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Yi Wang

A Century of Change

Beijing's Urban Structure in the 20th Century

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Preface

During the twentieth century, and especially during its last decades, Beijing underwent a number of profound changes. The aim of this book was to study these changes as they apply to Beijing's urban structure, in general, and to its housing in particular.

This book consists of four parts. Part I presents a historical review of Beijing's urban development in the twentieth century and a review of the relevant literature concerning urban structure theories and studies. Both of these provide a historical and theoretical background for the analysis conducted in Part II and Part III, which make up of the main body of the book. Part II identifies the reasons which underlie the disappearance of the traditional courtyard house in Beijing's Old City during the urban redevelopment which has taken placed since the 1990s. This section also suggests ways of protecting the courtyard houses and thus reducing the damages to the Old City. While Part II mainly focuses on the changes in Beijing's urban spatial structure, Part III concentrates mainly on the transformation of its urban social structure. In particular, Part III focuses on the transformation of Beijing's residential structure from an originally homogeneous type during the period of the planned economy to a segregated type emerged during the period of the market economy. This section also suggests ways of reducing residential segregation. Part IV states the study's conclusions.

This study concludes that ever since China changed from a planned economy to a market economy, economic growth has become the overwhelming driving force of reshaping Beijing's urban structure. The underlying economic interest gave critical impetus for the redevelopment of Beijing's Old City which has caused extensive damage to Beijing's historic cityscape. Meanwhile, the gradually widening gap between household incomes was the main factor generating a noticeable trend toward residential segregation between rich and poor. The research suggests that the fundamental solution which could adequately protect the courtyard houses and Beijing's Old City would be to establish a polycentric urban structure

for the city with the purpose of reducing the pressure of demand for the land in the old city proper. In order to reduce residential segregation, it would also be necessary for Beijing's municipal government to create and perfect its housing security system which would help the low-income families with their housing difficulties.

Beijing, China Yi Wang

Acknowledgments

This book is based on one of my researches, which has been undertaking for many years. I should acknowledge numerous people who have helped me during the research. Forgive me, however, for mentioning only a few of them here.

My study on Beijing's urban issues gets started on in the year of 2000 when I was a SPURS (Special Program of Urban and Regional Studies) Fellow in Massachusetts Institute of Technology in the USA. I am grateful to Prof. Juhn de Monchaux, the director of SPURS then, for guiding an architect to pay attention to urban issues. It, while exactly at the turn of the century, actually has brought the origin of this study on the transformation of Beijing's urban structure in the past century.

After transferring to the Ph.D. Programme at the University of Cambridge in the UK, I kept on focusing on Beijing's urban structure in my Ph.D. thesis. Here, I would like to acknowledge Prof. Marcial Echenique for his support and direction of the thesis at the beginning of my Ph.D. study. I am particularly grateful to Dr. Andreas Schäfer for his specific instructions for each chapter, for his patient and painstaking direction, and for his constant and unstinting support during the last stage of the study. I am equally grateful to Dr. Marie Lovatt, my tutor, for her warm encouragement when I was in difficulties and Dr. Sally Church, the International Student Liaison Officer of Wolfson College at Cambridge, for her suggestions on the writing up. My thanks also go to Michael J. Lanford, Professor in Philosophy and Medical Ethics, and Mercier Raymond, Professor in Astronomy. They raised my spirits with encouragements, which determined me to carry on with the study.

Several years later after I went back Beijing, the thesis had a chance to be adapted for a book and was first published by Pace in Hong Kong in 2013. Here, I would like gratefully to acknowledge my colleagues and my students in Tsinghua University in Beijing for their generous help in the field investigations and refinement of the figures. My thanks also go to the relevant real estate companies for their cooperation in supplying materials. Forgive me for not mentioning them one by one here.

Finally, I would like to express thanks to Ms. Juliana Pitanguy, editor of Springer, for her support to republishing the book with Springer and her suggestion on adapting the structure of the new version. Her help is invaluable and most appreciated.

Contents

Abbreviations

FAR	Floor area ratio
HAR	Housing affordability ratings
HCCD	Historic and Cultural Conservation Districts
ODH	Old and Dilapidated Houses
ODHRD	Old and Dilapidated Housing Redevelopment District
ODHRP	Old and Dilapidated Housing Redevelopment Project
WHS	Welfare-oriented Housing System
Yuan	RMB Yuan, Chinese cash unit. 1 US Dollar = 8.2 Yuan (in 2003)

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Chapter 1
Introduction

Abstract Introduction to the thesis and scope of the study.

Keywords Beijing · Built-up area · Urban district

1.1 Thesis of This Study

Beijing is a city with a history of more than 3000 years. It has been the national capital for most of the last 700 years, which have spanned the three dynasties of Yuan (1271–1368), Ming (1368–1644) and Qing (1644–1911), as well as the periods of the Republic of China (1911–1949) and the People's Republic of China (after 1949). But it is in the twentieth century that China has undergone its most overwhelming social and economic transformations—from a traditional to a modern society, and from a planned to a market economy. Against this background Beijing's urban development has never stopped: and during the last decades of the twentieth century, and in the 1990s in particular, the city has witnessed many fundamental changes. These continue to affect Beijing up to this day.

As one walks down the streets of modern Beijing, it is not difficult to see from its outward appearance the radical changes which the city has undergone in recent years. New high-rise tower blocks are scattered here and there, and new residential districts have spread far and wide. At the same time, a large number of centuries-old courtyard houses in the old city proper have been razed to the ground, and their residents have been pushed out of the Old City.

We may feel these changes even more sharply after examining the statistical data. Until the 1950s, Beijing's built-up areas were still confined roughly within the old city walls, occupying a land area of 62.5 km^2. Thereafter, these areas extended rapidly to 340 km^2 in 1980, to 490 km^2 in 2000 (Fang et al. 2002), and to 654.5 km^2 in 2004 (BMBS 2002–2006). Thus, the built-up areas of the city have been enlarged by more than a factor of 10 during the past 50 years. In contrast to this rapid extension of the built-up areas, the number of old houses in the city has decreased markedly over the past 50 years. Until the 1950s, most of the buildings in

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Beijing's old city proper were traditional courtyard houses (EBHUCB 1986: 170). However, by 2004, the districts with courtyard houses had come to occupy only 12.4 km^2, thus accounting for only 19 % of the total land area of the old city proper, and those districts which contained courtyard houses mixed in with modern buildings occupied 10.5 km^2, accounting for 17 % of the total land. The remainder constituted areas for modern buildings, roads and green space (Wei 2005).

To enable the redevelopment of Beijing's Old City to go ahead, a large number of former residents were urged to move out of the old city proper. According to Beijing's Census in 2000 (BMBS 2001), the percentage of the city population which was relocated showed a tendency to increase rapidly, from 1.8 % in 1996 to 20 % in 1998, and to 32 % in 2000. Many factors explain these relocations, including a change of job, marriage or graduation. But the major proportion—41 %—was made necessary by the redevelopment of the Old City. According to another statistical source (BMBS 2002–2006), between 1991 and 2000, a total of 184,000 households were relocated because of the redevelopment of the Old City, which affected 570,000 residents: and this figure had reached 1.5 million by the beginning of 2004 (Hong 2004). Since most of the former residents were urged to move away from their old neighbourhoods after the redevelopment of the Old City, not only was the traditional cityscape of the Old City destroyed, but so also was its original residential structure. Low-income families had difficulties with finding affordable housing, even though the housing stock of the city had grown significantly during the past two decades. Meanwhile, millions of "migrant workers" from the rural area have come to Beijing seeking job opportunities. Many of them congregate into the 343 "urban villages" (Yang 2005)—the fringe areas around the suburbs of the city. The living conditions in these villages contrasted sharply with those in the new high-grade residential districts, which in turn resulted in an increasingly serious problem of social polarisation or residential segregation in Beijing.

For many years, the protection of Beijing's courtyard houses and its historic cityscape has been a vexed topic in the realm of Chinese architects and city planners. The municipal government of Beijing has issued numerous relevant statutes and regulations with the purpose of stopping the demolition of the old city proper. However, these measures have turned out to be ineffective. In addition, many residents have started to oppose the redevelopment of the traditional residential districts, and incidents in which residents have refused to move out of their old neighbourhoods have increased. The questions which must now be answered are these: what has actually caused the extensive demolition of the courtyard houses in the old city proper, and why could government regulations not have stopped this tendency? Similarly: what is the solution now for protecting Beijing's Old City? What forces caused the residential segregation in Beijing, and how can the associated housing difficulties of the low-income families be resolved? What role should the municipal government play? All these questions should be addressed under two main headings: those aspects of the problem which concern the urban spatial structure of the city, and those which concern its urban social structure—residential structure, to be more exact.

In this book, I shall try to answer these questions. I shall argue that, ever since China started to shift from a planned economy to a market economy, economic

growth has become the main driving force in reshaping Beijing's urban structure. In particular, economic growth has caused intense competition for land within Beijing's old city proper, which in turn has accelerated the demolition of the traditional residential districts on a large scale. The fundamental solution, in order to protect Beijing's Old City, is therefore to replace its mono-centric urban structure by a polycentric one—a measure which would relieve the land within the old city proper from rising pressures. In addition, I shall argue that, although economic growth has led to a rapid real estate development in Beijing in the past two decades, this does not mean that the living conditions of all the families of the city have improved equally as a result. Actually, the widening income gap between rich and poor has led to differences in the affordability of housing between families, which have in turn resulted in residential segregation within the city. The housing difficulties faced by those on a low-income cannot be resolved by the market alone. It is therefore necessary for the municipal government to improve the housing security system of the city in order to reduce this residential segregation.

The structure of this book can be divided roughly into four parts. Following the introduction to the book in this chapter, Part I (Chaps. 2 and 3) will give a general review of Beijing's urban development during the twentieth century, and also of the relevant literature. This will supply a historical and theoretical background to the study in the subsequent chapters. Chapters 4 and 5 will form Part II of the book. Chapter 4 will examine the damage which large-scale urban redevelopment has done to Beijing's Old City, and Chap. 5 will analyze the reasons for this from the viewpoint of economics. It will also search for a fundamental solution whereby what is left of Beijing's Old City might be protected in the future. While Part II will be mainly concerned with Beijing's urban spatial structure, Part III (Chaps. 6–8) will shift the emphasis to the question of Beijing's urban social structure. Chapters 6 and 7 will show the transformation which has changed Beijing's residential structure from that of a homogeneous to that of a segregated society during the period of China's transition from a planned economy to a market one. Chapter 8 will analyze the housing problems facing by the low-income families and will suggest solutions as to how the government might improve the housing security system in order to diminish the trend towards residential segregation. Finally, Part IV—that is, Chap. 9—will summarize the conclusions reached by the book as a whole.

1.2 Scope of This Study

Beijing is made up of 16 districts and 2 counties (see Fig. 1.1). The four districts in the centre, Dongcheng, Xicheng, Chongwen and Xuanwu,[1] are considered as the city's central area, or the city proper, which occupies a land area of 87.1 km^2. The

[1]In July 2010, Beijing's municipal government adjusted the administrative divisions and separately incorporated Chongwen District and Xuanwu District into Dongcheng District and Xicheng District.

Fig. 1.1 The administrative divisions of Beijing. *Source* Edited by author based on data from Nameless (2006) and Nameless (1996)

four districts of Chaoyang, Fengtai, Shijingshan and Haidian, around the central area, are considered the inner suburbs, occupying a land area of 1282.8 km^2. The six districts of Mentougou, Fangshan, Tongzhou, Shunyi, Changping and Daxing, in the fringe area, are considered the outer suburbs, with a land area of 11,122.3 km^2. The two districts of Pinggu and Huairou and the remaining two counties, Miyun and Yanqing, are the area outside the urban districts, occupying 4315.6 km^2. The entire territory of the city occupies a land area of 16,807.8 km^2 (BMBS 2002–2006).

In addition, there are some terms frequently used by city planners to define the spatial areas of Beijing (Table 1.1) (see Sun 1992; Zong et al. 2002; Ping 1999). The "old city proper" refers to the area within the original city walls, which covers a land area of 62.5 km^2 (including the land occupied by the city walls themselves). Within that lies the "Inner City", which measures 6650 m from east to west and 5350 m from north to south: this occupies a land area of 35.6 km^2. The "Outer City", which is 7950 m from east to west and 3100 m from north to south, occupies a land area of 24.6 km^2. The old city proper is slightly smaller than the city proper.

Table 1.1 The urban districts and counties in Beijing. *Source* Made by author based on data from BMBS (2002–2006), Sun (1992), Zong et al. (2002) and Ping (1999)

	District or county	Land area (km^2)	Proportion (%)
Old city proper		62.5	0.37
City proper	Dongcheng	87.1	0.52
	Xicheng		
	Xuanwu		
	Chongwen		
Built-up area		654.5	3.89
Programmed scope of the		1041.0	6.20
Inner suburbs	Chaoyang	1282.8	7.63
	Fengtai		
	Shijingshan		
	Haidian		
Outer suburbs	Mentougou	11,122.3	66.17
	Fangshan		
	Tongzhou		
	Shunyi		
	Changping		
	Daxing		
Counties and far outer districts	Pinggu	4315.6	25.68
	Huairou		
	Miyun		
	Yanqing		
The whole city		16,807.8	100.00

The "built-up area", which extends to the inner suburbs of Beijing, occupied a land area of 654.5 km^2 in 2004. The "programmed scope" of the master plan of the city includes the four districts of the city proper and large portions of the eight districts in the inner suburbs, and covers a land area of 1041 km^2 (BMBS 2002–2006).

In 2004, the total population of Beijing was 11.5 million of which 2.4 million lived in the city proper, 4.6 million in the inner suburbs, 3.8 million in the outer suburbs, and 0.7 million in the counties. The population density for the city proper was much higher than that of the other regions, being 7.7 times more than the inner suburbs. The population density of the most crowded residential district in the old city proper was nearly 14.6 times that of the inner suburbs (BMBS 2002–2006).

