, rocks, and flowers.
Before the Qing Dynasty, each siheyuan was usually occupied by a single family. Sometimes, a spacious siheyuan would be occupied by a large and extended family or used as a lavish home by prosperous dignitaries. Throughout Chinese history, the siheyuan composition has served as the basic pattern used not only for residences, but also for palaces, temples, family businesses, and government offices. Due to the different classes of its occupants, siheyuans were built in various sizes. Usually, the size would be...
determined on the basis of the number of yards. Figure 3 shows the basic layout of
siheyuans according to the number of yards. The most privileged residents could afford
their own self-contained siheyuans, whereas the majority of residents had numerous
contacts with their neighbors. The more affluent families often had several such
courtyards linked together to form a compound.

During the Qing Dynasty, there were more large-scale siheyuans in the Inner City
than in the Outer City. Such luxurious residential compounds belonged to the Qing
princes and high-ranking ministers, who could live in relative privacy there. By the end
of the Qing Dynasty, the declining Manchu regime offered conditions that allowed
people of non-Manchu ethnic origin to live in the Inner City. As a result, thousands of
people were packed into the Inner City, which meant a sweeping change in ownership
took place in many of the siheyuan. When the Communist Party took control of China in
1949, Beijing experienced a tremendous change in its residential quarters. Almost all the
single-family siheyuans was occupied by multiple families. The traditional structure of
the siheyuan was substantially altered, with the biggest challenge being the courtyard.
The open-air space was used as much as possible in order to achieve maximum housing
occupancy. For example, sheds were constructed in order to serve as kitchens, storage
rooms, or bedrooms. Gradually, the siheyuan was replaced by the “dazayuan,” which
means a big chaotic multi-family courtyard.

In the 1960s, China was facing the second population birth peak since the founding
of the People’s Republic of China. There was an increasing population created immense
pressure on housing space for people living in Beijing. As a result, more and more
families were squeezed into the siheyuan, which led to an expanded siheyuan space, such
that the hutongs’ lanes were occupied by illegal makeshift sheds. Common space became increasingly scarce, and the distance between neighboring houses continually decreased. By the end of the 1970s, about two-thirds of Beijing’s 8.5 million people resided in hutong neighborhoods (Guo & Klein, 2005). Further, the siheyuan lacked many modern amenities such as private lavatories, piped water, electric circuits, and heating systems. Their fire lanes were narrow and their driveways constantly jammed. Due to this lack of modern facilities, Beijing’s municipal government decided to remove such illegal siheyuans and replace them with high-rise apartments in order to accommodate the increasing population. Beginning in the early 1980s, a housing relocation plan called the “weigai” has been implemented until the 2000s. Hutongs were demolished on a massive scale and many traditional hutong residential neighborhoods were transformed into new high-density neighborhoods with modern utilities. It is calculated that more than 200,000 families were relocated and their dazayuan houses demolished (Lo, 2010). In addition, many siheyuans were removed to make way for the construction of Beijing’s ring-road highway system, developed in 1990s. And, in 2008, in order to make way for the sports arena and infrastructure for the 2008 Olympic Games even more hutongs were destroyed.

In 2005, official statistics from the Chinese government showed that less than one-fourth of Beijing’s 13.82 million people still lived in hutong areas (Guo & Klein, 2005). Further, 45.2 million square feet of dazayuan houses were demolished between 1990 and 1998, and 150.7 million square feet of siheyuans have been destroyed since the early 1950s (Lo, 2010). At present, many of the remaining siheyuans are still used as housing complexes, some of which have been renovated to create two-story houses and thereby
accommodate the increasing number of residents in the city. Some traditional siheyuans have been reserved for use as government offices, museums, and business concerns.

Built in accord with many cultural rules, the siheyuan is an ingenious display of architectural engineering. Its structure reflects the Chinese hierarchy of the day. And, although the composition of the inhabitants has changed over time, the siheyuan represents the common people’s way of life and the urban identity of Beijing. It is sadly recognized that the traditional siheyuan has all but vanished as a residential building. This is a loss to the city of both culture and identity.
Chapter 3. QIANLONG MAP AND METHOD OF INVESTIGATION

The mapping of Beijing has been presented in a variety ways during 700 years of city’s history. The majority of schematic maps provides an overview of the city’s urban pattern, includes hutong network, location, size and lay out of most structures, palaces, towers and pavilions, streets, walls, moats and gates. Based on a comprehensive compilation of information, the Qianlong Map detailed every siheyuan in Beijing. This map is widely recognized and utilized as benchmark as Beijing’s historic urban form. Thus, in this chapter, I will use Qianlong Map as a primary mapping source to hypothesize the tree distributions in the history. The tree distribution proposed methodology will be draw from literature review, old paintings and photographs to establish a rational and credible hypothesis. I claim that the mapping of tree distribution of old Beijing is an essential step toward dealing with reconstruction of historical landscape of Beijing. The hypothesis study will contribute to the research on hutong neighborhood in terms of landscape variation and urban structure transformation.

3.1 Qianlong Beijing Map

Qianlong Map is a map of Beijing drawn around the fifteenth year of Emperor Qianlong’s reign during Qing Dynasty. The map is made by Haiwang, Shenyuan and an Italian Jesuit missionary Giuseppe Castiglione. The original map is 14 meter long and 13 meter wide, and was drawn in the scale of 650: 1, consisting of 51 volumes of folded-books; each volume was divided into 17 lines from north to south and 3 parts from west to east (Roon, 2008). Qianlong Map depicts ordinary siheyuan compounds besides...
monumental architectures like palaces, government offices, gate towers, temples, which are well coincident with old architectures preserved in Beijing. Differs to the other schematic maps, Qianlong map clearly shows sizes and locations of each siheyuan compound, and provides enormous information of Beijing’s folk society (see Figure 4). It is an important fundamental map to study the historical landscape during Qing Dynasty.

One of the disadvantages of original Qianlong Map is that there is no text label to demonstrate the name of the locations as well as the building. In 2008, Qianlong map was reprinted by the Japanese Digital Archive of Toyo Bunko Rare Books and the present version of the original one, scale down to 2600: 1; compiling 3 parts from west to east into one book. For example, one book to each line from north to south, consisting of 17 books in all (Toyo Bunko Archive, 2008). The digitized Qianlong Map was created by Digital Silk Road Project after the publication of serial books Complete Map of Peking, Qianlong Period by Digital Archive of Toyo Bunko Rare Books. The project overlaid original Qianlong Map on the current Google map (see Figure 5). The digital version of Qianlong Map is relocating the historic space of Beijing to fit the contemporary
geographical context, and integrating the old photographs and contemporary photographs to represent a contrast urban environment of history and contemporary. Though the form of original map is stretched for the sake of exact matching to current Google Map to some extent, the digitized Qianlong Map is providing a platform for the study of tree distribution.

![Figure 5. Shichahai Neighborhood Map. (1) Qianlong Map; (2) Google Map](image)

I will use Qianlong Map, a digitized version as my primary mapping reference to explore the relationships between trees and buildings, trees and streets as well as trees and neighborhoods in order to develop a tree distribution map of historical Beijing.

### 3.2 Investigation of Trees

Beijing has a dry but monsoon-influenced humid continental climate. The precipitation is limited such that insufficient water is available. During the Qing Dynasty, with the exception of a certain number of imperial gardens and prince’s private courtyards, the siheyuans were seldom allowed to have water channeled into their courtyards. Most of the siheyuans in Beijing have very little in the way of landscape. Though the constraints of natural environment restrict the development of landscape, it is interesting to find that in old paintings trees can easily be seen scattered in the hutongs.
The Ritual of Triumphant Return is an 18th-century serial handscroll painting created in 1760 by the Chinese court painter Xu Yang. It depicts the homecoming hero arriving in the city with serindia captives and greeted by the crowd gathered along the main hutong. Figure 6 shows the first part of the painting, capturing people’s daily lives and the landscape of the business district of Qianlong Era’s capital. The natural landscape in this painting is nothing but trees, all of which are located within or adjacent to the siheyuan. There are no statistics based on which we can determine how accurately a given artwork represents the number of trees and their arrangement, but the literature and paintings reveal the folk custom of tree planting in the past. The three words Beijingers use most often to describe the features of old Beijing are scholar tree, wisteria, and siheyuan (Zhang, 2006). In other words, the siheyuan is a conservatory of Beijing’s trees, and it directly impacts the arrangement of trees in the hutong neighborhoods.

The Siheyuan’s courtyard acts as a common space for family members to gather, communicate, and experience something of the natural world. The courtyard provides ventilation, sunlight, and drainage and circulation to all the rooms of the house, as well as providing an internalized outdoor living space. Though it is an outdoor open-space area, the courtyard is located inside the building compound; therefore, it functions as an indoor living area for the family members (Abramson, 1988). This is a very important value that has not been adopted in modern housing design. It is also interesting to find that compared with the European courtyard, the ancient Chinese courtyard has buildings located around the courtyard, whereas the European practice was to locate the courtyard around the buildings. This indoor–outdoor relationship determines the distinctive distribution of trees in the landscape of hutong neighborhoods.
Figure 6. Parts of the Ritual of Triumphant Return by Xu Yang, Qing Dynasty (1760). The court painter Xu Yang was commissioned by Qianlong emperor to record in 18.65 meter length handscrolls the triumphant return from Zunghars Battle. The scrolls recorded three major scenes; the above shows the first scene shows the Qianmen Business District of Beijing city. The careful attention to detail offers a rare opportunity to observe the daily life and activities of an 18th century Beijing City. People, residences, shops, imperial palace, temples and prosperous street reflect the scenery of ancient city.
In Chapter 2, I briefly introduced the structure of the traditional siheyuan and its typologies. A basic feature of siheyuan architecture is rectangular-shaped units of space joined together into a whole. The one-yard siheyuan has a “口” shape and is the most basic pattern for various siheyuan typologies, including temples, government offices, and imperial palaces. The distribution of trees in the one-yard siheyuan is also followed in the other types of siheyuans. Buildings in the traditional Chinese style have a distinctive arrangement of trees. For instance, in one-yard siheyuans, it is common to see two trees planted in front of the main gate (Zhang, 2006), and the hutongs are almost invariably lined with multiple household trees. Inside the siheyuan, one or sometimes two trees would symmetrically flank the front of the main room, to the east and west (Jia, 2010). The arrangement of the trees in all the other siheyuans is largely based on the tree distribution in the one-yard siheyuan. Based on a map dating to the Qianlong Era during Qing Dynasty (Figure 5) showing the concrete classification of siheyuan occupation and its affiliated hutong neighborhood typologies, I will explain the tree arrangements of five types of siheyuans specifically and offer an interpretation of how trees functioned in ancient hutongs.

The Qianlong Map classifies four official types of siheyuan in terms of its occupation. These structures include 1) civilian housing, 2) imperial palaces, 3) government offices, barracks and warehouses, and 4) temples. Additionally, I consider the hutong’s pathways and streets to be one of the hutong’s most important aspects. Therefore, a total of five structures of urban form will be investigated to demonstrate the distribution of trees in the hutong neighborhood.
Figure 7. Beijing City during the Qing Dynasty (1750)
3.2.1 The Civilian Siheyuan

The civilian siheyuan smoothly and comfortably sprawls into various places around the city and accounts for a substantial number of all the buildings in Beijing. This type of siheyuan plays a determining role in the arrangement of trees. Ordinarily, the courtyards in all types of siheyuans would be paved with pathways in this shape “+” and the rest of the space would be planted with trees and flowers, sometimes with rockery or even a pool with fish. On the basis of the simple tree plan of the one-yard siheyuan, the multiple-yard siheyuan simply shows an increase in the number of trees.