In this dissertation the scope of the area to be studied is the same as the programmed scope of the Master Plan of Beijing (see Fig. 1.2). That is, it includes the entire city proper, most of the inner suburbs and a small part of the outer suburbs to the north. The old city proper, among these, is the main focus of this study.

Although this study is primarily concerned with the transformation of Beijing's urban structure in the twentieth century, this does not mean that it will focus evenly on each stage of the whole century. With regard to the rapidity and intensity of

Fig. 1.2 The area investigated in this study (roughly the same as the programmed scope of Beijing's Master Plan). *Source* Drawn by author

urban change in Chinese cities in the twentieth century, Gaubatz once, in 1998, gave a vivid description: "Chinese cities have changed more in the past fifty years than in the preceding 500, and in many ways have changed more in the past five years than in the preceding fifty" (Gaubatz 1998). Beijing is probably the best representative of this. Great changes certainly did place during the first half of the 1990s, but these gathered pace during the last five years of the century and indeed have continued into the new century as well. Instead of concentrating on the century as a whole, this study will therefore give more attention to the urban development which has occurred during the second half of the twentieth century, and especially to the great changes which have taken place after 1990.

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Part I
A Review of Beijing's Urban Development and the Relevant Literature of the Study

In Chap. 2, I shall review the Beijing's urban development during the twentieth century, and in the subsequent chapters, I shall review the literature on urban structure and on previous studies concerning Beijing's urban structure by other scholars. These two chapters will compose Part I of this book and will supply a backcloth for the further, more detailed studies in Part II and Part III.

Chapter 2
A Review of Beijing's Urban Development in the Twentieth Century

Abstract This chapter takes a review of the urban development of Beijing during the twentieth century in three stages: first, before the founding of the People's Republic of China (1900–1949); second, during the period of the planned economy (1949–1979); and third, during the transformation towards the market economy (1979–2005). The review for each stage includes three aspects: the planning policies of the city, the redevelopment of the old city proper and the development of its urban housing.

Keywords Urban development · Master plan · Beijing · The twentieth century

During the twentieth century, great changes have taken place in China. The three most critical ones occurred separately, and at distinct periods during the early, the middle and the late years of the century. These periods were times of profound transformations: from an imperial system to a republican system in the 1910s, from capitalism to socialism in the 1950s and from a planned economic system to a market economy in the 1990s.

These transformations of the society and economy had a profound effect on the development of Beijing. Therefore, I shall accordingly review the urban development of Beijing during the twentieth century in three stages: first, the state of urban development before the founding of the People's Republic of China (1900–1949); second, urban development during the period of the planned economy (1949–1979); and third, urban development during the transformation towards the market economy (1979–2005). To make the discussions for each stage consistent and comparable with each other, I shall follow a uniform approach. The discussion for each stage will include three aspects: the planning policies of the city, the redevelopment of the old city proper, and the development of its urban housing. The newly rapid urban development of Beijing during the early years of the twenty-first century will also be considered, so as to extend some aspects of the discussion up to today.

In addition—since it is a city with a history of such long standing—the development of today's Beijing cannot escape the influence of its past, particularly its

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transformations during the past 700 years. It was under the three dynasties of Yuan (1271–1368), Ming (1368–1644) and Qing (1644–1911) that the foundations were laid Beijing's Old City. It is therefore necessary to begin with a brief review of the city's origin before discussing its urban development in the twentieth century.

2.1 The Origin of the City

2.1.1 From a Strategic Point to a Political Centre

As a city settlement, Beijing has a three-thousand-year history, which is documented in ancient writings. The earliest name for the city to appear in the documents is Ji, which was one of the numerous feudal city-states under the rule of the Zhou Dynasty (eleventh century B.C. to 256 B.C.). It was located on the northern bank of the Yongding River, southwest of today's city of Beijing. Later, another city-state called Yan sprang up on the southern bank of the same river. It subjugated Ji and moved its capital to the site of Ji. Therefore, Yan and Ji are early names for Beijing in the various historical records.

The reason why the city of Ji was not abandoned can be explained by its strategic geographical position: its proximity to the ferry station on the Yongding River and its location at the intersection of roads running northwest, northeast, southwest and due east (Fig. 2.1). Generally speaking, its easy access to transport is the main reason why Ji survived as a city for several thousands of years until today.

In 226 B.C. Emperor Qin Shihuang occupied Ji after unifying China. From then until A.D. 916, when the Khitans occupied the city, a succession of cities existed here, taking advantage for more than a thousand years of Beijing's status as both an important military stronghold and an important trade centre in North China. There were different names for these cities, such as Zhoujun and Youzhou; their location, however, was the same—the city never moved from the site of Ji.

In the early tenth century, the Khitans, a nomadic people who rose abruptly in the north-eastern region of China, founded the Liao Dynasty (916–1125). The Liao established its capital at Linhuangfu in present-day Inner Mongolia; it also occupied Beijing and established it as its secondary capital. The Liao people called the city Yanjing; it was also called Nanjing (Southern Capital), since it was located to the south of the principal capital. Based on the former site of Youzhou, Nanjing completely incorporated the former city, and was not rebuilt except for its city walls. According to historical documents (Hou and Deng 2001: 49), Nanjing once had a resident population of more than three hundred thousand people.

The next group of people who established Beijing as their capital were the Nuzhen or Jurchen, another people from the north-eastern regions of China. In the early twelfth century, the Nuzhen conquered the Liao and established the Jin

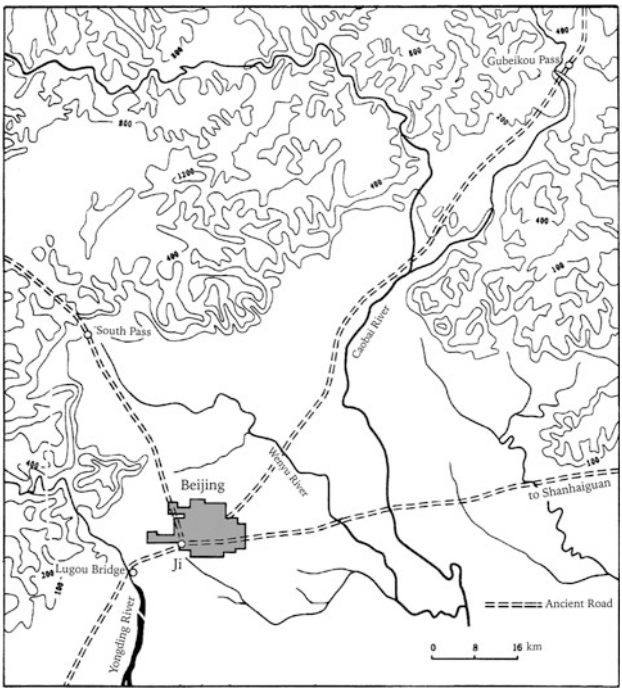

Fig. 2.1 The location of Beijing and the routes to neighbouring regions in ancient times. *Source* Edited by author based on data from Hou and Deng (2001: 21) and Nameless (1996)

Dynasty (1115–1234). In 1153 Jin moved its capital from Huiningfu, in present-day Liaoning Province, to Yanjing, and renamed it Zhongdu (Central Capital). This was a great historical moment for Beijing, and marks the beginning of the city's role as the political centre of north China.

Based on the site of Liao's Nanjing, Zhongdu underwent a large-scale reconstruction before Jin moved its capital there. The reconstruction of the new capital began in 1151. The urban area was extended toward the east, west and south, and was encircled by newly built city walls. After the extension, the layout of the city was utterly changed, and the palace, which had previously been located in the southwest corner of the city of Nanjing, now became the centre of the city of Zhongdu. According to historical documents (Hou and Deng 2001: 56–57), the palace in the centre measured about nine *li*[1] in circumference, the outer city walls measured about 37 li in circumference, and the registered population amounted to 226,000 households, which was approximately one million people.

[1]Li is a Chinese unit of length, 1 li is equal to 1/2 km.

2.1.2 *Dadu in the Yuan Dynasty*

In the early thirteenth century, another nomadic people, the Mongols, rose to power in the north of China. In 1215 the Mongols took Zhongdu by storm under Genghis Khan, and burned this capital city of the Jin Dynasty to the ground. It was not until 1271 that Kublai Khan, the grandson of Genghis Khan, established a dynasty on the Chinese model called Yuan (1271–1368) and proclaimed Jin's Zhongdu, which had been desolate for many years, as the capital. He gave the city the Chinese name of Dadu (Grand Capital).[2] After the Mongols completed their conquest of the Southern Song (1127–1279), in the south of China, and unified China in 1279, Dadu became the capital of China as a whole for the first time.

Since Yuan's Dadu initiated the configuration and character of Beijing, we have to begin here in order to understand the city as it stands today. According to historical documents, Dadu, whose designers were the two Chinese experts Liu Binzhong and Guo Shoujing, was grandly conceived and methodically planned (Hou and Deng 2001: 85, 89). A thorough survey of the site was carried out before the plan was devised, and special care was taken with its water supply. Here, I shall summarize the four features of the plan of Dadu (see Fig. 2.2).

First, since the original site of the Jin capital, Zhongdu, was destroyed by fire during the dynastic transition from the Jin to the Yuan, the Yuan capital of Dadu was moved to the north-eastern suburbs of Zhongdu, and arranged around the beautiful lake region which had been the suburban palace of the Jin. This change in site also meant that the source of its water supply changed from the Lianhua Pond to the Gaoliang River.

Second, the city was arranged along a north-south central axis, which began at the Lizheng Gate, a city gate in the south, passed through the Palace City in the middle, and ended up at the Central Terrace, which was the geometrical centre of the city. This central axis is still the backbone of Beijing today and still influences the thinking of Beijing's urban planners (see Chap. 5).

Third, the city was organized according to a hierarchical system, which consisted of the Palace City, the Imperial City and the city of Dadu. Each of these was encircled by city walls, which made Dadu a triple-walled city. Both the Palace City and the city of Dadu were in a perfect rectangular shape; furthermore, there was a mathematical relationship between their sizes. If one takes the Palace City as the basic modulus, the east-west breadth of Dadu was exactly 5 times of that of the Palace City, and the south-north length of Dadu was exactly 9 times of that of the Palace City. That is, the whole land area of the city was 45 times (5 times 9) that of the Palace City (Fu 2001: 11). The outermost city walls had eleven gates altogether: three gates on each side, except for the northern side, which had only two. In the

[2]In Mongolian it had been known as Khanbalig, or the City of the Grand Khan, and in the West the city was also known as Cambaluc, the Venetian traveller Marco Polo's transliteration of the Mongolian name.

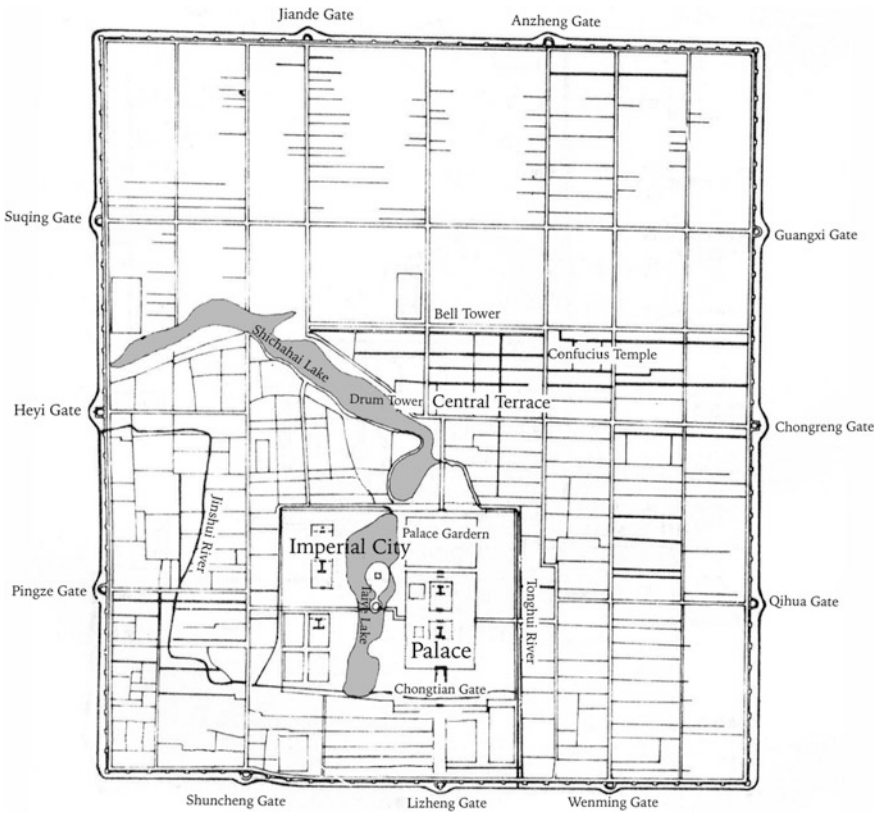

Fig. 2.2 The Yuan capital Dadu. *Source* Edited by author based on data from EBHUCB (1986: 14)

later years of Kublai Khan's rule, the city was inhabited by 100,000 households, that is, by about 500,000 people.

Fourth, the street system of Dadu was laid out in a chessboard pattern, comprised of rectangular blocks. The main streets led to the eleven city gates, and between them were the lanes (*hutong*, in Chinese). The breadth of the main streets was 25 m, while that of the narrow hutongs was 6–7 m. The space between the hutongs was 60 m, which was large enough for a large-sized dwelling compound with three courtyards. A further discussion about Beijing's courtyard housing will be given in Chap. 4.

The construction of the Yuan Dynasty, Dadu had begun before 1267, when Kublai Khan proclaimed the founding of the Yuan Dynasty, and ended in 1293. From the start, everything was carried out systematically and according to plan. The sewage system for the whole city was installed before the houses and streets were built.