The tree distribution in the siheyuans is predictable given that it is based on the number of yards a siheyuan has. In general, one-yard siheyuans usually have two or three trees, one or two of which are planted in front of the main house, and the rest are planted in front of the main gate as street trees. Two-yard siheyuans usually have three or four trees, with additional tree most often planted in the front yard. Three-yard siheyuans usually have five to eight trees, and so on.

The Red Persimmon Yard is a siheyuan in the eastside of the Inner City, once owned by the writer Lao She. A typical two-yard siheyuan, the Red Persimmon Yard sits in a hutong built on a north–south direction (Figure 9.1). A jujube tree (Ziziphus jujuba Mill) is planted in front of the main gate. Two trees are at the doorkeeper’s room, a pomegranate tree (Punica protopunica) and an oleander (Nerium indicum Mill). By the brick wall through the inner gate, there is a Peking Mockorange (Philadelphus pekinensis Rupr). Two persimmon trees (Diospyros kaki Thunb) were planted by Lao She personally in the central courtyard, hence the siheyuan name for Red Persimmon (Lao She Former Residence in Beijing, 2014).
The Yuewei Studio (Figure 9.2) is one of the most well-preserved three-yard siheyuans. Located in the outer city, it is famous for one of its former residents, Ji Yun, a minister of personnel during the Qing Dynasty. According to records provided from other well-known former residents, including Ji’s *Notes of the Thatched Adobe of Close Observations* (1789), Huang Antao’s *Zhenyouyi-Chai Edition* (1813), and Liu Yeqiu’s narrative, the Yuewei Studio has at least three yards (Jia, 2010). These texts tell a fascinating story that leads readers to imagine the past glory of the old structure. “余虎坊桥宅，为威信公故第。厅事东偏，一石高七八尺，云是雍正中初造宅时所赐，亦移自兔儿山者。南城所有太湖石，此为第一。余又号孤石老人，盖以此云。有青桐，数百年物也。虫蛀一孔，雨渍久而中朽。” The translation reads as “Yuewei Studio was the residence of a famous general Yue Zhongqi during the Yongzheng Era. A 2-meter-high Taihu stone called Tu’er Shan was placed in the east side of the main house as a talisman. It was a gift from the emperor. A 100-year-old phoenix tree stood in the third courtyard. And, although the bark was full of insect holes, the tree stood erect.” In the central courtyard, there is a cherry-apple tree (*Begonia evansiana*) sitting in front of the main room to the east side, and wisteria vines (*Vilous Wisteria*) are planted in the west corner of the frontyard.

The Wenyu Mansion, one of the prince’s mansions, is located in one of the most popular hutongs, Maoer hutong, in the east district of the Inner City. A multiple-yard siheyuan, the Wenyu Mansion includes the well-known and well-preserved Ke Garden. Ke Garden is a rectangular five-yard siheyuan that covers an area of 3,000 square meters. It is made up of two parts: a three-yard residential house in the west side and the two-yard Suzhou Garden in the east side (Figure 9.3). Lush pine and cypress, secluded paths, and winding verandas make the place unique and appealing. In the front yard of the
garden, there is a rockery mountain in the green shadow of bamboo. Behind the rockery mountain is an unobstructed garden full of flowers and old trees. In the backyard, there is a subquadrature garden with a small pond in the middle. And over the pond, a flagstone bridge leads to a pavilion on the rockery mountain. Several juniper trees (*Juniperus chinensis*) stand proudly next to the pond where they are surrounded by clusters of cloves (*Syzygium aromaticum*). A dozen of peony (*Paeonia suffruticosa*) is planted on the rockery mountain, and a Chinese catalpa (*Catalpa bungei*) and a jujube tree are growing on a hill nearby. The two trees have wide spreading branches, which with their thick foliage make a spectacular shape. Around the pavilion, there are several old trees including a pine tree, bamboo, and three cypress trees. A well, with an old elm tree standing next to it, is situated in the northwest corner of the garden where there is also a trench. Together the well and trench constitute a water-injection system designed to

Figure 8. Layout of a Siheyuan. (1) Layout of Laoshe’s Siheyuan; (2) Layout of Yuewei Studio; (3) Layout of Ke Garden
3.2.2 Imperial Siheyuan

An imperial siheyuan of particular note in ancient Beijing is the Imperial Palace complex from the Ming and Qing dynasties. Located in the Imperial City, the Imperial Palace complex includes such historical places as the Forbidden City, Tiananmen Square, the Imperial Garden, and the Imperial Ancestral Temple. The Forbidden City, now known as the Palace Museum, is the world’s largest palace complex. Rectangular in shape, it covers 74 hectares. Surrounded by a 52-meter-wide moat and a 10-meter-high imperial wall is a structure with more than 8,700 rooms (Chong, 2006). Traditionally, the Forbidden City is divided into two parts. The Outer Court located in the south section was used for ceremonial purposes. It is said that for the purpose of security, the Outer Court avoided having too many trees in order to keep the vision clean and clear. This interpretation is frequently cited; however, it appears to be an oral tradition, and it is not supported by survey evidence. In comparison with the Outer Court, the Inner Court has more trees because it was the home of the Emperor and his family. There are several gardens on a small-scale set in the Inner Court. Among them, the Imperial Garden in the middle of the northern end is a representative Chinese garden with several elaborate landscape features.

Outside the Forbidden City, groups of sizeable Imperial Gardens cover a large part of the Imperial City. To the immediate north of the Forbidden City is Jingshan, an artificial hill 150 feet high. Now known as Jingshan Park, it formerly served as a private garden, covering 230,000 square meters, of which 1,100 square meters are taken up by
more than 10,000 trees. To the west of the Forbidden City, there is a complex of lakes, called Tai-Ye-Chi during the Qing Dynasty, which are surrounded by several Imperial Gardens. At present, the garden serves as a public park named Beihai Park with a total area of more than 69 hectares, It is among the largest of all China’s gardens and is home to numerous historically important structures including palaces and temples. It is calculated that this park has 180,000 square meters of green space, such that the green coverage is 25% of the park’s area and about 56% of area is water (Beihai Park, 2008).

Figure 9. Plan of the Forbidden City; (Right) Part of Imperial City in Spring by Xu Yang, 1767. The author added the dotted lines for emphasis. The red line divides the inner and outer courts of the Forbidden City. The green line outlines the Imperial Gardens. The yellow line represents the Imperial Temple. The black line stands for the central axis.
3.2.3 Government Offices

Figure 5 shows most of the government offices distributed in the Inner City and scattered through the Forbidden City. Ancient China practiced a system of centralization, and every dynasty had its own bureaucracy. During the Ming and Qing Dynasties, the emperor set 18 governmental agencies and more than 50 siheyuans were assigned for official use. In general, government offices were laid out in a similar way to a traditional siheyuan, but the scale of the former is predictably larger and the architectural composition is designed to be grand. Guozijian, formerly known as Taixuefu, an Imperial Academy is a useful example. The layout of the Guozijian building complex as well as the arrangement of the roads around it are in keeping with Chinese customs according to which the temple should be on the left and the school on the right (Xie & Ling, 2008). Two large buildings form the Guozijian complex as a whole (Figure 8). To the eastside of the area is a Kongmiao, a temple devoted to the memory of Confucius and the sages and philosophers of Confucianism. Guozijian is adjacent to Kongmiao’s westside, faces due south, and has a total area of 27,000 square meters (Guozijian Information, 2008). Both buildings have a three-yard siheyuan structure, and the layout of each is symmetrical. Each central axis is flanked by lines of Chinese scholar trees (*Styphnolobium japonicum*), and over 40 impressive 100-year-old trees are standing in the grounds (Anami, 2007). In addition, two 700-year-old scholar trees stand on either side of Guozijian’s main building. As an important national symbol, scholar trees have been held in high esteem from ancient times such that they were considered appropriate to such venerable settings. Furthermore, their distribution is regular and dignified, including street trees outside of the building compound. Wang’s painting shows that a straight line of street trees stood at
regular intervals along the wall of Guozijian, revealing the importance of this site as China’s highest institution of learning in the traditional educational system. In general, the trees around the government office are planted in a symmetrical way, with large trees such as scholar trees, pine trees (*Pinus*), or elm trees (*Ulmus*) selected to create a royal and stately atmosphere. Also, the outside of offices are carefully arranged and tended to create a sense of peace and order.

![Image of Guozijian and Confucian Temple](Image)

**Figure 10.** (Left) Guozijian painting by Wang Qiufang, 1750; (Right) Plan of the Guozijian and Confucian Temple

### 3.2.4 Altars and Temples

There is an old saying that Beijing has as many temples as it has hutongs. Since the Yuan Dynasty, Beijing has had 187 altars and temples (Xiong, 1012)—a number that increased to about 300 at the beginning of the Ming Dynasty (Miu, 1408). Thanks to this temple fever, which began in the middle of the Ming Dynasty and continued until the early years of the Qing Dynasty, Beijing has more than 650 temples in different scales (Zhu, 1782). As shown in Figure 5, the historic city of Beijing is bisected by a 7.8-
kilometer north–south axis. On the central axis lies the Forbidden City, flanked by four temple complexes, one in each cardinal direction. The Temple of Heaven is located in the south, the Temple of the Sun in the east, the Temple of the Earth in the north, and the Temple of the Moon in the west. About 35 imperial and folk altars and temples are scattered throughout the city. The Monastery Garden is one of three major types of classical garden in China. During the Qing Dynasty, places near the temples became large scenic areas, including Shichahai, which is located northwest of Beihai Park. The landscape within or near the temple is not only a part of the Monastery Garden, but it has also served as a tourist attraction in the past (Sun, 1991).

Chinese temples are often laid out in the same way as siheyuans. The arrangement of trees in a temple is similar to that of trees in a siheyuans, although the two structures differ in terms of the number and species of trees they have. The Confucius Temple is a typical paradigm. Virginia Anami offers a tangible description of the trees in the Confucius Temple in her book *Witnesses to Time: The Magnificent Trees of Beijing*:

[It] was an imperial space, as recognized by the yellow tiled roofs, due to the high rank given the sage by generation of imperial favor. In the first courtyard are stone tablets with the names of the successful candidates of the triennial state examinations held in these temple halls. The inner courtyard is filled with the shadows of looming cypress trees, many of them planted in the Yuan Dynasty by an official named Xu Heng. Most old cypresses have bulbous growths protruding from their trunks. One with a particularly heavy set of these knobs has been nicknamed “The Arhat Cypress.” There are even a couple of the cypress trees
that “bloom” in late April with purple flowers of wisteria vines that have used the seven-hundred-year branches as trellises on which to climb upward. The most famous tree here is a cypress situated just to the west of the steps leading up to the main hall where many ceremonies took place in honor of the great sage. (Anami, 2007)

Both the illustration of the plan in Figure 8 and Anami’s narrative indicate that numerous trees grace the environs of The Confucius Temple and thus provide a great deal of shaded area there. The trail to the main sanctuary halls is flanked by towering evergreen trees such as Lacebark pine (*Pinus bungeana*), Chinese arborvitae (*Platycladus orientalis*), Chinese Juniper (*Juniperus chinensis*), Fir (*Abies*), and sometimes Gingko (Ginkgo *biloba*) kindred trees with big trunks and lush foliage (Sun, 1991). As a consequence, it is usually pleasantly cool and peaceful in the temple. On the way to the mourning hall, it is common to plant bamboo (*Bambuseae*) and Chinese red pine (*Pinus tabuliformis*) in order to create a mood appropriate for remembering the deceased. The backyard of the temple is where the monks live. Fruit trees and ornamental plants are commonly cultivated there.