As the capital city of the Yuan Dynasty, Dadu enjoyed great fame in the thirteenth century. Envoys and traders from Europe and Middle and West Asia were astounded by the splendour and magnificence of the city. Marco Polo was greatly

impressed by this well-organized city and described it's palace as "the most beautiful palace in the whole world" (Bredon 1922: 94). He descripted the palace in his travelogue: "These walls enclose the palace of that mighty lord, which is the greatest that ever was seen. The floor rises ten palms above the ground, and the roof is exceedingly lofty. …… The hall is so spacious that 6000 can sit down to banquet; and the number of apartments is incredible. ……. The roof is externally painted with red, blue, green, and other colours, and is so varnished that it shines like crystal and is seen to a great distance around" (Murray 1858: 104). He also said in his travelogue: "The streets are so broad and so straight that from one gate another is visible. It contains many beautiful houses and palaces, and a very large one in the midst, containing a steeple with a large bell" (Murray 1858: 105).

2.1.3 Beijing in the Ming and the Qing Dynasties

In 1368, Zhu Yuanzhang led his rebel forces to victory over the Mongols and seized Dadu. He founded the Ming Dynasty (1368–1644), but made his capital at Nanjing, a city on the Yangzi River in South China. Soon after the death of this dynastic founder, his fourth son, Zhu Di, usurped the throne and decided to move the capital north to Beijing. Generally speaking, Zhu Di, thereafter named Emperor Yongle (see Fig. 2.3), is considered to be the ruler who bequeathed the name "Beijing" to the city (Yu 1997: 179).

Unlike some of the earlier dynasties, which deserted former capitals and established new ones, the Emperor Yongle built his capital on the same site as Yuan's Dadu. Beginning in 1406 and ending in 1420, the city witnessed a 14-year reconstruction on a large scale. The Emperor formally transferred the capital to Beijing in 1421. In comparison with Dadu, with regard to the configuration of the

Fig. 2.3 Portrait of Emperor Yongle (1360–1424). *Source* Arlington and Lewisohn (1935: title page)

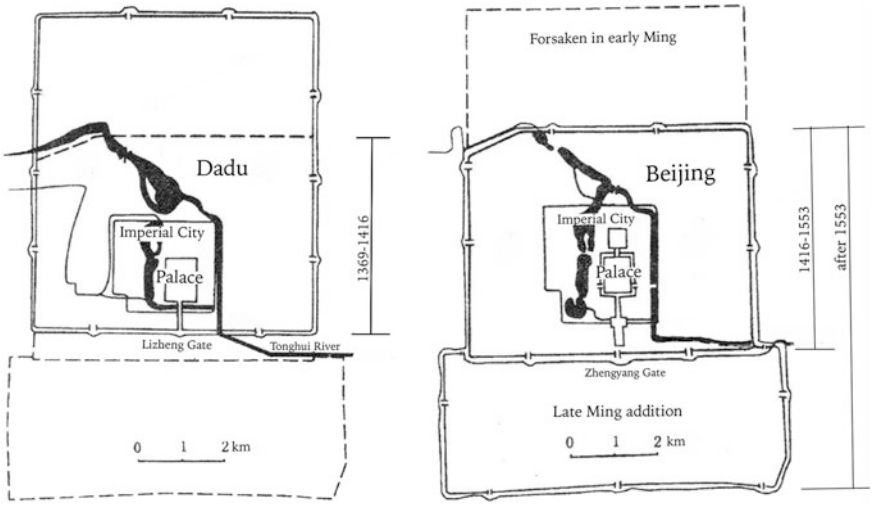

Fig. 2.4 Changes in the city walls from Yuam's Dadu to Ming's Beijing. *Source* Edited by author based on data from Hou and Deng (2001: 94) and Pan (2008: 74)

city, the changes made in Ming Dynasty Beijing can be summarizsed in the following two aspects (Fig. 2.4).

First, Beijing became a city with two-walled city under the Ming Dynasty. After Ming seized Dadu, massive new city walls, which were 12 m high and 10 m thick at the base, were built or reinforced. In order to protect the city from attack by Mongols, the northern part of Yuan's Dadu, because it was sparsely inhabited, was forsaken and the northern city walls were moved five li (2500 m) inwards in 1369. After the Ming capital had moved to Beijing, During the construction of the new palace, in order to make more space for the new palace in the south, the original southern city walls of Dadu were moved two li outwards in 1416. A century later, the area outside the southern city walls became a flourishing built-up district. In order to protect the growing population, the construction of yet more walls was started in 1553. The original plan was to surround the entire city completely with a second layer of city walls. However, because of financial difficulties, only the southern part was completed—this was in 1564—giving the rectangular city a slightly wider "base" in the south. Thus was formed the final configuration of Beijing, which consisted of two walled cities: a nearly rectangular city in the north known as the Inner City, and a wider rectangular city in the south known as the Outer City.

Secondly, Ming Dynasty Beijing more strongly reinforced the central axis of the city than had Yuan Dynasty Dadu. With the addition of the Outer City, the central axis was extended about 3 km to the south, thus making the whole axis nearly 8 km long. It ran through the imperial palace (also known as the Forbidden City) in the middle, from the Yongding Gate in the south to the Bell Tower in the north. At the southern part of the axis, two altars, the Temple of Heaven and the Temple of Earth,

were built symmetrically on opposite sides of the axis. At the northern part of the axis, a hill was constructed, called Wansui Hill (known as Jingshan under the Qing Dynasty). The Forbidden City, which was the most significant mark of the axis, was a completely new palace, built on the site of the Palace City of Yuan's Dadu. Being composed of thousands of halls and gates arranged symmetrically around the axis, its large dimensions and luxuriance were a fitting symbol of the power and greatness of the Chinese Empire. Like the city walls and moat around the whole city, similar city walls and a moat of a slightly smaller size were built for the Forbidden City. All these constructions played an important and dramatic role in reinforcing the central axis of the city (Fig. 2.5).

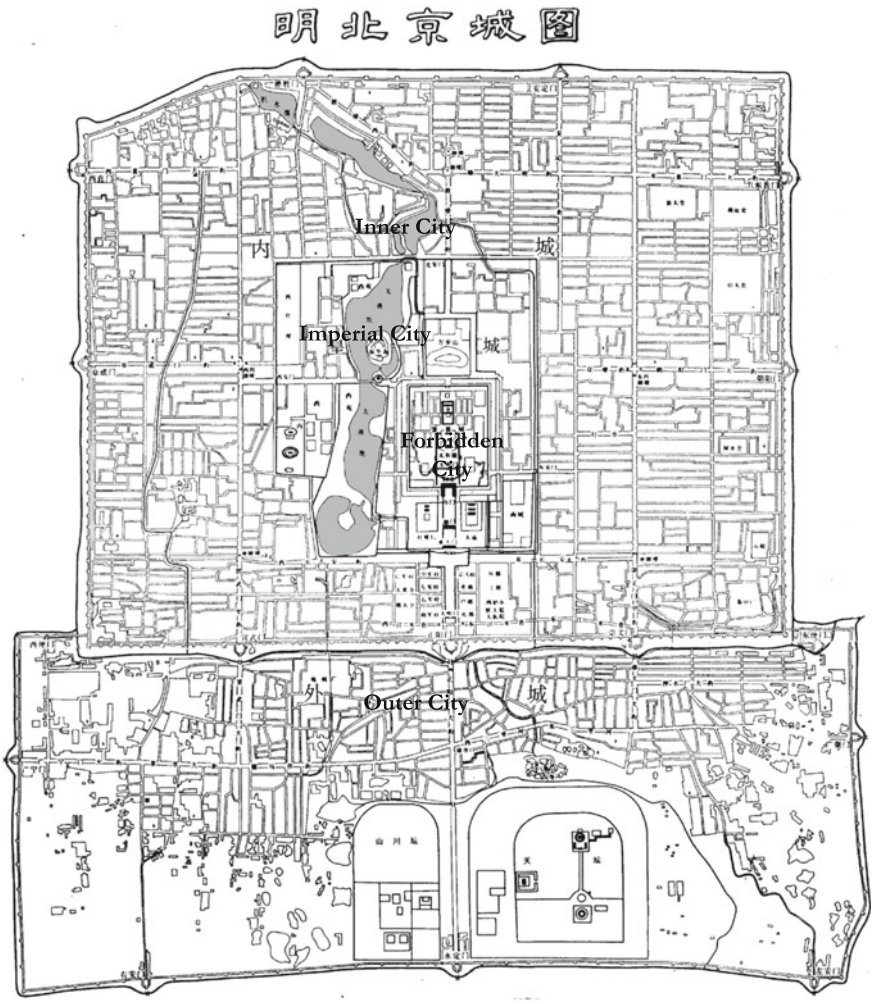

Fig. 2.5 Beijing in the Ming Dynasty (1368–1644). *Source* Dong (1998: 294)

Fig. 2.6 British and French allied troops entering into Beijing from Anding Gate on October 24, 1860. The engraving shows Beijing's cityscape before the twentieth century. *Source* ILN (1861)

The Qing Dynasty (1644–1911) was founded by the Manchus. After the last Ming emperor was dethroned in an internal rebellion, Manchu armies poured in from the Northeast to fill what was essentially a power vacuum. The Qing Dynasty they founded kept Beijing as its capital. During its reign of 267 years, the city was not subject to any major changes and stayed almost the same as Ming Dynasty Beijing. Even the palaces in the Forbidden City underwent only slight changes, with occasional repairs or partial reconstructions.

However, the Qing rulers spent huge financial resources to build enormous imperial pleasure-gardens in Beijing's north-western suburbs, the most famous of which was the Garden of Perfect Brightness (*Yuanmingyuan* in Chinese), the old Summer Palace. The imposing columned palaces and open-air pavilions of these grounds blended with the serenity of well-planned gardens to create a masterpiece of garden architecture unrivalled in the history of China (Hou and Deng 2001: 121).

In the late nineteenth century, after ruling China for more than 200 years, the Qing Dynasty gradually got weak, and the First Opium War of 1840 became a milestone in its decline. In the First Opium War, Beijing did not suffer serious, direct damage, since it was far away from the battlefield in the south of China. In the Second Opium War, of 1860, however, British and French allied troops directly overran Beijing and set fire to Yuanmingyuan, which was completely burned. From the engravings done then, we can get what Beijing's cityscape look like before the twentieth century (see Figs. 2.6 and 2.7).

2.2 Urban Development Prior to the People's Republic of China (1900–1949)

2.2.1 Introduction of Western Houses into Beijing

Beijing has a long history of communicating with the West. Marco Polo was probably the earliest and most famous Western traveller, who introduced thirteenth-century Beijing (in the Yuan Dynasty) to the West in his famous travel account *The Travels of Marco Polo* in 1298. In the Ming Dynasty subsequently, not far behind the arrival of the Portuguese on the China coast, established themselves at Macao and traded regularly under the Ming Dynasty, European Christian missionaries made their way to China, hoping to make converts there. Matteo Ricci, an Italian missionary, was the first to establish himself in Beijing. He arrived at Canton in 1582, lived in Beijing from 1601 until his death in 1610. In 1650, the Shunzhi Emperor of the Qing Dynasty permitted to build a church in Beijing. It was erected on the site of the house of Matteo Ricci, with the name of Southern Cathedral, as it was just located inside the Xuanwu Gate in the southern district of the Old City. It was the first western-style building, with a notable tower, appeared in Beijing. There is still a church on this site today, though it is the fourth Southern Cathedral, rebuilt after 1900 (Fig. 2.8).

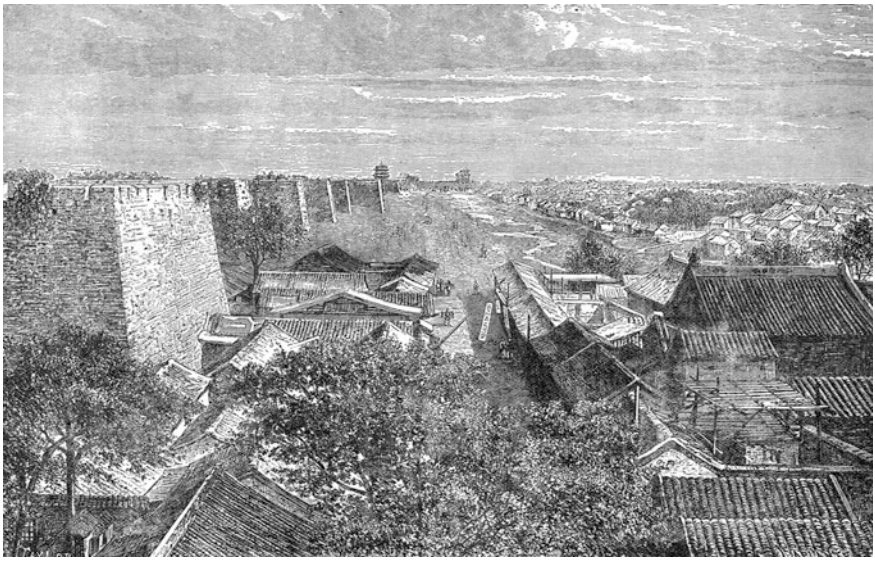

Fig. 2.7 The engraving from a book published in 1894 presented the view of Beijing's Outer City at that time. *Source* Northrop (1894: 111)

Fig. 2.8 Southern Cathedral rebuilt after 1900. *Source* By courtesy of the Reference Room of the School of Architecture, Tsinghua University

While the Portuguese and the Dutch were given permission to trade, separately in 1653 and 1655, by the Qing government, the Russians attempted to open diplomatic relation with the Qing Empire. After a series of fighting in the Amur region, a treaty was signed in 1689. The *Nerchinsk Treaty* was significant, as, for the first time, the Qing emperor accepted the equality of a foreign ruler, the Tsar of Russia (Haw 2007: 69). After 1694, a Russian House was setup in Beijing for Russians to reside for to trade or for diplomatic purposes. This was the first official residence for a European power to be established in Beijing. It was located in a district outside the south-east corner of the Imperial City, and more than 100 years thereafter became the Legation Quarter of Beijing.