In the south of the city, as shown in Figure 5, there are grounds covering 2.73 km² that include parkland and groups of buildings (Introduction to the Temple of Heaven, 2014). This is The Temple of Heaven, a large-scale temple complex that was built from 1406 to 1420 during the reign of the Yongle Emperor. As an important imperial sacrificial site, the layout of The Temple of Heaven is different to other traditional temple, but each building complex follows the central axis principle. It has quite extensive parkland, with the entire complex totaling 660 acres. In addition, 4,000 cypresses grow...
inside the grounds of the Temple of Heaven, most of them planted during the Ming Dynasty (Anami, 2007). Surrounding the Hall for Praying for a Prosperous Year are approximately 18 Chinese arborvitae trees (Platycladus orientalis). A few of the trees are more than 800 years, and one of them is called the “Lotus Flower Cypress” due its six heavy branches, which tangled around the low-based trunk, resemble a giant lotus bloom.

To the south, around the Circular Mound are Chinese Junipers (Sabina chinensis) situated in the four cardinal directions. The Temple of Heaven was designed as a UNESCO World Heritage Site in 1998 and is now known as the Temple of Heaven Park. It has a dense wood within the city center and is a favorite place for relaxation today.

3.2.5 Pathways and Streets

Jane Jacobs argued for the functional benefits of narrow streets in her book *Downtown is for People*, as follows:
Narrow streets, if they are not too narrow (like many of Boston’s) and are not choked with cars, can also cheer a walker by giving him a continual choice of this side of the street or that, and twice as much to see. The differences are something anyone can try out for himself by walking a selection of downtown streets. (Jacob, 1958)

The pathways and streets in the hutong neighborhoods are among the downtown streets in the city of Beijing. The hutong space provides a street vista that includes the vernacular architecture and landscape. As noted in Chapter 3, the category of pathways and streets is not a category on the Qianlong Map, and I have added this category to provide more comprehensive typological framework for an analysis of an urban tree approach in Beijing’s hutongs.

One of the features characteristic of the landscape of contemporary Beijing is the tree-lined street. Many trees were planted in the siheyuan, and more were planted later along the sides of the hutongs. In the Beijing Metropolitan area, there were more than 64,000 km of closely spaced street trees by 1982, set at distances of only 3 to 4 meters apart (Hill & Mahan, 1986).

The history of street tree-planting can be traced back to the 13th century, to the reign of Kublai Khan of the Yuan Dynasty. He dictated that streets tree be planted at intervals of two paces

Figure 12. Trees in Drum Tower Site. (1) Photograph of Drum Tower in 1900; (2) Photography of Drum Tower in 2008
(Polo, The Travels, 1291) which equals 5 feet apart along both sides of the public streets.

The resulting closely-spaced tree-planting pattern differs from Western models, which tend to depend on their canopies for visual effect. In China, it is the trunks that dominate the view (Forestry Department, 1999).

In the neighborhood of the Drum and Bell Towers, it is not just the narrow hutongs and siheyuans that create the atmosphere of old Beijing. The Drum and Bell Towers were built in 1272 during reign of Kublai Khan, at which time it stood at the heart of the Yuan capital. During Ming and Qing Dynasty, the Drum and Bell Towers became the center of north part of the Inner city, sat on the city’s central axis. They continued to function as the official timepiece of Beijing until 1924. Because of their significant function, the setting of street trees in the neighborhood was designed carefully. Trees in the neighborhood are an important part of the picture as well. On Jiugulou Dajie (Old Drum Tower Street), several scholar trees have been around for almost as long as the towers which date back to the Yuan Dynasty. It is remarkable that the street had kept its original shape for about 700 years. Until 2005, the historic street was widened to accommodate the modern construction. Fortunately, these aged trees managed to stay put and are still an important part of the new landscape (see Figure 12).

According to the 2010 Evaluation of Beijing’s Green Spaces in the Historic Cultural Districts by the Ministry of Construction, the hutong landscape, in particular the street trees, is dictated by the hutong’s width. In general, the narrower the hutong space, the more difficult it is to include green space. Therefore, where the hutong is less than 3 meters wide, it is only used as a passageway and few if any trees are present. Most hutongs are between 3 and 5 meters wide, and the tree distribution varies according to
conditions. In regard to width, 6 to 9 meters are designated to pedestrian use and to a branch road. There is enough space to plant a certain number of trees for shade, however. Hutongs that are at least 10 meters wide are used as city roads, and their tree-planting patterns must meet the city’s standard requirement so that useful green space results (He & Liu, 2010).

3.3 Hypothetical Analysis of Tree Distributions

The tree distribution indicated in the historic map represents a hypothesis—a calculation based on my analysis of the tree-planting distribution in siheyuan with different number of yard, given the principle whereby one-yard siheyuans have 2 to 3 trees, two-yard sihyuans have 3 to 5 trees, and three-yard siheyuans have 5 to 8 trees (see Figure 13. Tree Distributions in Siheyuans).
According to the layouts of siheyuans with different-yard-number, I traced out each siheyuan’s layout in Qianlong Map and verified its yard number, then determined the number of tree and tree’s locations in each siheyuan compound based on the principle of tree distribution. In Figure 14, each closed black line represents one siheyuan compound. The number of courtyard in one siheyuan is determined by the number of roof which is counted from Qianlong map, and the size of the architectural compound which is measured from Google Map. The blue line and red line is boundary of places of interests such as palace, imperial garden, temple, government office and large scaled prince’s mansion. The tree distribution in different non-civilian siheyuan compound has an identified form, and the number and location of tree is diverse. The tree distribution map of palace, imperial garden, temple, government office and large scaled prince’s mansion is replicated from each architectural plan map. Reviewed from ancient paintings and photographs, the distribution of street tree in the history is not presented in a systematic planting setting. Although Marco Polo’s record has showed the planting pace of street tree, the Yuan Dynasty’s street tree planting policy will not be applied to the tree distribution map in this case.
Except it is showed in the map or photograph, such as Guozijian’s plan (see Figure 10) and Drum Tower’s old photograph (see Figure 12), the street tree will not be presented in the tree distribution map. Figure 15 shows a final map of tree distribution in Guozijian District. The size of tree canopy remains the same within the siheyuan scaled tree distribution, while in the non-civilian buildings, the size of tree canopy will be determined by map and photographs.
The hypothetical tree distribution map will be applied as a basic methodology to the case studies in the following contents. The hypothetical tree distribution is mapped in a certain number of sites in this study, to serve as a method of testing this research for subsequent scholarship.
Chapter 4. Trees in the Hutong Neighborhoods

Because of Beijing’s geographical condition and climate, the cultivation of plants in the city is limited. Yet, even so, there are many wonderful plant landscapes with distinctive local characteristics. Due to the transformation of the hutong neighborhoods, most of the trees have been pulled up to make way for buildings. However, in many cases in the context of modern development since the 1980s, trees now take precedence. For example, a preserved old scholar tree creates a traffic divider in the middle of the widened Jinbao Road. Old trees surviving from earlier planting eras are found off-street, primarily in older residential and protected areas. Government statistics show that about 50,000 trees identified as more than 100 years old are protected in Beijing metropolitan area: 19,732 of them are in the old city area and of these 3,804 trees are over 300 years old (Forestry Department, 2007). Even in a worldwide context, Beijing is among the cities that boast a largest number of old trees. It is worth noting, too, that the city has more than 90 different species (Profous, 1990).

The hutong represents an important cultural element in the city of Beijing, and they were named in a variety of ways. Thanks to Beijing’s long history and status as a capital for six dynasties, almost every hutong has stories, reflecting the culture of ordinary Beijingers. Statistics indicate that more than 200 hutongs are named after the scholar tree and the cypress, respectively. These include Shuanghuai Hutong (Double-Scholar Tree Hutong), and Longzhuahuai Hutong (Chinese Pagoda Hutong). About 20 hutongs were named after pine, cedrela, peach, or willow, e.g., Wuksong Road (Five-Pines Road), Chunshu Hutong (Toon Tree Hutong), and Taoliuyuan Hutong (Peach-and-Willow Hutong).
Garden Hutong). Each of these hutongs was named for the lines of trees in its neighborhood and the hutongs also became landmarks on this basis. Take Yushuguan Hutong (Elm Tree House Hutong) for instance. Located in the northwest area of the Western District of central Beijing, Yushuguan Hutong used to be a graveyard. A grave keeper, Jin, opened a teahouse by an elm tree, which gradually became a gathering place where people came to chat and relax. People still gather in the area, even though there is no longer a teahouse. Some hutongs were named after the fruit yielded by the neighborhood trees. This category includes Zaolin Hutong (Jujube Wood Hutong), Hetaoyuan Xijie (Walnut Tree Garden West Street), and Yingtaohutong (Cherry Hutong). Undoubtedly, trees have played their part in the development of the hutong.

Though most of the old neighborhoods in old Beijing have undergone rapid and often drastic changes, a number of prominent trees have managed to survive despite the rise in the number of tenants living in the hutongs and the expansion that this occasioned and the clutter around them. Along the sidewalk, in the high-rise apartment complexes, in the newly created modern look of the neighborhoods, these trees that once graced courtyards or main gates have found their new neighbors.

Zhonguancun is a fast-developing computer technology center in Beijing. The old urban form has quickly given way to the new modern image. However, a few aged trees can still be found along what had been a Ming Dynasty imperial road now lined with high-tech stores, and only a few trees along this road are connected to history in similar ways. A lone cypress grows in the central courtyard of Guandi Temple from Qing Dynasty. Several hundred years old by now, this cypress has seen the temple used in many ways. It has been a charity warehouse, a vegetable market and an adult education
classroom. The cypress evokes a sense of nostalgia for the surrounding area of old, though the temple rooms are freshly painted and surrounded by modern high-rises and contemporary shops.

Trees in the hutongs are an inheritance, part of the cultural heritage of the city. To look at them is to connect with the life of old Beijing back through centuries. The distribution of the trees directly influenced the function and significance of the hutong neighborhoods.

4.1 Tree Species

“Half city wall, half city tree” was how old Beijing used to be described. In 1949, forest cover in Beijing stood at 3.2% (Hook & Twitchett, 1982). Thanks to the war and fighting among political factions, most of the city’s trees had been destroyed. However, under the voluntary tree-planting campaign in 1981, large numbers of trees and shrubs worth a total of $8 million (Xu, 1989) were planted. Of the more than 90 tree species identified in a study by Profous (1990), almost 55% comprised four genera (Populus, Sabina, Sophora, and Robinia). Another 24% consisted of Siberian elms (Ulmus pumila), maidenhair trees (Ginkgo biloba), Shantung maples (Acer truncatum), trees of heaven (Ailanthus altissima), panicled golden rain trees (Koelreuteria paniculata), lilacs (Syringa spp.) Peking willows (Salix matsudana), ash trees (Fraxinus spp.), paulownias (Paulownia spp.), pines (Pinus spp.), silktrees (Albizia julibrissin) and sycamores (Platanus orientalis and P. acerifolia). These were the most common choices for street trees. In order to create a natural environment in the courtyard, plant cultivation in traditional siheyuans is careful and particular attention to the tree’s function. Tao
Yuanming’s poem *Returning to My Farm* describes the respective functions of some of the trees as follows: “the elms and willows shade the hindmost eaves, while peach and pear-trees spread before the hall,” and so, he says, “long have I been imprisoned in a cage, now back to Nature I return again” (Tao Yuanming, Six Dynasties period).

Pagoda trees are popular ornamental trees in Beijing such that they are used extensively as street trees. Growing to 65 feet in height, the Pagoda is a medium-sized tree, usually with a broad round crown that provides shade as well as exerting an influence on the air quality, weather (including the wind) in the vicinity. Municipal regulations specify that all large roads and boulevards must be planted with at least two tree species, often in two or more rows. The pagoda tree and the Oriental arborvitae are Beijing’s official city trees and have a strong bearing on the city’s appearance. The pagoda tree is popular not only because of its ecological effects, but also for its cultural meaning. The Chinese name for the pagoda tree is composed of the word 木 (wood) and 鬼 (demon). It was believed that demons are drawn to this tree such that it was considered inappropriate to use the pagoda’s wood to build homes. However, it is also held that this tree brings good fortune tree when planted in front of the main gate. In this placement, the tree symbolizes luck and treasure.

Fruit trees, principally *Ziziphus jujuba*, *Toona sinensis*, and *Diospyros kaki*, comprise almost 18% of Beijing’s urban forestry (Profous, 1990). In the historic hutong neighborhoods, fruit-trees make up an average of 23% of all trees, and in some areas the percentage is as high as 42% (Forestry Department, 2007). More than 40 varieties of fruit are grown in the metropolitan area. Profous’s study lists the following: the common jujube (*Ziziphus jujuba*), Chinese toon (*Toona sinensis*), persimmon (*Diospyros kaki*),
pomegranate (*Punica granatum*), apricot (*Prunus armeniaca*), peach (*Prunus persica*), Persian walnut (*Juglans regia*), apple (*Malus* spp.), mulberry (*Morus* spp.) and Chinese hawthorne (*Crataegus pinnatifida*) are the most common fruit-trees. Many tree species did not make their way into the hutongs because of homophones with the Chinese language or because of certain customs and associations. For example, pine and cypress trees are planted in graveyards, mulberry tree sounds like “funeral,” and pear tree sounds like “separation.” Peonies sounds like wealth and prosperity, respectively, whereas pomegranates have many seeds and as such symbolize a large number of children. In the case of the jujube tree, the important meaning did not lie in the fruit, but in the name of the tree itself: in Chinese zao (枣) is has the same pronunciation with zao (早), which means “early,” referring to the traditional formula of 早生贵子, used to wish that newlyweds will soon have a child.

In addition to the provision of food, a number of the fruit-tree species are also valued for their medicinal properties. For example, ginkgo (*Ginkgo biloba*) provides edible nuts and is also used in the treatment of tuberculosis. In Chinese culture, certain plants have human personalities of one kind or another. For example, the peony symbolizes wealth and honor, the lotus is a symbol of the purity of heart and mind, the bamboo represents a noble person, and the chrysanthemum represents a hermit. This unique cultural tendency is also reflected in the private gardens of Beijing.

Today, Beijing’s green cover has reached 26%, about 6 square meters per person (Forestry Department, 2007).
# TREE SPECIES LIST (Canopy Tree)

<table>
<thead>
<tr>
<th>Chinese Name</th>
<th>Common Name</th>
<th>Scientific Name</th>
<th>Uses</th>
</tr>
</thead>
<tbody>
<tr>
<td>剃柏</td>
<td>Chinese arborvitae</td>
<td><em>Pseudolarix kaempferi</em></td>
<td>ornamental tree</td>
</tr>
<tr>
<td>柏木</td>
<td>Chinese juniper</td>
<td><em>Juniperus chinensis</em></td>
<td>ornamental tree and widely used in bonsai</td>
</tr>
<tr>
<td>龙柏</td>
<td>Dragon juniper</td>
<td><em>Juniperus chinensis</em></td>
<td>ornamental tree</td>
</tr>
<tr>
<td>滨松</td>
<td>Chinese red pine</td>
<td><em>Pinus densiflora</em></td>
<td>ornamental tree and botanical gardens</td>
</tr>
<tr>
<td>白皮松</td>
<td>Lacebark pine</td>
<td><em>Pinus bungeana</em></td>
<td>ornamental tree and botanical gardens</td>
</tr>
<tr>
<td>松</td>
<td>Dragon spruce</td>
<td><em>Picea asperata</em></td>
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<td>松柏</td>
<td>Cedar</td>
<td><em>Cedrus</em></td>
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<td>喜马拉雅松</td>
<td>Ginkgo</td>
<td><em>Ginkgo biloba</em></td>
<td>ornamental tree, street tree and medicinal uses</td>
</tr>
<tr>
<td>紫叶</td>
<td>Goldentree</td>
<td><em>Koelnia paniculata</em></td>
<td>ornamental tree</td>
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<td>元宝枫</td>
<td>Shantung maple</td>
<td><em>Acer truncatum</em></td>
<td>ornamental tree</td>
</tr>
<tr>
<td>凤尾</td>
<td>Painted maple</td>
<td><em>Acer mono Maxim</em></td>
<td>ornamental tree</td>
</tr>
<tr>
<td>木香</td>
<td>Manchurian catalpa</td>
<td><em>Catalpa bungei</em></td>
<td>ornamental tree</td>
</tr>
<tr>
<td>金银桐</td>
<td>Northern catalpa</td>
<td><em>Catalpa speciosa</em></td>
<td>shade and ornamental tree</td>
</tr>
<tr>
<td>金叶</td>
<td>Chinaberry tree</td>
<td><em>Melia azedarach</em></td>
<td>ornamental tree</td>
</tr>
<tr>
<td>钻石</td>
<td>Sawtooth oak</td>
<td><em>Quercus acutissima</em></td>
<td>ornamental tree</td>
</tr>
<tr>
<td>香果</td>
<td>Daimyo oak</td>
<td><em>Quercus dentata</em></td>
<td>ornamental tree</td>
</tr>
<tr>
<td>香桂</td>
<td>Oriental white oak</td>
<td><em>Quercus aliena</em></td>
<td>ornamental tree</td>
</tr>
<tr>
<td>黄金桂</td>
<td>Mongolian oak</td>
<td><em>Quercus mongolica</em></td>
<td>ornamental tree</td>
</tr>
<tr>
<td>金枝</td>
<td>Manchurian walnut</td>
<td>* Juglans mandshurica*</td>
<td>ornamental tree</td>
</tr>
<tr>
<td>小叶朴</td>
<td>Bunge hackberry</td>
<td><em>Celtis bungeana</em></td>
<td>shade tree, ornamental tree and street tree</td>
</tr>
<tr>
<td>朴树</td>
<td>Siberian elm</td>
<td><em>Ulmus pumila</em></td>
<td>ornamental tree and widely used in bonsai</td>
</tr>
<tr>
<td>挂香</td>
<td>Qing tan</td>
<td><em>Pteroceltis tatarinowii</em></td>
<td>ornamental tree</td>
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<tr>
<td>小叶橡 (蒙橡)</td>
<td>Small-leaved lime</td>
<td><em>Tilia cordata</em></td>
<td>a shade tree with its dense canopy, an ornamental tree with its architectural shape and a street tree</td>
</tr>
<tr>
<td>大叶橡 (橡胶)</td>
<td>Large-leaved lime</td>
<td><em>Tilia platyphyllos</em></td>
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</tr>
<tr>
<td>七叶树</td>
<td>Chinese horse chestnut</td>
<td><em>Aesculus chinensis</em></td>
<td>ornamental tree</td>
</tr>
<tr>
<td>国槐</td>
<td>Pagoda tree</td>
<td><em>Sophieolophum japonicum</em></td>
<td>ornamental tree and street tree</td>
</tr>
<tr>
<td>长角 (高梁)</td>
<td>Chinese honey locust</td>
<td><em>Gleditsia sinensis</em></td>
<td>ornamental tree and medicinal uses</td>
</tr>
<tr>
<td>水杉</td>
<td>Dawn redwood</td>
<td><em>Metasequoia glyptostroboides</em></td>
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<tr>
<td>枫叶</td>
<td>Paper mulberry</td>
<td><em>Broussonetia papyrifera</em></td>
<td>ornamental tree and fruit tree</td>
</tr>
<tr>
<td>广东木</td>
<td>Chinese pistache</td>
<td><em>Pistacia chinensis</em></td>
<td>street tree and used in classical Chinese garden design</td>
</tr>
<tr>
<td>流苏树</td>
<td>Chinese Fringetree</td>
<td><em>Chionanthus retusus</em></td>
<td>ornamental tree, valued for its feathery white flowerheads</td>
</tr>
<tr>
<td>鲑柳</td>
<td>Manchurian ash</td>
<td><em>Fraxinus mandshurica</em></td>
<td>ornamental tree</td>
</tr>
<tr>
<td>黄槐 (黄皮树)</td>
<td>Anur cork tree</td>
<td><em>Phellodendron amurense</em></td>
<td>ornamental tree</td>
</tr>
<tr>
<td>黄杨 (美杨)</td>
<td>Tree of heaven</td>
<td><em>Ailanthus altissima</em></td>
<td>ornamental tree</td>
</tr>
<tr>
<td>香柳</td>
<td>Chinese mahogany</td>
<td><em>Toona sinensis</em></td>
<td>ornamental tree and culinary uses</td>
</tr>
<tr>
<td>桃柳 (香柳)</td>
<td>Chinese parsley tree</td>
<td><em>Firmiana simplex</em></td>
<td>ornamental tree</td>
</tr>
<tr>
<td>花柳</td>
<td>Persian silk tree</td>
<td><em>Albizia julibrissin</em></td>
<td>ornamental tree</td>
</tr>
<tr>
<td>华山松</td>
<td>Chinese white pine</td>
<td><em>Pinus armandii</em></td>
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</tr>
<tr>
<td>毛白杨</td>
<td>Chinese white poplar</td>
<td><em>Populus tomentosa</em></td>
<td>street tree and grown for shelterbelts</td>
</tr>
<tr>
<td>加杨</td>
<td>Canadian poplar</td>
<td><em>Populus × canadensis</em></td>
<td>street tree</td>
</tr>
<tr>
<td>银柳</td>
<td>Chinese willow</td>
<td><em>Salix matsudana</em></td>
<td>ornamental tree, shade tree, street tree and grown for shelterbelts</td>
</tr>
<tr>
<td>银柳</td>
<td>Babylon willow</td>
<td><em>Salix babylonica</em></td>
<td>ornamental tree and grown for shelterbelts</td>
</tr>
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<td>白柳</td>
<td>White birch</td>
<td><em>Betula platyphylla</em></td>
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<td>柏木</td>
<td>Chinese tulip tree</td>
<td><em>Liriodendron chinense</em></td>
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<td>法桐</td>
<td>Oriental plane</td>
<td><em>Platanus orientalis</em></td>
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<td>桑叶</td>
<td>Black locust</td>
<td><em>Robinia pseudoacacia</em></td>
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<td>美国白蜡</td>
<td>American ash</td>
<td><em>Fraxinus americana</em></td>
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**TREE SPECIES LIST (Understory Tree, Shrub and Vine)**