As the result of the Second Opium War (1856–1860), the Qing government was forced to sign the *Tianjin Treaty* in 1858 and *Beijing Convention* (see Morse 1918a: 30–35) in 1860, which permitted Western resident ambassadors to live in Beijing permanently. As a consequence, many foreigners moved to Beijing and gradually formed a Legation Quarter, which was set up mainly along the Legation Street, now called Dongjiao Minxiang, on the south side of the Russian House (see Fig. 2.9).

In 1900, the Boxer Movement broke out in Beijing and the Legation Quarter was attacked. Under the pretext of suppressing the movement, an allied army of eight powers[3] blasted the city walls of Beijing and ransacked this ancient city. In 1901, the Qing government was forced to sign the *Xinchou Treaty* (see Morse 1918b: 347), and according to this, Dongjiao Minxiang was set as a special Legation Quarter for foreign settlements only, and foreign garrisons were allowed to quarter in Beijing. The construction of the Legation Quarter accelerated thereafter, and larger numbers of foreigners came to live in Beijing. Since the Legation Quarter had extraterritoriality, that is, the activities of foreigners were not restricted by Chinese laws, the Legation Quarter effectively became "a nation within a nation" (Zhang 1995).

Meanwhile, having suffered the invasion of Western powers, Beijing also experienced the introduction of a number of modern Western techniques, and its urban infrastructure and service facilities, such as electric power supply, water supply and transport system, were improved.

[3]These powers were Britain, Germany, Russia, France, America, Japan, Italy and Austria.

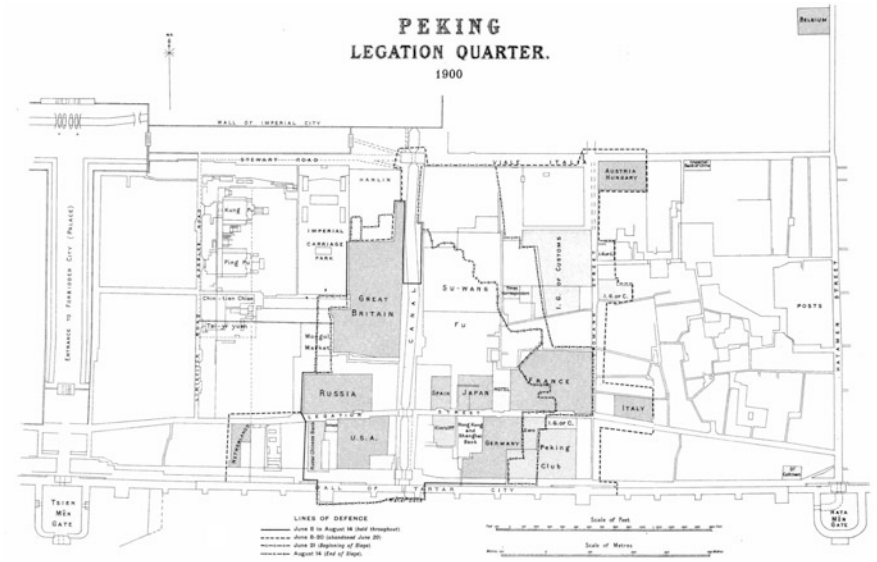

Fig. 2.9 Map of foreign legation quarter in Beijing, 1900. *Source* Morse (1918b: 224)

In 1888, an electric light was fixed on the ceiling of the Dowager Empress Cixi's bedroom. This was the first time in Beijing's history that electric lights were used, which inaugurated the age of electricity in the city. After the German company Siemens built a commercial powerhouse to supply electric power to the foreign legation quarter in 1899, the first Chinese electric company was established in 1905 to supply electric power to the inhabitants of Beijing. In the late nineteenth century, interior water transport in Beijing almost disappeared, and land transport was still in the stage of using wagons. The first Western car was introduced into Beijing in 1902 and the first railway was built in 1903—it looped around the old city proper and improved the transport conditions of the city (see Fig. 2.10). There was no public water supply system in Beijing before the twentieth century. The imperial family had channelled a spring to the palace from West Mountain (*Xishan* in Chinese), and the residents also dug wells to obtain water in the ancient manner. By 1910 the first water supply system had been built by a German company.

The Legation Quarter was a visible sign that the Western powers had forcibly opened the door of China. By providing a Western model within such an old city, it also played a direct role in promoting the modernization of the city. In 1915, the first asphalt streets were built in the Legation Quarter, which with their cleanliness and orderliness served as a model for the rest of Beijing. The Legation Quarter accommodated foreign embassies, banks, Western offices, clubs, hotels and military garrisons. Furthermore, a number of Western churches, schools and hospitals were built outside the Legation Quarter as well. These buildings, with a distinct Western style, gave Beijing an international look (Bredon 1922: 36) (Fig. 2.11), which created an observable change in the Chinese traditional townscape (Sit 1985: 83).

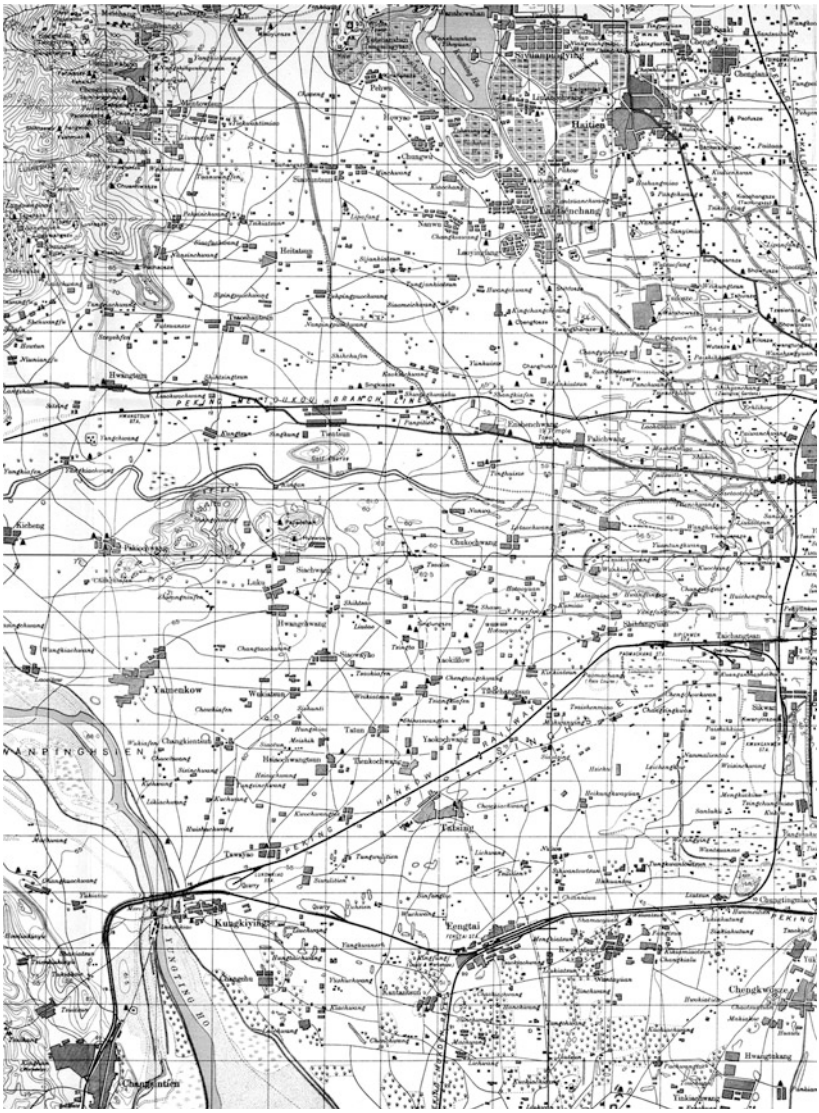

Fig. 2.10 Map of Beijing in 1920. *Source* Map collected by Cambridge University Library

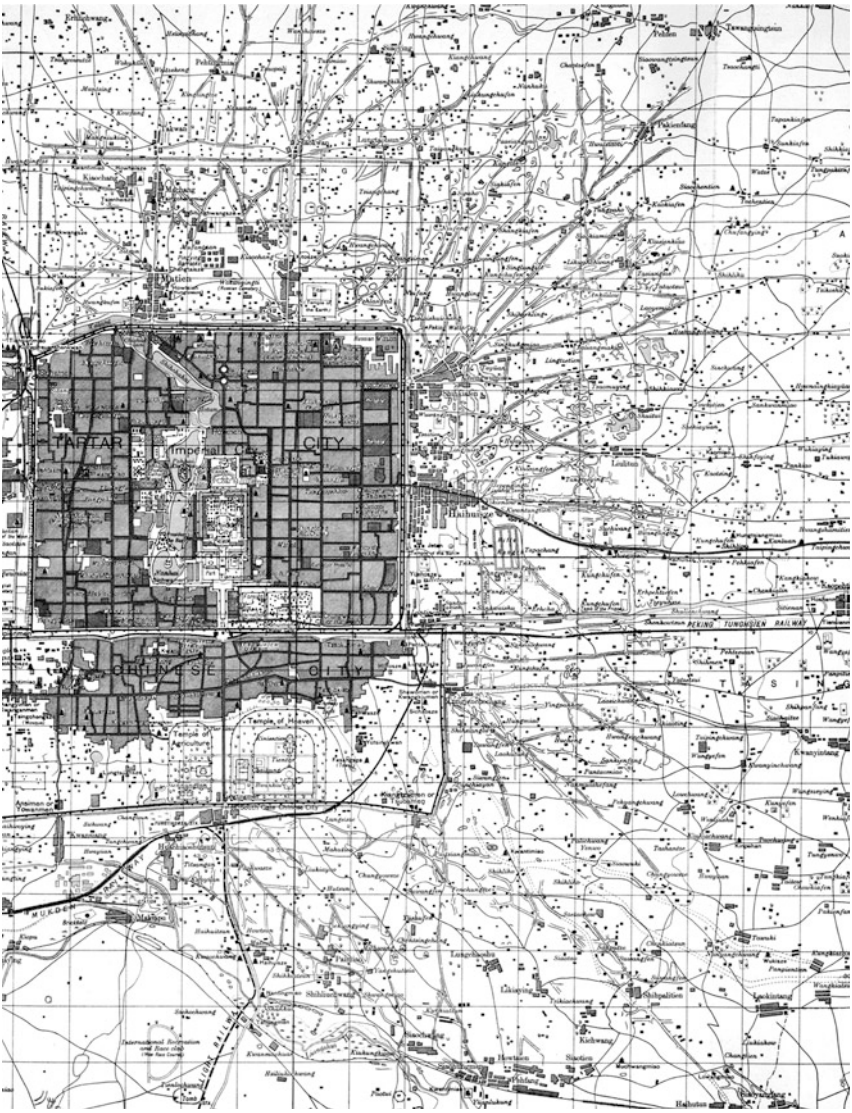

Fig. 2.10 (continued)

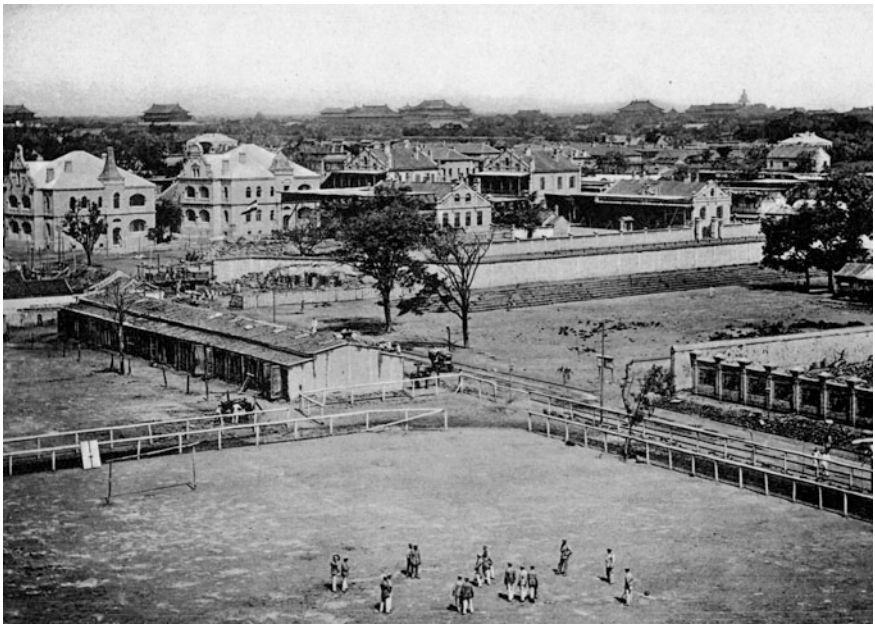

Fig. 2.11 View of foreign legation quarter with the Imperial City in the background in 1900. *Source* By courtesy of the Reference Room of the School of Architecture, Tsinghua University

2.2.2 The First Modern Redevelopment of Beijing's Old City

During the early period of the Republic of China, which was founded after the revolution of October 1911, Beijing underwent a modern urban redevelopment for the first time in its history. Many changes took place, but the most significant ones, which had a direct influence on the urban structure of the city, were, first, the opening of the Forbidden City and the imperial gardens to the public; second, the building of new roads through the city walls; and third, the construction of a new business quarter in the old city proper.

The opening of the Forbidden City and the imperial gardens to the public was the first obvious change that the 1911 Revolution brought to Beijing. In 1914, a historic museum was founded in it. Meanwhile, many other imperial gardens, palaces and temples, such as Beihai Park, Jingshan Hill, the Imperial Ancestral Temple, the Temple of Heaven and the Summer Palace in the suburbs, were opened in succession. They became museums, public parks and accessible to ordinary people. The opening of Tiananmen Square was an outstanding example. As an imperial square within the Imperial City, this square was surrounded by walls to prevent the common people from entering. After the gates and the walls were removed one after another, this square was opened to public access.