<table>
<thead>
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<td>Yulan magnolia</td>
<td>Magnolia denudata</td>
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</tr>
<tr>
<td>紫玉兰</td>
<td>Magnolia</td>
<td>Magnolia ilicifolia</td>
<td>ornamental tree</td>
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<td>丁香花</td>
<td>Saucer magnolia</td>
<td>Magnolia soulangiana</td>
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<td>丝棉木</td>
<td>Hamilton’s spindle</td>
<td>Euonymus hamiltonianus</td>
<td>ornamental tree</td>
</tr>
<tr>
<td>木犀</td>
<td>Burning bush</td>
<td>Euonymus alatus</td>
<td>ornamental plant</td>
</tr>
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<td>栎</td>
<td>Yellow catalpa</td>
<td>Catalpa ovata</td>
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<td>杜仲</td>
<td>Tu-chung</td>
<td>Eucommia ulmoides</td>
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<td>枸杞</td>
<td>Jujube</td>
<td>Ziziphus jujuba</td>
<td>fruit tree</td>
</tr>
<tr>
<td>酸枣</td>
<td>Sour jujube</td>
<td>Ziziphus jujuba var. spinosa</td>
<td>fruit tree</td>
</tr>
<tr>
<td>龙爪枣</td>
<td>Chinese date</td>
<td>Ziziphus jujuba Miller cv. Tortuosa</td>
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</tr>
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<td>Du li</td>
<td>Pyrus betulifolia</td>
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<td>Asiatic apple</td>
<td>Malus spectabilis</td>
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<td>西府海棠</td>
<td>Midget crabapple</td>
<td>Malus micromalus</td>
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<td>Chinese wingnut</td>
<td>Diospyros lotus</td>
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<td>Japanese persimmon</td>
<td>Diospyros kaki</td>
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<td>Wisteria sinensis</td>
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<td>White mulberry</td>
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<td>糖梅</td>
<td>Wintersweet</td>
<td>Chimonanthus praecox</td>
<td>ornamental shrub, producing valued flower colour in the dormant season</td>
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<td>Pomegranate</td>
<td>Punica granatum</td>
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<td>Sorbus sorbifolia</td>
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<td>Chaenomeles speciosa</td>
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<td>月季</td>
<td>China rose</td>
<td>Rosa chinensis</td>
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<td>丰花月季</td>
<td>Floribunda rose</td>
<td>Rosa hybridra</td>
<td>ornamental shrub</td>
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<td>黄罗汉</td>
<td>Huangci rose</td>
<td>Rosa chienhina</td>
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<td>Kerria</td>
<td>Kerria japonica</td>
<td>ornamental shrub</td>
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<td>Prunus cerasifera</td>
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<td>冬桃</td>
<td>Shan tao</td>
<td>Prunus davidiana</td>
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<td>梅叶梅</td>
<td>Flowering almond</td>
<td>Prunus triloba</td>
<td>ornamental plant</td>
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<td>日本樱花</td>
<td>Cherry tree</td>
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<td>Chinese redbud</td>
<td>Cercis chinensis</td>
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<td>莲花</td>
<td>Huang yang</td>
<td>Vitis vinifera</td>
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<td>火棘</td>
<td>Staghorn sumac</td>
<td>Rhus typhina</td>
<td>ornamental tree</td>
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<td>舞树</td>
<td>Smoke tree</td>
<td>Cotinus coggygria</td>
<td>ornamental tree</td>
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<td>鸡爪枫</td>
<td>Japanese maple</td>
<td>Acer palmatum</td>
<td>ornamental tree and street tree</td>
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<td>爬山虎</td>
<td>Boston ivy</td>
<td>Parthenocissus tricuspidata</td>
<td>ornamental plant</td>
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<td>槲寄生</td>
<td>Rose of Sharon</td>
<td>Hibiscus syriacus</td>
<td>ornamental shrub</td>
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<td>紫藤</td>
<td>Crape myrtle</td>
<td>Lagerstroemia indica</td>
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<tr>
<td>红瑞木</td>
<td>Hong rui mu</td>
<td>Swida alba</td>
<td>ornamental shrub</td>
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<td>连翘</td>
<td>Lian qiao</td>
<td>Forsythia suspensa</td>
<td>ornamental shrub</td>
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<td>紫丁香</td>
<td>Early lilac</td>
<td>Syringa oblata Lindl.</td>
<td>ornamental plant</td>
</tr>
<tr>
<td>迎春</td>
<td>Winter jasmine</td>
<td>Jasminum multiflorum</td>
<td>ornamental shrub</td>
</tr>
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<td>金叶茶条</td>
<td>Hybrida vicary prion</td>
<td>Lachnus vicary</td>
<td>ornamental shrub</td>
</tr>
<tr>
<td>醋栗</td>
<td>Bodinier’s beautybail</td>
<td>Callicarpa bodinieri</td>
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</tr>
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<td>金叶</td>
<td>Chinese trumpet vine</td>
<td>Campsis grandiflora</td>
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<td>膨花</td>
<td>Oldfashioned weigle</td>
<td>Weigela hortensis</td>
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<td>金银花</td>
<td>Jinyinhu</td>
<td>Lonicera japonica</td>
<td>ornamental shrub and medicinal uses</td>
</tr>
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<td>金银木</td>
<td>Amur honeysuckle</td>
<td>Lonicera maackii</td>
<td>ornamental shrub</td>
</tr>
</tbody>
</table>

**Figure 16. Tree and Shrub Species**
4.2 Landscape Views

Though the canopies of widely spaced street trees provide important visual effects in Western countries, trees in China are closely spaced and the trunks are used for maximum visual effect (Profous, 1990). It is the width of the hutong that determines the approach to viewing the landscape. In terms of the relationship between street width and building height, Ashihara introduces a measure of various kinds of urban space by calculating the ratio of the street width (D) and building height (H) (see Figure 17). He observed that D/H=1 is a median from which spatial qualities vary depending on whether the ratio is greater or less than 1. As D/H rises above 1, the space opens up; as DH passes 2, the space gradually becomes expansive or vast. When D/H falls below 1, space grows increasingly intimate, until eventually it is simply cramped. When D/H equals 1, a balance is achieved (Ashihara, 1983).

![Figure 17. D/H Relationship in Architecture](image)

Hutong width is related to building height. For example, Zhenjue Hutong is 6 to 7 meter wide, and its side buildings are 5 to 6 meters high. Xinghua Hutong’s width ranges from 5 to 6 meters, while its building height is 4 to 6 meters. LiuyinJie has a width of 9 meters, and the buildings surrounding it are 6 to 9 meters high. In summary, when the
hutong is 4 to 7 meters wide, the buildings on both sides are 5 meters high; when the width goes from 8 to 10 meters, the height of the buildings remains below 10 meters. According to the analysis, the hutong neighborhoods in Beijing are built on a D/H= 0.9–1.25 ratio, exemplifying comfortable space on a human scale. In Figure 19, I have created five sections of different widths hutongs based on the information gathered from onsite investigations and the illustration demonstrates a hutong scale landscape view that is provided by trees. In such a narrow space, compared to the wide boulevard, it is easier for people to get a proper appreciation of a tree trunk at first glance, than it is for them to appreciate the tree’s dense canopy as high as 12 meters overhead.

The 1.8 meter wide hutong is too narrow to plant street tree, thus the landscape view is provided from the tree canopy far away; while in 4.2 meter wide hutong, people can get visual effect from the overarching tree canopy which is presented from the trees planted in the courtyard. The 6 meter width hutong has an enough space for street planting, and the ratio of building height and street width equals to 1 which will provide a maximum effective landscape experience. People can receive the visual experience not only from the tree canopy, but also from the trunk. In such streetscapes, the distance between people and tree, as well as building is short and it is able to get a closer look at the details of surroundings and get a maximum visual effects. When the width of hutong is larger than 10 meter, it is usually used for city road and the condition of hutong meets the requirements of city’s street tree planting regulation. The street tree in hutong with width of 12 meter and 18 meter are well managed. The caesious trunk seems to blend into the grey painted surroundings. The street trees in the hutong transcend their definition as flora. Instead, they are also a part of the historic architecture of the hutong as a whole.
They are placed to provide something for the people to look at, to sit on, or to touch, adding a sensual interest to the space. In Beijing’s traditional neighborhood where both sides of the hutongs are lined with trees, people have a distinctive experience with a variety of rhythms associated with the bustle of the city.

Figure 18. Photographs of Hutong Sections: (1) Yushuxiang Hutong (Elm Tree Hutong). (2) Zongshoutiao Hutong (Palm Tree Hutong). (3) Xiaojingchang Hutong (Little Buddhist Text Depository Hutong). (4) Liuyin Jie (Willow Shadow Street). (5) An’Dingmen Nei Dajie (Anding Gate Street)
Figure 19. Hutong Sections: Hutong Scaled Landscape
The landscape surrounding the siheyuans is often designed to take into account views from within the buildings and views from the outside. When people walk along the pathways of a hutong, it is not only the tree trunks that catch their eyes. Instead, the tree’s branches and the canopy from siheyuan usually peep out from the wall to render a greeting. The residents who live in the four-section courtyard compounds like to leave their doors wide open, and they often rest outside in the sun. It is impossible to see through the landscape into the courtyard from outside the siheyuan, however, because a screen wall provides a shield at the entrance gate in order to protect the resident’s privacy. However, the towering yard trees do offer an opportunity for the curious to get a glimpse inside. This kind of architecture emphasizes the pleasure of viewing the garden landscape from a comfortable point outside the building.

In traditional Chinese gardens, it is common to use “obstructive scenery” to bring variety to the garden space and create a circuitous scenic view. In the case of the hutong landscape, the yard tree opens the inside of the siheyuan to its surroundings and brings interior and exterior space into close association. In the contrast, street trees are planted closed to the siheyuan and it seems to be integrated into the surroundings. The tree acts as
a medium for interacting with the siheyuan and hutong, presenting a unique landscape view to integrate the neighborhood as a dynamic landscape.

In Beijing, there are some examples of traditional hutong landscapes that provide naturalistic scenery—a design aesthetic that is easily created with trees, shrubs, and flowers (See Figure 21). The central courtyard is used for the private garden, and a table is usually placed at the center. The area designed for walking is shaped like a square cross with four areas for plants around it. The siheyuans usually have one or two trees in each area. The garden functions as an ecologic microcosm. Artificial ecosystems are constructed in each siheyuan whereby the trees provide both oxygen and shelter. Verandas block the sunlight in the summer. In the winter, the sun shines horizontally, so the verandas angle the sunlight to where the tables are situated inside the siheyuan.
Figure 21 shows the landscape view between hutong and urban form. The tree in the hutong neighborhood provides an atmosphere of compactness and privacy. The tree cover offers a microclimate impact on the hutong’s environment. While in the modern context, the height of a 6-story building is higher than the height of trees, so the private and intimate landscape view is unachievable from the perspective of such a multiple story building. Such a visual experience can only be expressed by the tree canopy. In addition, the height of 6-story building is able to observe the views in a hutong, and the quality of hutongscape is becoming more private and interesting. In the contemporary high-rises, the landscape of hutongscape is integrated into the patches of canopy and becomes a background of the city’s horizontal surface.

Plants are vigorous landscape elements that can bring strong natural vitality to the siheyuan and show the various beauties of the changing seasons (Li, 2007). Beijing with its four distinct seasons offers many trees to enjoy all the year. Different species are attractive for different features. In the autumn, the weather is refreshing, and the trees provide a spectacular display of fiery foliage to create the beautiful autumn scenery of Beijing. *Ginkgo biloba* and *Acer spp.*, with their gold-and-brilliant-red fall leaves are the most interesting trees of the season. The scenery of winter is relatively depressing to look at in Beijing. Most deciduous trees have bare trunks and branches. Only the pine and the cypress retain their leaves in the savage winter cold.
4.3 Road Markers

The history of street tree cultivation dates back to the Yuan Dynasty, during the reign of the Grand Khan 700 years ago. Marco Polo recorded the Yuan’s street tree-planting policy in his book *The Travels*, states that the street tree in the history is not only providing environmental and aesthetical effects, but also serving as road markers. He recorded that:

There is another regulation adopted by the grand Khan, equally ornamental and useful. At both sides of the public roads he causes trees to be planted, of a kind that become large and tall, and being only two paces asunder, they serve (besides the advantage of their shade in summer) to point out the road (when the ground is covered with snow); which is of great assistance and affords much comfort to travelers. This is done along all the high roads, where the nature of the soil admits of plantation; but when the way lies through sandy deserts or over rocky mountains, where it is impossible to have trees, he orders stones to be placed and columns to be erected, as marks for guidance. He also appoints officers of rank, whose duty it is to see that all these are properly arranged and the roads constantly kept in good order. Besides the motives that have been assigned for these plantations, it may be added that the grand khan is the more disposed to make them, from the circumstance of his diviners and astrologers having declared that those who plant trees are rewarded with long life. (Polo, 1291)

Centuries later, the Grand Khan’s innovation still survives and continues to inform an extensive tree-planting method in China, with the purpose of highlight both environmental and ecological function.
The circulation in the hutong is complex. Even with a GPS system, it is still easy to get lost in a labyrinth-like hutong neighborhood. When the modernization intruded into the historic site, the space became crowded and the hutong lanes are difficult to see in a satellite map. It is hard to imagine the hutong neighborhood with its winding lanes without ubiquitous signs and descriptions. It is even harder to imagine a hutong without trees, from an aerial perspective. Figure 22 shows two satellite photographic images from Google map which is upper image and Baidu map which is bottom image, both of which are shown at the same maximum scale. It is not difficult to see the main hutong in the map, which is traced by a white line in the Baidu map. Most of hutongs are 3 to 4 meters wide. But the biggest difference between the Google map and the Baidu map pertains to the color of the trees. Compared with the Google map, the street trees shown in the Baidu map clearly mark out the hutong and better define the landscape in the siheyuan. Additionally, I found at least two hutongs in the Baidu map that though unmarked can be identified thanks to the road marker strategy. The Qiansun Park and Housun Park hutongs two 1.5 meters wide and 2.8 meters wide respectively,
as they are showed in the map by red dotted line. Both hutongs conform to the tree code required by the City, but they are not marked because of their small size. Further the trees are arranged in a curved line, and so the hutong can be identified.

4.4 Public Space

People who live in hutongs often see themselves as real Beijingers. They speak their own hutong dialects, which are defined by unique words and expressions and differ a bit from Mandarin. They usually like to spend their free time sitting on little stools in the hutong and talking to their neighbors. When one strolls through a hutong, despite the overcrowded and dilapidated siheyuans, there is a special idyllic atmosphere of a neighborhood at ease with its environment. According to the inventory conducted by the Tibet Heritage Fund (2008), 80% of the residents surveyed regard the hutong as an important public space. It is common to see people chatting in the hutong, exercising, and sitting on small stools playing chess. It is interesting to find that in ancient China, there were few public plazas as compared to the number of city squares in Western countries. However, in hutong neighborhoods, there are many hutong corners perceived as small public spaces, providing a pleasant environment, where people can relax just a step away from their houses. These informal public spaces are formed unconsciously by the connection of each hutong pathway, and most importantly, are usually accompanied by a large tree.

According to one old saying, “Good trees are good for nothing but shade,” and certainly there is a custom whereby people favor engaging in activities under the branches of a tree. Hutongs were not designed to accommodate cars; however, the
hutongs have the great advantage of offering many amenities that are within easy walking distance. With no particular purpose in mind, hutong residents like to find a shady tree and gather together in the summer, perhaps to cool down, drink tea, or play chess.

Take the Guozijian neighborhood as an example. As shown in Figure 23, the green dots marked on the map represent public spaces. There are two major city roads: Annej Dajie (30 meters wide) situated to the north and the Second Ring Road (55 meters wide) to the west of the area. In this neighborhood, the widest hutong is 10 meters wide. The residential area takes up to 80% of the total area, and 60% of the buildings are in the siheyuan compound. In Xiaojia Hutong, two scholar trees with massive trunks and thick branches stand in front of a modern brick-and-metal community apartment. The residents are using the trees’ branches to hang laundry and to connect electric and telephone wires to their homes. Under one of the trees, an old couple is playing chess, a dog is taking afternoon nap, and a woman is passing by on a bike.
The present distribution and composition of the public space in the Guozijian neighborhood can be explained by understanding that 1) the hutongs’ public spaces are all situated away from the major roadway, thus ensuring a safe and quiet environment; 2) the hutongs are accessible from all directions and are within walking distance of many amenities; and 3) the hutongs provide pleasant spaces where people can relax and interact with each other, affording many opportunities to create and sustain a sense of community.

Figure 23. Guozijian neighborhood structure map and photographs of daily street activities: (1) Old people sit under a tree in the hutong. (2) People chat under the tree. (3) A woman reads a newspaper in the front of siheyuan. (4) An old couple play chess. (5) Two men play chess in a demolished siheyuan. (6) Two men play chess in Houhai Hutong.
Chapter 5. Case Studies

Since the 1980s, China has been developing into a market economy. In 1993, the State Council approved the Beijing City Master Plan (1991–2010), which established Beijing’s status as an aspiring international city (Tibet Heritage Fund, 2008). Overall, the plan highlighted the need for balance in integrating modern development into Beijing’s ancient heritage. In 2001, in cooperation with Tsinghua University, the Tibet Heritage Fund conducted a study of the remaining historical buildings in the Inner City area. As a result, the municipal government adopted the Conservation Plan for the Historic and Cultural City of Beijing in September 2002. In 2005, Beijing approved the new Beijing Master Plan and declared 30 districts to be historic conservation areas (Figure 24). These areas account for 21% of the total Inner City area. More than 285,000 people comprising 95,000 families live in the area, and the population density is 275 people per hectare (Tibet Heritage Fund, 2008).

According to the survey of Inner City hutongs conducted by the Beijing University of Civil Engineering and Architecture in 2006, only one third of Beijing’s hutongs have survived. There are about 1,320 hutongs being investigated, 33% of which have been preserved entirely in terms of the traditional pattern. About 52% of the total 685 hutongs have been partly preserved, and 15% of the rest have been modified in a modern style (Beijing News, 2006).

In this chapter, I will explore three sites as case studies by comparing them in regard to neighborhood pattern, building structure, and tree distribution. I also consider the nature and extent of the changes each has undergone in the journey from historic to
contemporary hutong. Central to this discussion will be a consideration of the in
interactions between the hutong neighborhoods and their trees. All the contemporary
maps in this chapter are from Baidu Map, and the historic maps were sourced from the
Digital Maps of Old Beijing from the Digital Silk Road Project by National Institute of
Informatics. The selected sites present three typologies in terms of the siheyuan type, the
hutong pattern, and the level of protection afforded to the neighborhood, etc. The
Qianmen District (referenced as 1 in Figure 24) will serve as an example for comparing
the historic hutong with the contemporary urban form. The Yonghe Temple and the
Guozijian District serve as the case to compare the historic with the contemporary hutong
(referenced as 2 in Figure 24). The Wangfujing Dajie District (referenced as 3 in Figure
24) will serve as a basis for comparing the contemporary hutong with the contemporary
urban form.
5.1 Qianmen District

The Qianmen District is called Qianmen because there is a gate, Zhengyangmen, which means Qianmen (front gate) in Beijing’s historic city wall. The gate is situated to the south of Tiananmen Square and once guarded the southern entry to the Imperial City. Qianmen Dajie is an important part of Beijing’s central axis, which runs through the district. Historically, Qianmen Dajie was used as a boundary line to separate the Eastern and Western Districts of old Beijing. Qianmen Dajie was also a royal road linked to the
Temple of Heaven, it was, therefore, wider than the other dajies. During the Ming Dynasty, Qianmen Dajie became a prosperous commercial district, which includes the Dashilar subdistrict located in the south of the area. The district was further developed during the Qing Dynasty. And, at the end of the Qing Dynasty, it becomes a traffic hub when Emperor Guangxu built two train stations in the Qianmen Battlement, one in the east and the other in the west wing (Kim, 2008). Historically, the Qianmen District is one of the busiest and most important districts in the city. During the 1950s, the district had 800 stores. In 2003, the Beijing Municipal Government approved the Redevelopment Plan of the Qianmen District in order to preserve the city’s historic cultural and commercial functions. The renovation project was begun in 2007 and finished in 2008, before the opening of the Beijing Olympic Games (Li, 2007).

A close look at the maps of the historic and contemporary Qianmen District (Figure 25) shows that the width of the streets, the geography of the site, and the pattern of the hutong neighborhood, as well as tree distribution were altered, although to differing extents. The difference between the road patterns of the historic and contemporary district, however, is slight. The major roads are the same although they are wider in the contemporary district. The blue area in the historical map represents a river that was once Beijing’s city moat. Situated in the Qianmen District, the moat was planned as a viewing site for people to boating and sight viewing. However, in the 1970s, the moat became an underground river due to construction of a ring road. At present, the moat is below a road (20 meters wide) that connects to Tiananmen Square and eases the endless flow of cars through the city. One of the central initiatives of the redevelopment project was the renovation of Qianmen Dajie whereby it was turned it into a walkway. As part of the
city’s central axis, Qianmen Dajie was 32 meters wide during the Qianlong Era. However, through the restoration, it was rendered 22 meters wide and 845 meters long. According to Qianmen Dajie’s official introduction, only the Avenue des Champs-Elysees compares favorably with Qianmen Dajie.

The Qianmen District’s structural pattern shows dramatic changes based on a comparison of the two maps. In the old map, the siheyuans are carefully delineated and there are no ambiguous or undefined spaces between the buildings and the streets. However, it is not easy to discern the paths between the countless siheyuans. In the contemporary map, by contrast, the buildings do not necessarily completely fill the sites in which they are situated, some undefined space frequently remains. In this map, it is easy to see the area in which the siheyuans are situated and where the modern buildings are based on respective density and size. Obviously, with the exception of the Dashilan District in the southwest part of the map, modernity has intruded into every area of the Qianmen District. The contemporary structure of the Qianmen District is comprised several large size buildings and a few green environment. It should be noted, though, that the relationship between the buildings and the streets are far from clear.