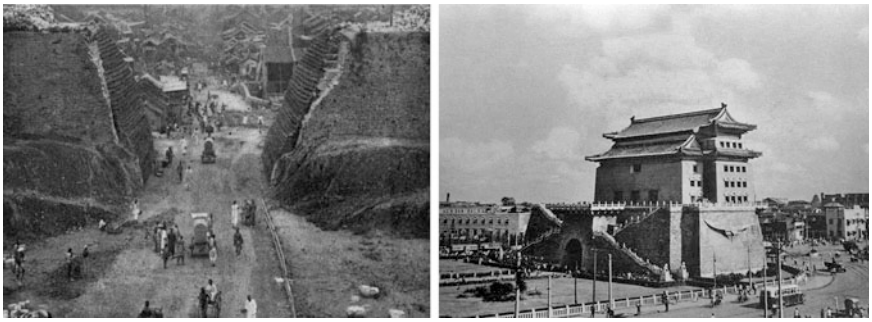

Fig. 2.12 City wall was broken down for new road pass through (*left*). *Source* Holmes (1919: 237); Qianmen Gate after reconstruction (*right*). *Source*: By courtesy of the Reference Room of the School of Architecture, Tsinghua University

The second change of Beijing was that, in order to improve traffic conditions, some of the city walls were broken down to let the newly built roads or railways pass through. The walls of the Imperial City, which were located at the city's centre and blocked traffic between the east and the west, were removed first, and then, some breaks in the walls of the city were made for roads to go through, and some gates, considered bottlenecks for traffic, were reconstructed or dismantled (see Fig. 2.12). The reconstruction of Qianmen Gate caused a conflict between two groups who disagreed about the way to effect the urban redevelopment of the city. After the reconstruction, the wall was razed, and the gate that had been previously surrounded by the wall became a single tower surrounded by traffic. The newspapers of the time were full of either praise or condemnation. One columnist wrote that the reconstruction "satisfied the demand for the development of the city as a capital" (Wang and Zhao 2007). Others, however, thought that the reconstruction obliterated one of the most important elements in the townscape of Beijing.

The third change is the appearance of new business quarters in the old city proper. During the period of the Qing Dynasty, trading was strictly prohibited in the Inner City, and the only commercial district of Beijing, Qianmen, was based in the Outer City. After the founding of the Republic of China, Wangfujing and Xidan, in the Inner City, were successively established as the commercial districts of the city. By 1934, Wangfujing, being the home of 136 Chinese and foreign firms (Xi 2002), became one of the most famous commercial districts not only of Beijing but also of all China.

2.2.3 The Master Plan of the City During the War Years

Beijing had undergone numerous wars in contemporary times. Fortunately, the Old City was spared from major demolition. As mentioned in previous section, in the Second Opium War, of 1860, British and French allied troops burned down the imperial gardens on Beijing's north-western suburbs, the Old City itself, however,

suffered no serious damage. In the Boxer Movement, of 1900, for selling Western medicine, Laodeji Pharmacy at Dashila commercial district was torched by rebels and large numbers of houses nearby were burned down as well. The invasion by the allied army of eight powers in the same year was more damaging. What they destroyed were mostly the city walls and many gate towers and watch towers on the walls. Among them, Zhenyangmen Gate Tower and Watch Tower and Chaoyangmen Watch Tower were rebuilt in 1903.

Beijing came under Japanese occupation after the famous Lugou Bridge (Marco Polo Bridge) Incident on 7 July 1937. During the Japanese occupation, two breaks at the east and west sides of the walls of Inner City were made for roads go through, which were named as Qimingmen (Gate of Enlightenment) and Chang'anmen (Gate of Eternal Peace).[4] The occupation continued until the Japanese surrender of 1945, but the city had precious little time to recover before being swept up in the Civil War, which lasted until 1949.

During these war years, the urban development of Beijing was in recession. However, it is worth mentioning that two master plans for Beijing were produced during this period. The first plan, *The Outline of City Planning of Beijing*, was made by the Japanese in 1938, and the second plan, *The City Planning of Beiping*,[5] based on the Japanese project, was made by the municipal government of Beiping in 1946. This was the first time that Beijing had taken on urban planning in a modern sense, although these plans were applied only on a small scale.

After occupying Beiping, the Japanese made the city into the capital of a puppet state, renaming it Beijing. Thereafter more and more Japanese moved into the city. According to statistics (Sun and Wang 2002), the number of Japanese living in Beijing was 4000 by December 1936, but by October 1939, the number had risen sharply to 41,000, with females accounting for 39 %. This high percentage of women indicated that Japanese migrants had moved to Beijing, mostly in families. As the Japanese rolled into the old city proper and occupied the courtyard houses by forcing the original Chinese residents out, conflicts between Chinese and Japanese residents occurred frequently.

In order to solve the problems of population pressure, and especially the conflicts between Chinese and Japanese residents, a Japanese-controlled construction bureau, established in 1938, drew up a master plan for the city (Fig. 2.13) Within this plan, two new towns were planned to be built in the eastern and western suburbs, and the new towns and the old city proper would be separated by green space of one to three kilometres in width. In order to separate Japanese residents from Chinese residents, the new western town, located at Wukesong with a distance of 10.5 km from Tiananmen Square, was planned to become a district solely for Japanese residences and Japanese military offices (Fig. 2.14). The new eastern town would

[4]The names were changed into Jianguomen (Gate of National Construction) and Fuxingmen (Gate of National Rehabilitation) after Japan surrendered.

[5]During 1927–1949, the national capital was moved to Nanjing, on the Yangzi River. Beijing lost its capital status and in 1928 was renamed Beiping, with the status of special municipality. But during the period of Japanese occupation (1937–1945), the city was renamed as Beijing.

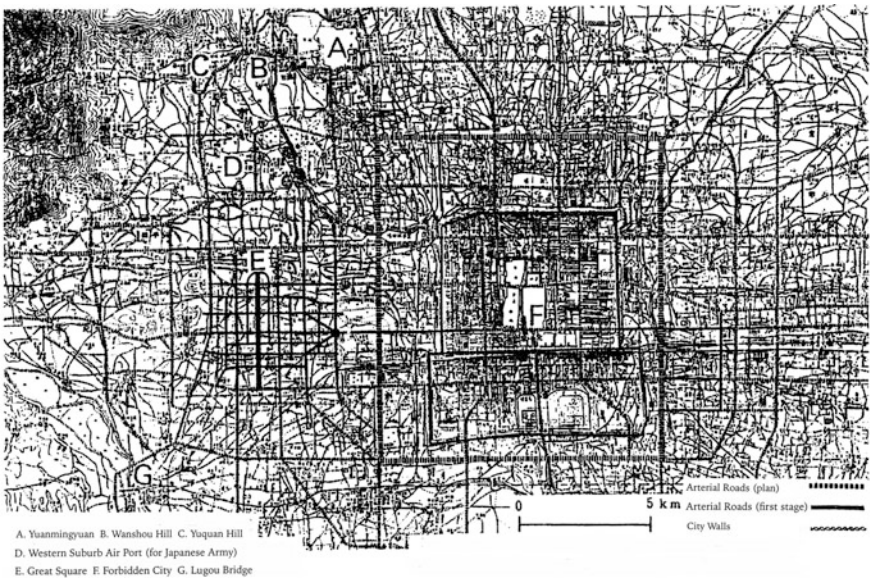

Fig. 2.13 Network of arterial roads of city planning of Beijing by puppet municipal government in 1938. *Source* Dong (1998: 300)

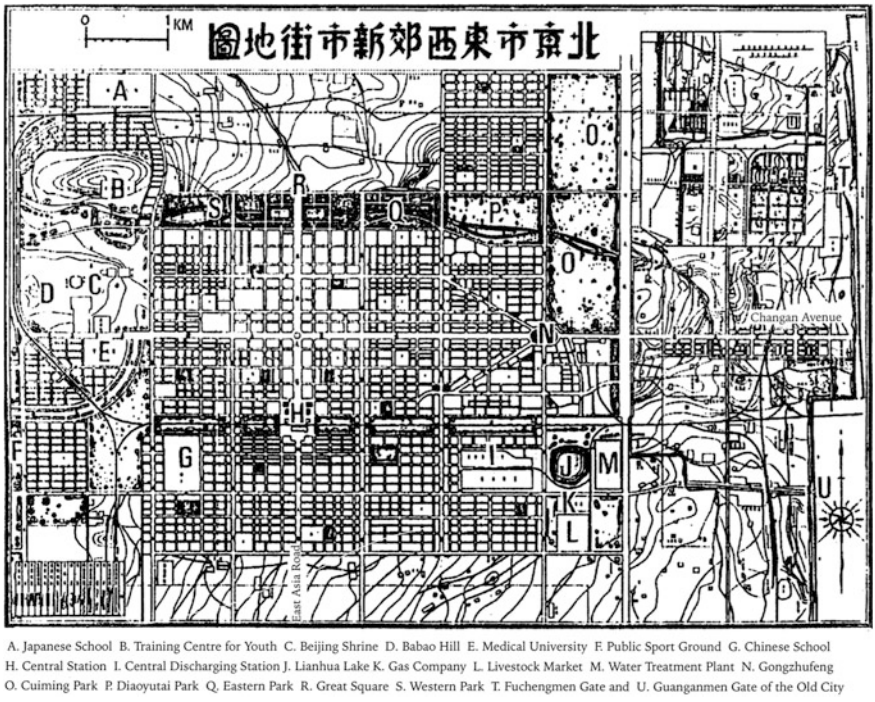

Fig. 2.14 Plan of West Surburban New Town of Beijing in 1938. *Source* Dong (1998: 301)

be an industrial district. Chang'an Avenue would be extended, and a ring road would be built around the old city proper in order to connect it with the new towns. Apart from 581 houses (with a total floor area of 67,083 m^2) and 8.02 km long roads been built in the western suburbs, this master plan was not yet fully carried out when the Japanese surrendered in 1945.

In the three years following the Japanese surrender, the municipal government of Beiping examined the problems that the city had experienced during the occupation period and came up with a new master plan for the city, based on the Japanese plan. The new plan, which focused on developing the traffic system, cleaning up the slums, improving urban infrastructure facilities, and protecting historic sites, was announced in 1947. Within the new plan (Fig. 2.15), some changes were made. The western town would become an administrative centre; the central railway station would be relocated, and a public traffic system would be built; and a nature park, a golf course and an international sports field would be added to the plan. One remarkable point about this plan is that it was the first in history to propose the redevelopment of Beijing's Old City. It highlighted the need to protect historic sites while modernizing the city, and also submitted a zoning plan for limiting the height of buildings near historic sites. Although this new master plan of Beijing was not put into effect because of the Civil War, it provided many reference points for research on the urban development of Beijing in the coming years.

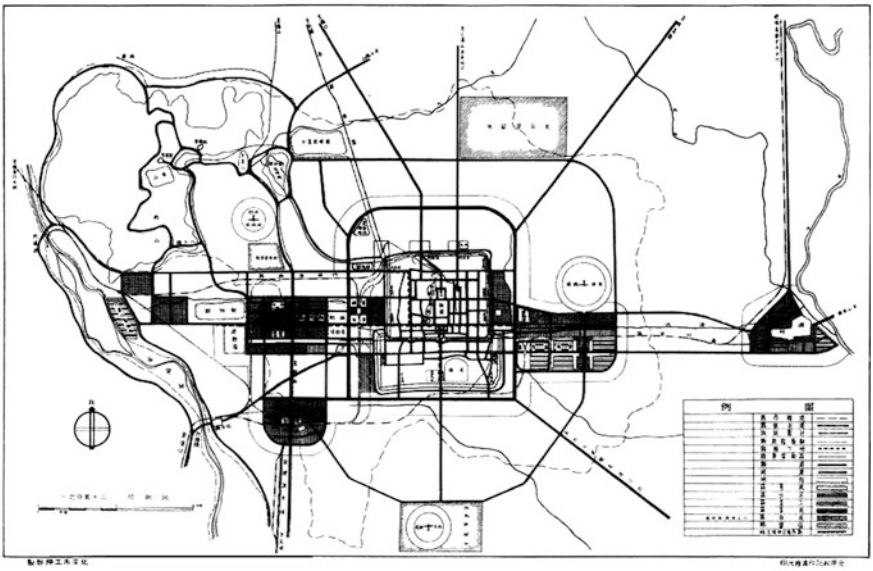

Fig. 2.15 The Master Plan of Beiping in 1947. *Source* Chen and Wu (2003)

2.3 Urban Development Under the Planned Economy (1949–1979)

2.3.1 Urban Planning of the New Capital

In 1949, Beijing was established as the capital of the People's Republic of China. When Beijing's municipal government was charged with the planning of the city, not only were some Chinese experts engaged in the planning work, but experts from the Soviet Union, who had previously engaged in planning the city of Moscow, were also invited.

The first problem that the planning of the city encountered was to decide where the new administrative centre should be put, in the old city proper or in a new urban district outside the old city proper (Shen 2000). The location of the new administrative centre was primarily concerned with the question of how to make use of, or redevelop and protect, Beijing's Old City. One group believed that it would inevitably damage Beijing's Old City if massive new administrative departments were introduced into it. In a project proposed by two Chinese architects, Liang Sicheng and Chen Zhanxiang advised that the new administrative centre should be built outside the city walls and in the western suburbs, suggesting that this would preserve Beijing's Old City in its entirety. Different form the "New Urban Area" developed under Japanese occupation, Liang and Chen proposed a site to the east of Wukesong, also in the city's western suburbs but closer to the Old City, with a distance of 7.5 km from Tiananmen Square. They called for developing the area "where work should be done in a planned way to choose a site with sufficient open space to be home to the government bodies, serving as the capital's administration centre" (Liang and Chen 1986: 15). "Liang-Chen Proposal" (Fig. 2.16) took the whole situation into account that there is an acute shortage of open space within the city walls while the "new urban area" developed by Japanese aggressors is too far away from the city, which totally ignored the redevelopment of the Old City.