The transformation of the urban structure has wrought changes in the distribution of the trees in the hutongs. The tree distribution indicated in the historic map represents a hypothesis—a calculation based on my analysis of the tree-planting distribution discussed in Chapter 3. Given the principle whereby one-yard siheyuans have 2 to 3 trees, two-yard siheyuans have 3 to 5 trees, and three-yard siheyuans 5 to 8 trees, I found that the number of trees in the historic map to be much larger than the number on the contemporary map. This finding indicates that in modern times, less attention has been paid to trees’ role in
the landscape compared to older notions whereby trees were understood to play a role in the city of equal importance to that of the buildings and to be inextricably associated with street space.

Figure 25. Negative and positive urban pattern and tree composition maps of the historic Qianmen District compare to the contemporary Qianmen District

5.2 Yonghe Temple and Guozijian District

The Yonghe Temple and Guozijian District include two major buildings, the Yonghe Temple and the Guozijian Museum both are recorded as Primary National Cultural and Historic Buildings. Because of the acknowledged value of these two buildings, the surrounding neighborhood is well-preserved inasmuch as the traditional hutong pattern remains and the siheyuan is well-maintained. A temple and monastery of the Geluk School of Tibetan Buddhism, the Yonghe Temple, together with the Guozijian Museum, is situated in the Eastern District of Beijing, near the Second Ring Road to the north.
As shown in Figure 26, the Yonghe Temple and the Guozijian District, which both date back to the Qianlong Era, have undergone some limited changes. The size and location of the Guozijian District has not changed. Yonghe Temple stays in the same location as well but has changes in the size. Four significant buildings, the Imperial History Museum, the Berlin Temple, the Artillery Battery No. 4 Warehouse, and Prince Li’s Mansion, were renovated in order to create a modern image. The urban structure of the site has changed slightly changed its building density has remained unchanged. However, it is self-evident that most of the hutongs have become narrower and that siheyuans have been built closely on both sides of the hutongs.

In the contemporary scenario, Yonghe Temple and Guozijian District continue the site’s history pertaining to the composition of the site’s trees. At present, the tree distribution is being maintained and developed in accord with the historic tree-planting scheme. Based on the original distribution, the city has added more trees to the sides of street. As shown on the map, at present, the trees take up to about 50% of the total area. In essence, therefore, the Yonghe Temple and Guozijian District presents an urban oasis in central Beijing.

Research (Forestry Department, 2007) indicates that an attractive landscape improves people’s quality of life. A single tree can absorb 10 pounds of air pollutants every year and produce nearly 260 pounds of oxygen, which is enough to support two people (American Forest.org). In the hutongs, the trees provide many benefits to the neighborhood by inviting people to stop, sit, play, and relax. The trees provide shade and screen the noise pollution from vehicular traffic, thereby maintain the hutong neighborhood as a quiet and peaceful community. Further, the trees add value to the
neighborhoods by fostering a sense of identity and by providing an attractive environment for cultural activities in the city. In the Guozijian and Confucian Temple District, for instance, about 29 300-year-old trees stand in front of the Guozijian and Confucian Temple, stretching their branches toward the temple as well as toward the neighborhood. To the east wing of the Guozijian District, 33 cypress trees (*Platycladus orientalis*) contribute to the beauty and functionality of this urban oasis. In addition, approximately 44 300-year-old trees surround the central yard of the Confucian Temple. Of these trees, the oldest and largest is an impressive cypress that is 5 meters around and stands 20 meters. Planted by Xu Heng, an official at the Imperial College during the Yuan Dynasty, the tree has a grand name derived from folklore. It is known as the Cypress of Justice. It is said that a minister who meted out punishment to the people in an unfair and an arbitrary way was walking past the tree one day when a gust of wind suddenly shook the trees branches, the minister’s official headgear blew from his head. Afterwards, he was sentenced to jail and ended up tragically. And, so the tree got its name.

The significant and cultural and environmental value is attached to the hutongs’ trees such that surrounding neighborhoods are motivated to improve the number and quality of the trees in their locales. However, the fact remains that, the hutongs are better preserved and developed in terms of living environment and cultural properties than their neighbors are.
5.3 Wangfujing District

Located in the Eastern District, the Wangfujing Dajie District is one of the most famous shopping streets in China. This district comprises two distinctive sites: the Nanchizi area, which is a Historical and Cultural Protected Area, and the Wangfujing area, which is not. The Wangfujing Dajie District is surrounded by four major city roads. To the north of the district is the 23-meter-wide Donghuamen Dajie, and to the west is the 22-meter-wide Nanchizi Dajie, which is 100 meters from the Forbidden City. To its south of the district is the 65-meter-wide the Chang’an East Jie, which is part of the
longest and widest road in the world, and to the east is the famous pedestrian mall street of Wangfujing Dajie, which measures 20 meters wide.

Divided by the Nanheyan Dajie, the east and west areas of the Wangfujing District present quite different urban forms. In the east, a part of the Nanchizi area was once the site of offices for the Imperial Palace and was used exclusively by government officials. However, with the creation of the Republic of China (1919–1949), the site was opened to the public, renovated, and put to new use as a residential neighborhood. The cultural significance of the Nanchizi site has long been recognized, such that in 1987 it was designated a first heritage quarter. The Beijing municipal government began to renovate the area in 2000. The hutong landscape is aesthetically beautiful. The renovated site has continued many elements from the original landscape. Firstly, the hutong pattern has been preserved. Siheyuans are used as the primary building types, and together with other natural elements, many of the trees have survived (Qian, 2013). Secondly, integrated with the Imperial Palace, including not only the buildings, but also the trees and moat encircling the Forbidden City, the site is appealing given its rich, traditional royal tones of red, gold, and green. Thirdly, many of the original siheyuans have been replaced by new ones, which are with larger size but remain the original layout, where neighbors can see each other as their extended family. In the Nanchizi area, the hutong has a high density of small buildings and winding paths that create a vein-like structure (Qian, 2013).

Whereas the west side of the site offers a modern picture that incorporates high raised and large scaled shopping malls, which naturally dominate the site, the streets take up the rest of the space. Dating back to the Yuan Dynasty, the Wangfujing Dajie is one of the earliest commercial streets in China’s history. Since 1993, the Beijing municipal
government has invested 1.5 billion dollars to renovating the site in order to turn it into a modern commercial district. Two hundred street trees were planted in the area, and 3,184 square meters designated as green space (Beijing Municipal, 2000). As a result, it is currently a well-known and prosperous business street that reflects modern fashion trends. As its plazas and associated buildings proliferate, the Wangfujing District is becoming an area for shopping, official business, entertainment, and dining. Every day, 600,000 people come to the street—a number that rises to as high as 1,200,000 on holidays.

The comparison maps of two building structure shows an extended and character of this transformation suggest that Beijing is being "replaced" as much as it is being "developed" (Qian, 2013). The contrast of classic physical form of the hutong and an architectural form that strives to present a "modern" image has presented that how the historic site accommodates to the modern urbanization. The map of tree distribution is even clearer to tell the differences between hutong neighborhood and modern urban form. The quantity of trees in hutong is larger than the number of trees in the urban form. Large number of trees has produced amount of shading area in the Nanchizi Site. Tree has provided many environmental benefits including the perception of a landscape as naturally beautiful, increasing plant reliability, improving planting success and richer living environment. Major shade trees can cool surface temperatures between 3-5 °C, and keep the place 1 °C warmer in winter (Benedict & McMahon, 2006). The surface temperature in Nanchizi Area is cooler than the temperature in Wangfujing Area. Consequently, the cooling surface contributes to asthma and other pulmonary diseases. A certain number of trees can purify the air people breathe and help to improve the quality and quantity of Nanchizi Site’s living environment. Trees renew the air supply by
absorbing carbon dioxide and producing oxygen. The dust holding plants such as *Platanus sp.* and *Sabina chinensis* could partly mitigate the dust storm— one of the severest seasonal meteorological phenomenon— and intercept predominant wind in Beijing. Trees reduce perception of noise is by creating a visual barrier between the source and the hearer (Beal).

![Figure 27. Negative and positive urban pattern and tree composition maps of the historic Wangfujing District compare to the contemporary Wangfujing District](image)

**5.4 Strategies for Implementation**

Chinese society has also undergone enormous social change during the earlier three decades. Beijing’s hutongs are not immune to such general social trends, and their social structures are changed in certain ways. These remaining remnants of historic Beijing are of substantial value and the importance of their preservation has become widely recognized. Hutong’s tree represents the cultural and historic significances of old hutong neighborhoods. It is valued by people and beneficial to the hutong’s preservation. The high percentage of tree coverage in hutong neighborhood has made hutong an urban oasis. In addition to serving an important aesthetic function in the streetscape, hutong trees
provide many ecological benefits that most people take for granted. The environmental
functions provided by trees include climate change mitigation, air purification,
groundwater replenishment, water purification, urban heat reduction, and etc.

In the cities, trees serve as what Frederick Law Olmsted called the “lungs of the
city.” Trees purify the air we breathe and help to improve the quality of our environment.
They clean the atmosphere by intercepting airborne particles, and absorbing ground-level
ozone, carbon monoxide, sulfur dioxide, and other greenhouse gases. A single tree can
absorb 10 pounds of air pollutants every year and produce nearly 260 pounds of
oxygen—enough to support two people (American Forest.org). In Chicago, for example,
one urban tree can remove 15 metric tons of carbon monoxide, 84 metric tons of sulfur
dioxide, 89 metric tons of nitrogen dioxide, 191 metric tons of ozone, and 212 metric tons
of particulate pollutants each year (Alderman, 2004). In the 1990s, the City of
Sacramento, California, received more than 200,000 trees via a public–private
partnership. The Western Center for Urban Forest Research found that the resulting urban
forest removes over 200,000 metric tons of carbon dioxide from the atmosphere each
year, saving taxpayers about $3 million every year in pollution cleanup costs (Pacific
Southwest Research Station, 1992).

In Beijing’s hutong, tree has not only improved the neighborhoods living condition,
but also increased environmental benefits to the whole city. The dust holding plants such
as Platanus sp. and Sabina chinensis could partly mitigate dust storms—one of the
severest seasonal meteorological phenomena—and intercept dominant winds in Beijing.
Furthermore, trees and shrubs produce an effect that masks sound through the rustling of
leaves and the movement of branches in the wind. In fact, a properly designed buffer of
trees and shrubs can reduce noise by about 5–10 decibels—about 50% as perceived by the human ear, according to the USDA National Agroforestry Center. It has been suggested, too, that people are less conscious of noise when they cannot see the source. And, trees are useful in that regard, as they reduce the noise by creating landscape barrier.

The urban tree canopy can intercept 35% of the solar radiation and cool down the urban area in general. Study shows that urban trees improve cognitive function and promote an active lifestyle. Children who have green spaces to play in have a lower incidence of ADHD symptoms and show improved performance in school better than children who do not have green space to play in (American Forest.org, 2004). And, of course, trees provide important habitats for birds and a host of other animals, and thus bring flora and fauna to the urban neighborhood. Compare to the contemporary urban form which represents in a vertical community, hutong neighborhood’s single story housing form provides the neighborhood a healthy and sustainable environment. The importance of hutong as an ecological site is being valued.