The other group, mainly made up of the Soviet Union experts, recommended that the administrative centre be constructed within the old city proper in order to make full use of the Old City, suggesting that protection must be combined with redevelopment of the city (Dong 1998: 315). In *The Proposals on Improving Beijing's Municipal Infrastructure*, the Soviet expert group refuted "Liang-Chen Proposal" and elaborated on a plan for having the new administrative centre constructed in the exact centre of the old city. They alleged that plan of building the new centre on the suburbs was "uneconomical", which would "give up the attempt in rebuilding and improving the existing city" (Wang 2003: 83). Barannikov, one of the Soviet experts, stated in his report, "Beijing does not have large industrial enterprises. However, as the capital, in addition to a city of culture, science and art, it should be a large industrial city as well". Further more, he proposed, "It will be good to begin with transforming one avenue or one square, such as Tiananmen Square in the historic centre of the city, which has become all the more important because of the military parade and the mass demonstration took place there not long

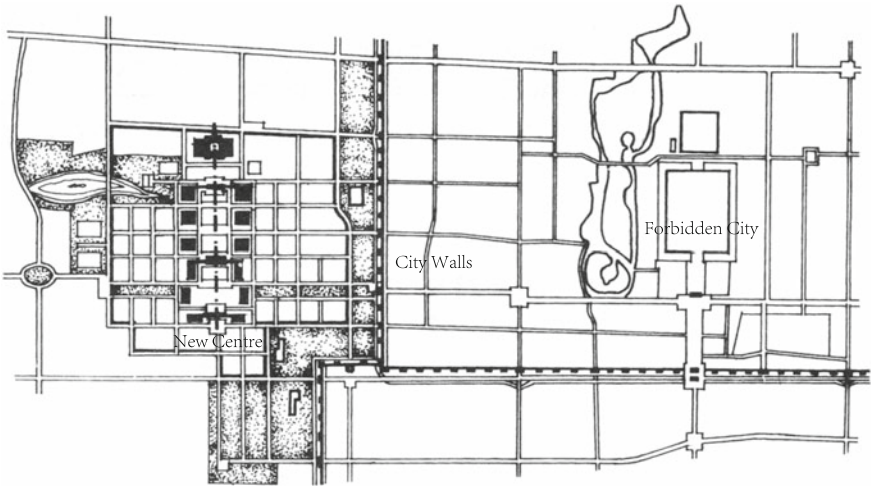

Fig. 2.16 "Liang-Chen Proposal": the new administration district in relation to Beijing's Old City. *Source* EBHUCB (1986: 26)

ago for the inauguration of the People's Republic of China. Tiananmen Square, therefore, should be made the centre of the city" (Wang 2003: 83).

It is clear that both sides had as their aim a wish to protect Beijing's Old City, but the methods they advocated were very different. Considering them today, it would seem that the proposal of the Chinese experts Liang and Chen was the more far-sighted. However, the result was that the opinions of the Soviet Union advisors got the upper hand; and after that, Beijing's municipal government established an urban development guideline of "fully using and developing the Old City" (Song et al. 2004; Shen 2000). Further more, following the so-called "Stalin's principle for city planning", which was introduced to China by the Soviet advisors and advocated "the capital cities of all socialist countries must be large, nationally important industrial centres" (Gao and Wang 1991). Beijing's municipal government, in 1950, set up the development policy of "transforming Beijing from a consumption city into a production city, from an old, backward city into a modern city" (Wang 2003: 66).

In 1953, the municipal government proposed *The Draft Plan of Redeveloping and Expanding the City of Beijing*, the first master plan of the city after the founding of the People's Republic of China. This plan clearly pointed out that the old city proper would serve as the location of the central government of China (Lu 2005). In 1957, the municipal government, based on the 1953 plan, proposed *The Preliminary Plan of Urban Construction of Beijing*, which was approved by the central government in 1958 (see Fig. 2.17). The urban development guideline of "fully using and developing the Old City" brought about in Beijing a monocentric urban structure, which was referred to, in jest, as "spread cake structure" by the architects and city planners in China (Wang 1999). This urban structure has caused hidden trouble for the protection of Beijing's Old City ever since.

Fig. 2.17 The Master Plan of Beijing in 1958. *Source* EBHUCB (1986: 41)

In 1958, Beijing began to build the "Ten Major Constructions"[6] to commemorate the tenth anniversary of the People's Republic of China. Seven of these buildings were located in the old city proper. They adopted an imposing and magnificent style, seeking a bulky, symmetrical form. The Great Hall of the People and the National Museum of History represented the influence from the Soviet Union, and the National Cultural Palace, the National Agriculture Exhibition Hall and Beijing's Railway Station incorporated modern buildings with traditional Chinese style roofs (Fig. 2.18). In addition to the "Ten Major Constructions", many administrative departments, such as Ministry of Foreign Trade, Ministry of Textile Industry and Ministry of Coal Industry, were built in the old city proper as well.

Besides the location of the administrative centre, another problem that the planning of the city had to face was whether Beijing should become an industrial centre as well as a political and cultural one. Because of the extreme economic difficulties which the state had encountered during the early years of the People's Republic of China, the central government carried out a policy of "giving priority to industrial development". In the 1958 master plan of the city, Beijing's municipal government carried out a policy of "converting a consumptive city (Beijing) into a industrial city" and proposed that Beijing would indeed become an industrial centre as well (Lu 2005). As a result,

[6]The "Ten Major Constructions" included: the Great Hall of the People, the National Museum of History, the National Military Museum, the National Agricultural Exhibition Hall, Beijing's Railway Station, the Worker's Stadium, the National Cultural Palace, the National Hotel, Diaoyutai State Guest Hall and the Overseas Chinese Building.

Fig. 2.18 Two of the "Ten Major Constructions": the Cultural Palace of Nationalities (*left*) and the Great Hall of the People (*right*). *Source* By courtesy of the Reference Room of the School of Architecture, Tsinghua University

this plan accelerated the construction of new industrial enterprises within the city. In the course of only two years, from 1958 to 1960, 800 new factories were built in Beijing: these included textile mills in the eastern and north-western suburbs and electron tube factories in the north-eastern suburbs, with a floor area of about three million square metres. This accounted for 26 % of the city's total annual construction (Tan 2002). Most large-scale heavy industries were set up around the suburbs, at some distance from the old city proper, and were like "urban enclaves" in a rural area.

During the period of the planned economy, Beijing produced two master plans for the city: those of 1953 and 1958. However, during the Great Cultural Revolution (1966–1976),[7] the urban planning and housing management system suffered serious damage. In 1967, indeed, during that time, the master plan of the city ceased to operate, and in 1968, Beijing's Municipal Bureau of Urban Planning was closed and was not reopened till 1972. In 1973, the reopened Beijing's Municipal Bureau of Urban Planning produced a master plan (see Fig. 2.19). It indicated that the city had occupied so much land and the industries have become over centralized that they had resulted in serious shortages of water and land, and environmental pollution. The plan was submitted to Beijing's Municipal Communist Party Committee[8] and, however, was pigeonholed, not open to discussion (Wang 2003: 345).

[7]The Great Cultural Revolution was a radical movement in China initiated by Mao Zedong in 1966. It intended to eliminate counterrevolutionary elements in the government and resulted in purges of the intellectuals and ended in socioeconomic chaos. It was on a mammoth scale, lasted for two years in its intense form, lingered on for another year and a half, and was not officially declared over until 1976.

[8]During the Great Cultural Revolution, many functions of the government's departments were performed by Communist Party Committee.

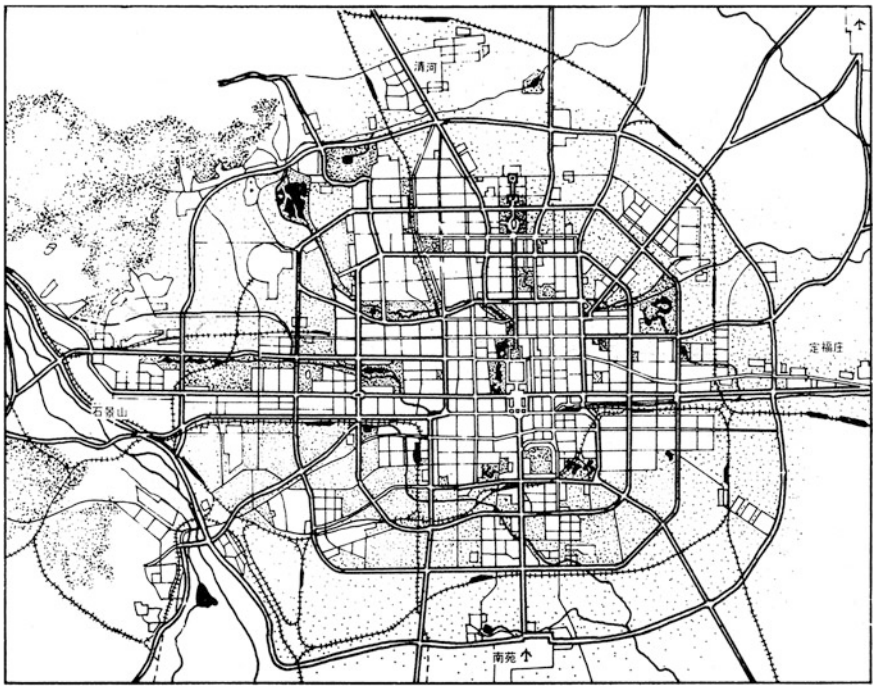

Fig. 2.19 Beijing's Master Plan in 1973, the only plan made during the Great Cultural Revolution. *Source* EBHUCB (1986: 55)

2.3.2 Destruction of the Old City Proper

Under the guideline of "fully using and developing the Old City", many urban functions became concentrated within Beijing's old city proper. After the 1950s, when administrative departments and public facilities were constructed on a large scale within this area, it followed that a considerable number of courtyard houses had to be dismantled in consequence.

Between 1956 and 1959, when the "Ten Major Constructions" were built, the demolition of courtyard houses tended to peak (Table 2.1). In particular, in 1958, in order to build the Great Hall of the People and the National Museum of History on Tian'anmen Square, and to break through Chang'an Avenue from east to west, altogether 540,000 m^2 of old houses were dismantled (see Fig. 2.20). Unfortunately, these old houses were for the most part not dilapidated houses, which needed to be reconstructed, but courtyard houses of relatively good quality located along the street frontage (Ping 1999). And after these good quality courtyard houses have been demolished, many poor quality courtyard houses in other areas of the Old City still remained. In the 1958 master plan, the municipal government set itself a target of redeveloping the old city proper within 10 years.

Table 2.1 The old houses that were dismantled in Beijing's old city proper during 1949–1976

Socioeconomic background	Year	Old houses dismantled (1000 m^2)	Average dismantled (1000 m^2/year)
Period of economic recovery at the early stage of the People's Republic of China	1949–1955	296	42
Late period of the "First Five-year Plan" and the period of the "Great Leap Forward", many new administrative buildings were built in the old city proper	1956–1959	1065	266
Period of economic readjustment	1960–1965	448	75
Period of the "Great Culture Revolution", many courtyard houses began to decline	1966–1976	748	68

Source Made by author based on data from Ping (1999)

Fig. 2.20 A bird's-eye view of Tiananmen Square after reconstruction in 1959. *Source*Li (1959)

However, after all this urban redevelopment, the number of "old and dilapidated houses" (ODH) in the old city proper did not decrease but actually underwent a huge increase, and by 1966 their number was even greater than it had been during the early years of the People's Republic (EBHUCB 1992: 443).

Even the traditional residential districts in the old city proper which were not demolished did not survive undamaged. From the latter part of the Great Cultural Revolution (1966–1976) onwards, in order to relieve the pressure due to the shortage of housing, Beijing's municipal government carried out a policy which allowed residents to use the yards in their courtyard houses for extensions. Furthermore, government even tried to make the most of the open space within the old city proper to build a kind of temporary housing (Fig. 2.21). Such "dime houses" were generally only three or four-storeys high, and were equipped with communal kitchens and toilets, but no heating. Each household who lived in one of

Fig. 2.21 "Dime houses" inserted into courtyard houses neighbourhood in Jianchang Hutong. *Source* By courtesy of the Reference Room of the School of Architecture, Tsinghua University

these could possess only a 31.5-m^2 floor area. The "dime houses" were intentionally constructed below the normal standards, and had a notional service life of only 20 years (EBHUCB 1992: 443). With such low construction standards and simple and crude facilities, the living conditions in these "dime houses" were very poor.

This policy did great damage to Beijing's Old City: bunkhouses were crammed into the open space or gardens of courtyard houses, and crude rectangular buildings were inserted into traditional residential districts. This infill development did not disappear until 1986, when the municipal government prohibited "inserting new buildings into the open space of the old city proper" by an explicit order (Tan 2002). However, it is recorded that during the 12 years between 1974 and 1986, a total of 11 million m^2 of new buildings had already been inserted into the old city proper, of which 7 million m^2 were filled with proper housing and one million square metres with "dime houses" (EBHUCB 1992: 281).

In addition to the removal of many courtyard houses and the infill of "dime houses" within the old city proper, the city walls, erected since Ming Dynasty (1868–1644), were dismantled during this period of time. As mentioned in the previous section, in the early years of the Republic of China, some breaks in the city walls had been made for roads go through. These openings had caused controversy during discussions on how to redevelop Beijing's Old City. Although some of the city walls had been breached in this way, a large part remained intact up until the early years of the People's Republic of China. In the 1950s, however, a new controversy arose among experts and professionals, as well as the ordinary citizens, about the dismantling of the city walls. Liang Sicheng, the famous Chinese architect mentioned earlier, was one of the dissenters. He wrote articles appealing to the government to protect the city walls, but his efforts were in vain.

From 1952 on, the outer city walls began to be dismantled gradually. Till the Great Cultural Revolution, almost nothing had been left of the outer city walls. During the Great Cultural Revolution, the inner city walls were dismantled as well, and a broad ring road, the Second Ring Road, and the subway under it were built. In 1965, a report, approved by the central government of China, said that "the construction of the subway is to serve military purposes and solves the traffic problems as well. As most parts of the city walls have been demolished or collapsed, the

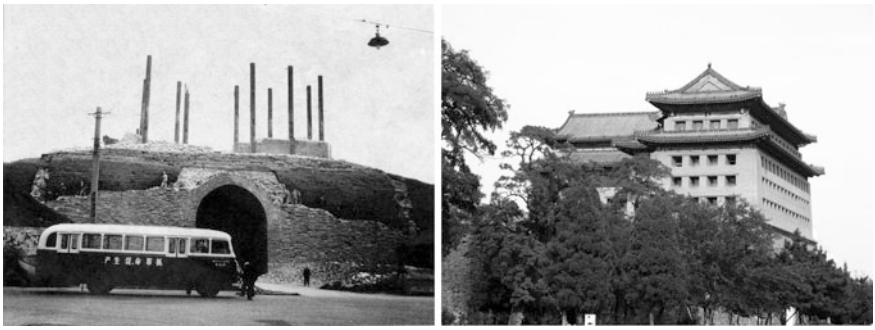

Fig. 2.22 Xizhimen Gate Tower being dismantled (*left*). *Source* Luo and Yang (1999: 15); The watch tower survived on the south-east corner of the inner city walls (*right*). *Source* By courtesy of the Reference Room of the School of Architecture, Tsinghua University

subway would be built on the foundation of the city walls. This conforms to both military needs and avoids the dismantling of large number of houses, and meanwhile the construction will not obstruct the normal traffic of the city. It facilitates the construction and lowers cost" (Wang 2003: 297). The historic city walls of Beijing, giving way to the new subway, came to their end at last.

Only two gates, Zhenyanmen Gate and Qianmen Gate, due to their special sites located on the central axis, were preserved (see Fig. 2.22). In addition, another gate, Deshengmen Gate, the watch tower on the south-east corner of the inner city walls, and a segment of the inner city walls at the southwest corner, which had not yet been pulled down during the Great Cultural Revolution, luckily escaped demolition.[9]

2.3.3 *Urban Housing Characteristics*

After the founding of the People's Republic of China, the new government adopted a socialist system of public ownership within a planned economy. By confiscating privately owned courtyard houses and transferring them as public properties and by developing ""work-unit" compounds", the majority of urban housing in Beijing gradually became publicly owned. Therefore, two types of housing appeared in Beijing: ""work-unit" compounds" managed by "work-units"—the state-owned enterprises or institutions—and publicly owned houses. These latter were mainly those old houses which had been inherited from the former regime or confiscated

[9]Not long after the Great Cultural Revolution, the government acknowledged that the demolition of Beijing's city walls was short sighted. In 1980s, a mile-long segment of the inner city walls at the south-east corner, which was almost pulled down completely, was reconstructed. In 2003, Beijing's municipal government decided to reconstruct Yongdingmen Gate, one gate of the outer city walls, at the southern end of the urban central axis. In September 2004, the gate was re-erected at the site a little north to the original site.

from private owners, to be managed by the urban housing management departments of the municipal government. Within a "Welfare-oriented Housing System" (WHS), urban housing was not regarded as a consumer good but as a kind of welfare, and residents paid rents for their housing at a uniform and low rate.

Because of the government's policy of "giving priority to the development of industry", many industrial projects were being built around the suburbs of the city. Residential districts for employees—known as ""work-unit" compounds"—were also being set up nearby. These constituted a new type of residential district, which provided not only housing but also social welfare facilities, such as kindergartens, grocers and clinics. They constituted a major part of the urban housing development constructed during that period.

In order to keep housing construction and costs and standards of provision under control, the state policy propagated "six unifications" in housing development, in the areas of planning, design, investment, construction, distribution and management. These received state investment, were constructed under the supervision of the relevant "work-units", and were distributed to their employees for a low rent.

During the early stages of the People's Republic, China yielded to the influence of the Soviet Union in numerous aspects. In the matter of urban development, these are reflected not only in the "Ten Major Constructions" as mentioned above, but also be seen in the overall layout of residential districts. In the early 1950s, the "perimeter block neighbourhood" pattern, derived from Soviet Union, was used in planning residential districts. A "perimeter block neighbourhood" normally had a distinct axis, and within that area, houses were arranged along streets or in a symmetric pattern. The neighbourhood therefore had a strong sense of order and formalism (see Fig. 2.23). However, since a considerable number of houses stood east-west in this type of neighbourhood, access to sunlight and ventilation was far from suitable for Beijing's climate and for the living habits of its residents. At the end of the 1950s, from the Soviet Union again, the idea of the complete planning of a residential district, which was similar to neighbourhood units in Western countries, was introduced into Beijing and put into practice. Accordingly, the 1958 master plan of the city proposed that residential districts from thirty to sixty hectares would become the basic residential units of the city, and that each would accommodate ten to twenty thousand residents. Within these residential districts, residents could purchase daily necessities and children could have their primary school. Public transport would go around the residential district. Xizhaosi, built at the end of the 1950s, was the first residential district of Beijing to apply this concept.

However, during the period of planned economy, the state policy of "production first and livelihood second" kept urban housing standards low. In particular, from the end of the 1950s to the mid-1960s, China's economy experienced its first major setback after it broke its ties with the Soviet Union: and following this setback, the principle of economic saving on housing was taken to extremes, and many houses with poor conditions were built. Due to the housing shortage, it became common practice for two families to share a house, using a communal kitchen and toilet. In 1960, the amount of living space per capita in Beijing dropped to 3.24 m^2. This was the lowest point for the city since the founding of the People's Republic of China in 1949.

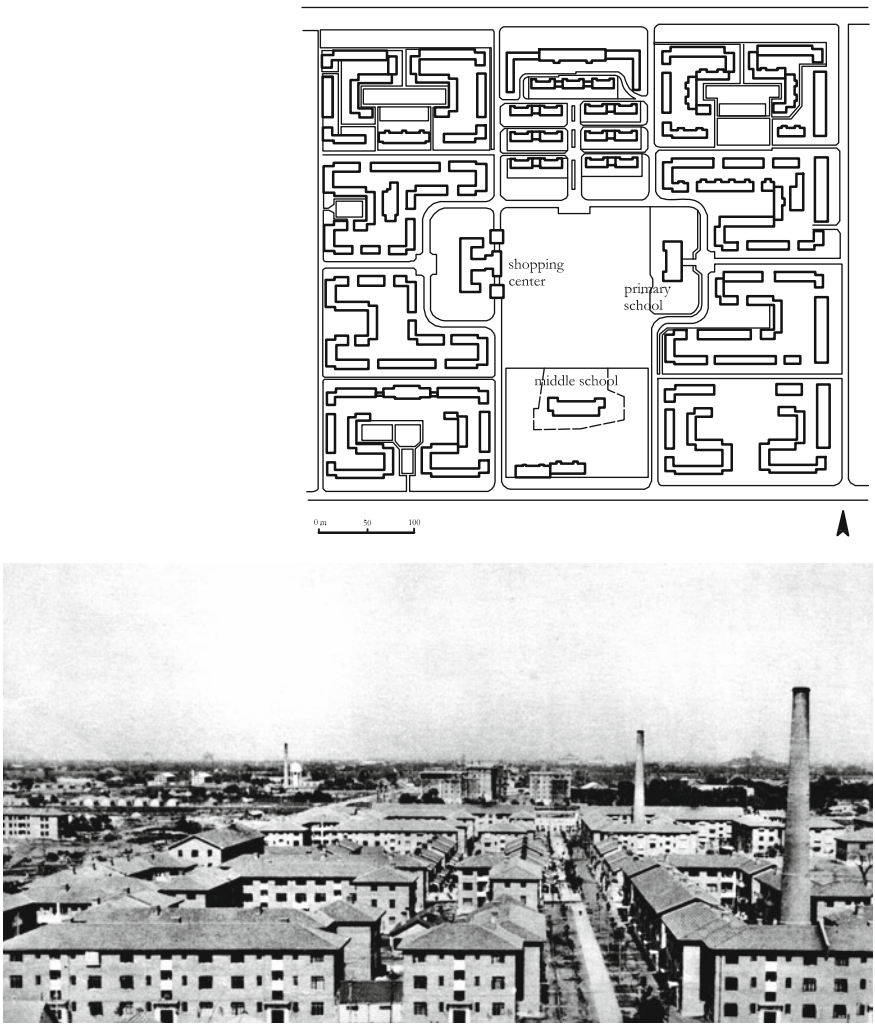

Fig. 2.23 The layout of Baiwanzhuang neighbourhood (*above*). *Source* Dong (1998: 227); The view of Baiwanzhang in the 1950s (*below*). *Source* BMCUP (1958)

Between 1966 and 1978, the period of the Great Cultural Revolution (1966–1976) and its immediate aftermath, society and life in general fell into chaos all over the country, resulting in the stagnation of urban housing development. In the case of Beijing, the floor areas of the new houses completed in 1967, 1969 and 1970 were, respectively, only 201 thousand, 291 thousand and 224 thousand square metres. This marks another of the lowest points for the city since 1949 (Fig. 2.24): and this extremely serious housing shortage created an inevitable need for urban housing reform.

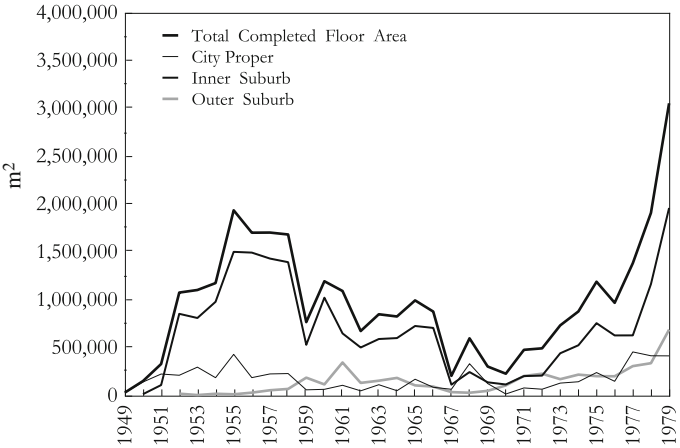

Fig. 2.24 Completed residential floor area per year, 1949–1979. *Sources* Drawn by author based on data from BMBS (2001) and BMBS (2002–2006)

2.4 Urban Development Under the Market Economy (1979–2005)

2.4.1 The New Master Plans and the Opening of the Urban Land Market

Since 1979, when the Chinese government embarked on a "reform and opening-up"[10] policy aimed at shifting the planned economy to a market economy, Beijing has entered a period of rapid urban development. In 1981, Beijing's municipal government began to produce a new plan for the city: The Plan of Urban Construction of Beijing (see Fig. 2.25). It was approved by the State Council of China in 1983. The most significant difference between this master plan and those produced in the 1950s is that the 1981 plan no longer emphasized that Beijing must be an industrial production base. In this plan, the city was identified as a political centre as well as a cultural one. In 1991, the municipal government, based on the 1981 plan, produced a new plan for the city: The Master Plan of Beijing (1991–2010). It was approved by the State Council of China in 1993. This plan set a new goal: to rebuild Beijing as a modern international city. It placed great emphasis on the development of high-tech and tertiary industries in the city, and promoted a trend toward suburbanization to fulfil the decentralization of the population (Lu

[10]Reforms and opening-up: In December 1978, the Third Plenary Session of the 11th Central Committee of the Communist Party of China decided to shift the focus of the Party's work to economic development and set a policy of reform and opening-up to the outside world. It is a historic landmark in China's modern history. Since then China has gradually transformed from a planed economy to a market economy.

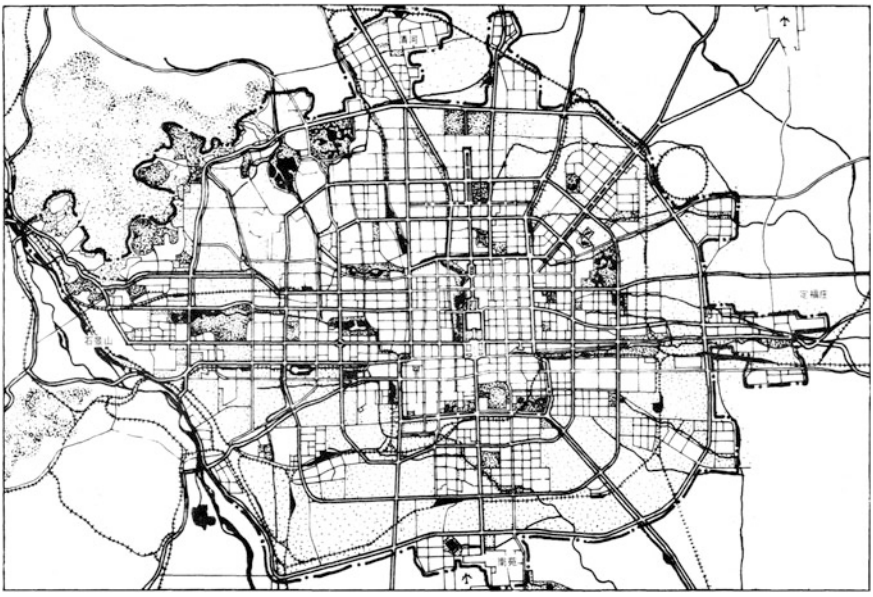

Fig. 2.25 The Plan of Urban Construction of Beijing in 1982. *Source* EBHUCB (1986: 57)

2005). These two plans were both produced against the background of China's transformation from a planned to a market economy. They both stressed that any master plan of the city had to be implemented within market economy rules.