According to the research by Worcester Polytechnic Institute (2011), it shows that for an environment to be conducive to promoting human health, its tree cover must be at least 40%, a number that seems out of reach in many urban areas. The healthy city trees can create cleaner, healthier, and more breathable air. Such trees cool parking lots and cars, which helps mitigate the impact of urban heat islands. Urban trees can shade homes and buildings, making them cooler and more energy-efficient and lessen exposure to damaging solar radiation. Further, trees retain rain on their leaves and branch, lessening the impact of storm runoff. Trees also provide neighborhoods with a sense of place and a sense of restoration that can ease mental fatigue and stress. It can improve more public
communications, and attract business, home buyers, and tourism to the area (Urban Forestry News, 2004).

Trees act like a sponge: they absorb precipitation and runoff and slowly release it into the ground and outlet streams. They preserve watersheds and help improve the quality and quantity of drinking water. According to a study by the World Wildlife Fund, “more than a third of the world’s 105 biggest cities rely on fully or partly protected forests for much of their drinking water—a much less expensive option than building and maintaining water treatment plants” (Washington, D.C.: WWF, 2003). Also, trees store nutrients from runoff and release water and oxygen into the atmosphere. Roots and vegetation encourage the infiltration of groundwater, and contaminants and nutrients are filtered by plants and microbes (USDA National Agroforestry Center, 2000).

“Connections to the landscape are critical to a person’s sense of history, continuity, and stability” (Benedict & McMahon, 2006). Hutong’s landscape preserves and enhances Beijing’s time-honored characteristics. An urban tree approach contributes to hutong preservation, as well as reinforces city’s place legibility.

### 5.5 Framework for Subsequent Scholarship

There are many challenges facing conservation projects with regard to the retention of the unique historic urban character whilst achieving necessary revitalization. The protection of cultural landscapes requires holistic and inclusive approaches; it calls for practices that accommodate changes on the one hand and maintain the heritage values on the other hand (Qian, 2013). The idea of urban tree approach involves the care of the meanings, characteristics and the association of people with their environment. The
purpose of this study is to provide a platform for the future heritage managers to arouse the awareness of the tree within the place, to encourage inter-disciplinary research and to give associative values due priority in historic district planning schemes and interpretations.

The spirit of a historical vernacular landscape is related to physical appearance and to the function of the landscape (Qian, 2013). And the function role plays a significant influence in historic landscapes. Trees complement the unique layout of the hutong. No less importantly, trees were planted in accord with the way of typical life in the hutong. Wu Liangyong identified five characteristics of the hutongs in Beijing, which are the distinction between private and public space, the relationship between interior and exterior, the natural beauty that can be included in a human-made environment, the residents’ sense of identity and belonging to local culture, and the hierarchical structure of the road network (Wu, 1999). Therefore, it can be considered that the trees in the hutongs have helped to retain much of the neighborhood culture, which is intangible, but important to the preserve the significance of old Beijing.

The rich history of tree cultivation has made a foundation for hutong neighborhood’s high density of tree coverage. The additional tree planting lends itself to another scenario to fit into the modernity. The Beijing Government has made efforts to use all available open space to plant trees in order to improve the quality of living condition. Since the central city has very little additional growing open space, areas have been allocated around the city for forest parks, the density of plantings in the city has been increased, and the vegetation of all available growing open spaces in the city has been accelerated (Profous, 1990).
The transformation of tree distributions from history to nowadays reflects the process of modernization and urbanization. Represented from the height of urban building and width of urban street, the shift in hutong’s scale has not only altered the function of neighborhood, but also has altered the symbolism of trees. Over the course of the past decade, China has made significant progress on its urban afforestation program. Many cities have achieved dramatic improvements in the environment in support of food production and human subsistence. In Beijing, for example, the current green space cover is 28% compared with the 3.2% of 1949 (Profous, 1990). The tree at present is functioning mostly as city’s beautifier and city environmentalist. The significances of tree in the history, such as fruit tree, medicinal uses and cultural mediator, have been lost during the transition. What is the place of historic uses for trees in the modern context will be a question. Many of residents in hutong had lived in the same hutong for more than 40 years, and these community elders reported little change in the basic institutions of dispute resolution and the community norms that animate them. The reason for residents’ satisfaction of hutong living environment is not only because of traditional life inheritance, but also because of cultural inheritance. And hutong’s old trees make valuable contributions to such culture heritages, and act as cultural and social communicator between history and modern.

According to the report from Tibet Heritage Fund (2008), there is an increasing population of younger generation who grew up in hutong moving out of the neighborhood when they reached adulthood, preferring the modern amenities and privacy of newer apartment buildings. As a result, young people are becoming more mobile, educated and affluent than their parents, and this will continue to have an adverse effect
on the social cohesion of more traditional communities. To attract younger generation in
contributing the neighborhood will be next challenge for the hutong neighborhood.

One particularly interesting new trend is the recent influx of foreign residents in
hutong neighborhoods. Attracted by the history and charm of the hutong itself, some
foreigners have bought siheyuans in Beijing's famous hutong district, often with an eye
towards refurbishing, and modernizing them (Tibet Heritage Fund, 2008). Insofar as such
demographic shifts impact the social fabric of hutong neighborhood in unforeseen ways.
The value of the hutong neighborhood as historic site, and the value of site’s cultural and
social significance can be addressed from the perspective of trees, thereby reinforce the
city’s identity and characteristics. The urban tree approach and landscape design could
incorporate the concepts of hutong preservation, place legibility and other relevant topics
and practices to bring enrichment.

This study investigated Beijing’s hutongs and their characteristics. It extends the
large amount of scholarships dedicated to the building forms to include the structure,
cultural significant and preservation implications of Beijing’s trees. An analysis of
historic hutongs was completed as part of this study in order to establish the structure and
distribution of trees in Beijing’s hutongs. The seminal textual image for this historic
research was the Qianlong Map of 1750. An analysis of three contemporary hutongs was
then completed in order to establish a method of research and inquiry that provides a
framework for future scholarship on this topic.
MAP REFERENCES

Figure 1. Development of Urban Structure from the Yuan Dynasty to the Qing Dynasty
Created by author based on the map of Beijing from Jin, Ming and Qing by Weisen Guo

Figure 2. Scale of Beijing from the Qing Dynasty to the Present Day
Created by author

Figure 3. Siheyuan Layouts.
The original map is created by Yuwei Yang in “Persistence of the Collective Urban Model in Beijing”, the figure of Courtyard house: spatial orders and power hierarchy. Orange tones are added by author in order to clarify the location and size of courtyard.

Figure 4. Drum Tower Site Map. (1) Map of 1914; (2) Qianlong Map
Map of 1914 is part of Map of Beijing. Printed by Chung Tung Litho Work, sourced by the United States Library of Congress's Geography & Map Division

Figure 7. Beijing City during the Qing Dynasty (1750)
The map is created by author based on the map of Qianlong Map of 1750

Figure 8. Layout of a Siheyuan. (1) Layout of Laoshe’s Siheyuan; (2) Layout of Yuewei Studio; (3) Layout of Ke Garden
The layout of Laoshe’s Siheyuan is created by author based on the architectural plan of Laoshe’ Siheyuan by Laoshe Museum. The tree distribution is added by author to clarify the contents

Layout of Yuwei Studio is created by Jun Jia in “An Case Study of Landscape in Beijing Siheyuan”, Traditional Chinese Architecture and Gardens Issue 2 2010. Figure 1, p39

Layout of Ke Garden is created by author based on the plan of Ke Garden from Beijing Municipal Administration of Cultural Heritage

Figure 9. (Left) Plan of the Forbidden City; (Right) Part of Imperial City in Spring by Xu Yang, 1767
Plan of the Forbidden City is cited from Museum of The Forbidden City
Figure 10. **(Left) Guozijian painting by Wang Qufang, 1750; (Right) Plan of the Guozijian and Confucian Temple**

The Floor map of Guozijian is created by author based on the plan of Confusion Temple Map from Guozijian Museum. The author created the plan Map of Guozijian and Confusion Temple and added the tree distribution on the basis of Guozijian Painting.

Figure 11. **Plan of Temple of Heaven.**

It is cited from UNESCO website.

Figure 12. **Trees in Drum Tower Site. (1) Photograph of Drum Tower in 1900; (2) Photography of Drum Tower in 2008**

Photograph of Drum Tower in 1900 is cited from http://history.m4.cn/2012-11/p1191604_all.shtml


Figure 13. **Tree Distributions in Siheyuans**

Created by author.

Figure 14. **Siheyuan Map of Guozijian District**

Created by author.

Figure 15. **Tree Distribution Map of Guozijian District**

Created by author.

Figure 16. **Tree and Shrub Species**

Created by author and Zhen Tong.

Figure 17. **D/H Relationship in Architecture**

Cited from Ashihara, Yoshinobu, “Composition of the Townscape” in *The Aesthetic Townscape*, Figure 33, p47.

Figure 18. **Photographs of Hutong Sections: (1) Yushuxiang Hutong (Elm Tree Hutong). (2) Zongshu toutiao Hutong (Palm Tree Hutong). (3) Xiaojingchang Hutong (Little Buddhist Text Depository Hutong). (4) Liuyin Jie (Willow Shadow Street). (5) An’Dingmen Nei Dajie (Anding Gate Street)**

Photographed by author.
Figure 19. Hutong Sections: Hutong Scaled Landscape
Created by author

Figure 20. Hutong Section: Siheyuan Scaled Landscape
Created by author and Zhen Tong

Figure 21. Hutong Sections: Urban Street Scaled Landscape
Created by author and Zhen Tong

Figure 23. Guozijian neighborhood structure map and photographs of daily street activities: (1) Old people sit under a tree in the hutong. (2) People chat under the tree. (3) A woman reads a newspaper in the front of siheyuan. (4) An old couple play chess. (5) Two men play chess in a demolished siheyuan. (6) Two men play chess in Houhai Hutong.
Image of (1) (2) (4) are photographed by author
Image (3) is cited from Simple Travel China
Image (5) is photographed by Jwill Wong
Image (6) is photographed by Ji Zhen

Figure 24. Historical and Cultural Protected Area and selected sites
The map is created by author based on the Historic and Cultural Protected Area from Beijing Master Plan (2004-2020)

Figure 25. Negative and positive urban pattern and tree composition maps of the historic Qianmen District compare to the contemporary Qianmen District
Created by author

Figure 26. Negative and positive urban pattern and tree composition maps of the historic Yonghe Temple and Guozijian District compare to the contemporary Yonghe Temple and Guozijian District
Created by author

Figure 27. Negative and positive urban pattern and tree composition maps of the historic Wangfujing District compare to the contemporary Wangfujing District
Created by author
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*Guozijian Information*. (2008, June). Retrieved June 12, 2014, from Museum of Guozijian and Kongmiao: http://baike.baidu.com/view/9428411.htm?fromtitle=%E5%AD%94%E5%BA%99%E5%92%8C%E5%9B%BD%E5%AD%90%E7%9B%91%E5%8D%9A%E7%89%A9%E9%A6%86&fromid=7524914&type=syn