From 1992, the opening of urban land market has produced a profound impact on the formulation and implementation of these new master plans for Beijing. During the period of the planned economy, China established state-ownership of land: the state was the sole authority which could assign the right to use land with no charge and no time limit. The right to use land could not be transferred from one land-user to another. In other words, there was no land market in China at that time. During the same period, as mentioned before, China implemented a policy of "converting the consumptive city into the industrial city" over a substantial period of time. In comparison with cities in developed countries, Chinese cities tended to emphasize primary and secondary industries and to neglect tertiary industries (Jiang 2001: 256). As a result, in most cities in China, industrial land-use usually occupied a higher proportion of land than commercial land-use for the business and service industries. This was also the case with Beijing.

In 1992, regulations for urban land-use with compensation were established in China. These separated the right to use land from the ownership of land, and permitted the transference of land-use rights with compensation. Since that time, the urban land market has gradually come into being and land prices have begun to play an important role in urban development. During the twenty-first century, the global economy, which caused a transformation of industries in many countries, has influenced China's economy as well (Zhou and Ma 2000). Service industries have

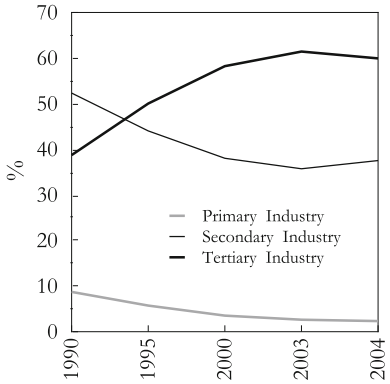

Fig. 2.26 The proportion of total output of industries of Beijing, 1990–2004. *Source* Drawn by author based on data from BMBS (2001, 2002–2006)

risen quickly and begun to thrive, and the urban industrial structure of Beijing has gradually evolved from one mainly made up of heavy industries to one that is centred on tertiary industry. According to government statistics [BMBS 2004], by 2003 the tertiary industries had become the pillar industries of the city, with a total output which accounted for 62 % of Beijing's gross domestic product (Fig. 2.26). This adjustment of its urban industrial structure has, in consequence, necessitated adjustments to the master plan of the city.

The increasing mobility of global capital has increased competition between cities to attract investment. Since the beginning of this new century, and with this aim in mind, Beijing has been building several large-scale urban development projects in the suburbs, such as that based in the Central Business District in the eastern part of the city, the Zhongguancun High-tech Research and Service Centre in the northwest of the city, and the Olympic Sport Centre in the north of the city. In 2005, in order to respond to the new situation, Beijing produced yet another plan for the city: The Master Plan of Beijing (2004–2020). This plan emphasized the need to develop sub-centres, and proposed a "polycentric" structure for the city. As for the nature of this "polycentric" structure, and more especially, whether it will play a role in the protection of Beijing's Old City, a further analysis will be given in Chap. 5.

2.4.2 The Large-Scale Redevelopment of Beijing's Old City

Since living conditions in the courtyard houses in the old city proper had by then become very poor, in 1990 Beijing's municipal government made the decision to accelerate the redevelopment of the Old City. This was the beginning of the "Old and Dilapidated Housing Redevelopment Project" (ODHRP). Most of the activities undertaken by the ODHRP involved levelling existing structures and rebuilding

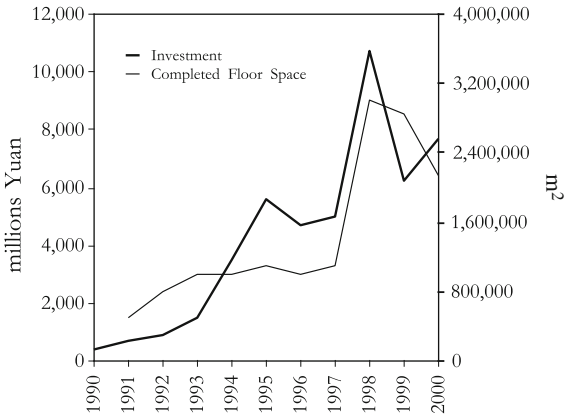

Fig. 2.27 Investment quantities and completed floor space in the redevelopment of Beijing's Old City, 1990–2000. *Source* Drawn by author based on data from BMBS (2001)

them. Meanwhile, in an attempt to transform the urban industrial structure, various government policies aimed to encourage and support tertiary industries. This has transformed the old city proper of Beijing into a hotbed of real estate development. Thus investment in the urban redevelopment of the old city proper, and the amount of floor space completed, have both increased significantly during the 1990s (see Fig. 2.27).

Economic competition in turn caused competition for urban land resources: and so factories previously situated in the old city proper had to move to suburban areas, and the more expensive central areas are now reserved for business and the service industry. In contrast with the situation during the period of the planned economy, yet more courtyard houses were dismantled and more new buildings were built. Until 1949, dwelling houses in Beijing were composed mostly of courtyard houses with a total floor area of over 11 million m^2 (Ping 1999). However, during the period between 1949 and 1999, about 12 million m^2 of the "old and dilapidated houses" (ODH) in the old city proper were dismantled. These included courtyard houses built before 1949 and houses built after that year but which had now became dilapidated, such as the "dime houses" mentioned above. Meanwhile, about 30 million m^2 of new houses were constructed. Of all the old houses which have now been dismantled, 75 % were demolished between 1979 and 1999. On the other hand, 60 % of the new houses were also constructed during this 20-year period (Table 2.2).

As to whether or not the traditional residential districts of the old city proper should be included within the region of protection, Beijing has experienced a tortuous process. In 1961, the Chinese government issued a list of the first batch of "Historic Sites to be Protected" (HSP). Up to 2001, altogether 231 historic sites in Beijing's Old City were identified as falling within this category. The total area of these historic sites and their surrounding settings amounted to 15.52 km^2, approximately 25 % of the whole of the old city proper. Besides these historic sites,

Table 2.2 The old houses that were dismantled and the new houses that were built in Beijing's Old City during 1949–1999

Time	Old houses dismantled (m^2)	Average dismantled per year (m^2)	%	New buildings built (m^2)	Average built per year (m^2)	%
1949–1979	3,000,000	100,000	25	12,000,000	400,000	40
1980–1999	9,000,000	450,000	75	18,000,000	900,000	60
Total	12,000,000		100	30,000,000		100

Source Made by author based on data from Ping (1999)

however, there were also large traditional residential districts within the old city proper: but since these were not considered as falling within the protection target, they were therefore demolished in great numbers during the ODHRP of the 1990s.

In fact, Beijing's municipal government had originally listed 25 traditional residential districts in the old city proper as "Historic and Cultural Conservation Districts" (HCCD) back in 1990: but unfortunately, these districts were earmarked only on paper. Most of them were still not given any clear conservation range or detailed planning, even as late as the year 2000 (Li 1999). After Niujie, which was one of the HCCD, had been totally dismantled and redeveloped in 1999, the municipal government re-divided the remaining 24 HCCD into 25 new ones in November 2000, and determined the ranges of their core conservation districts, which together account for 17 % of the total area of the Old City, and their surrounding areas, where construction is under control. But, in December of the same year, the municipal government made a plan to finish the ODHRP in five years. That means the residential buildings classified as ODH with a combined floor space of 9.34 million m^2, located at 164 separate blocks, were to be torn down and "redeveloped".

In September 2002, the *Conservation Plan of 25 "Historic and Cultural Conservation Districts" in Beijing's Old City* was finally promulgated by the municipal government of Beijing; and in 2003, Beijing settled on a second batch of HCCD with 15 more districts, among which 5 were located in the old city proper. Thus, the total conservation range of the HCCD in Beijing's Old City now covered 1287 hectares, and accounted for about 22 % of the total area of the old city proper.

Is 22 % enough? Fireworks started to explode in the realm of architecture and urban planning (Zhou 2000; Tao 2004). However, while the arguments were still going on, redevelopment of the traditional residential districts accelerated, and the courtyard houses which had not been included in the range HCCD, were dismantled even more swiftly in the new century than they had been before. In fact in 2001, the area of old houses which had been dismantled amounted to more than 1.8 million m^2: an unprecedented record. The areas of 2002 and 2003 had been 1.6 and 1.3 million m^2, respectively (Wei 2005). Although that figure dropped to 0.5 million m^2 in 2004, this was still larger than the average figure during the years 1980 to 1999 (see Table 2.2). By 2004, according to studies made by Tsinghua University (Wei

2005), the districts with traditional courtyard houses occupied 12.4 km^2 within Beijing's old city proper, thus accounting for 19.2 % of its total land. The districts with modern buildings occupied 24.2 km^2, accounting for 38.7 % of the total land, and the districts which contained courtyard houses mixed in with modern buildings occupied 10.5 m^2, accounting for 16.7 %. The remainder constituted areas for roads and green space. Thus it can be seen that, in contrast with the situation in 1949, when 86 % of the buildings in Beijing's old city proper were one-storey buildings (Ping 1999), multi-storey or high-rise buildings have now become the main component of the old city proper. A further analysis of the protection of Beijing's e courtyard houses and its Old City will be given in Part II.

2.4.3 The Rapid Housing Progress

As China's economic reform process developed and its economy underwent rapid growth, reform of its urban housing system began in earnest. This aimed to transform the "Welfare-oriented Housing System" (WPS) into a housing market system, i.e. the commercialization of urban housing. People who became rich began to buy their own residences in the housing market rather than obtain them through the WPS. This process of reform has been gradual and has been conducted over a fairly long period of time. Not until 1998 did China completely abolish the WPS, which had existed for about 50 years—in fact, ever since the founding of the People's Republic of China. This was a historic landmark in China's urban housing reform.

This rapid development of urban housing owes its existence to the growth of the real estate industry. Not until 1980 did the first real estate company appear in Beijing, and even by 1985 real estate companies numbered only 62, all of whom were state-owned enterprises. By 1995, however, this number had expanded to 623, and the ownership of these companies varied from state-owned to private-owned, to Sino-foreign joint- and exclusively foreign-owned (Tan 2002). By the end of 2002, it had rocketed to 3482 (BMCC 2003: 72). This rapid housing development was also reflected in the increase of living space per capita. As mentioned above, in 1960, under the WPS, the amount of living space per capita in Beijing had dropped to 3.24 m^2. In 1980, however, the living space per capita of the city reached 4.8 m^2. This was the first time that this indicator, having diminished for many years during the period of planned economy, exceeded that of the 1950s (Tan 2002). Thereafter, urban housing stock in Beijing grew in leaps and bounds, until in 2000, living space per capita in Beijing had reached 16.8 m^2. In 2004, it had risen to 19.1 m^2 (BMBS 2001, 2005).

Along with this rapid housing development, the scale of residential districts increased greatly and the city began to witness a process of fast residential suburbanization. An example is Fangzhuang, a residential district which began to be built in the southern suburbs of Beijing during the 1980s. Fangzhuang occupied a land area of 150 hectares and had a housing floor area of nearly 1.7 million m^2. It accommodated 82 thousand residents, and resembled a "small town". This pattern has become increasingly common since the mid 1990s. Residential districts, such as

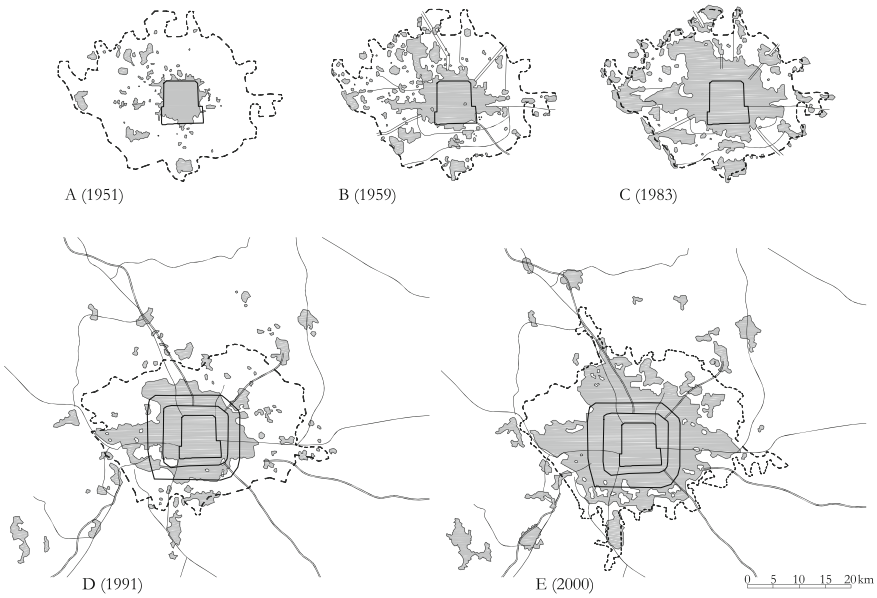

Fig. 2.28 Urban expansion of Beijing since the 1950s. *Source* Wang (2003: 30–31)

Wangjing, Huilongguan and Tiantongyuan, located in the north-eastern, north-western and northern suburbs of the city respectively, are huge in size, with a floor area of several million square metres and over one hundred thousand residents. Meanwhile, the built-up area of the city has spread rapidly outward, and has grown from 339 km^2 in 1979 to 490 km^2 in 1999, reaching an area of 604 km^2 in 2004 (BMBS 2001, 2002–2006) (see Fig. 2.28). Correspondingly, the completed residential floor space in the suburbs of the city between 1979 and 2004 has also increased significantly (Fig. 2.29), and Beijing has taken on many characteristics of residential suburbanization.

Although the figure above shows that Beijing has experienced rapid housing development during the past two decades, this does not mean that the living conditions of all the residents of the city have improved equally as a result. In contrast, housing reform promoted both the improvement of living conditions and also the diversity of housing estates. Under the "Welfare-oriented Housing System" (WPS) during the period of the planned economy, the construction criterion issued by the government was an imperative requirement for housing design and construction; no models which lay outside that criterion were allowed (Tan 2002). However, with the coming of urban housing reform and the opening-up of the property market, housing in Beijing ceased to follow a unified model any more. Differences in income between rich and poor have led to differences in the affordability of housing, which in turn has caused residential segregation in Beijing. This has been apparent since the mid 1990s. While rich people moved into high-grade flats and detached houses, low-income families still lived in the "old and dilapidated"

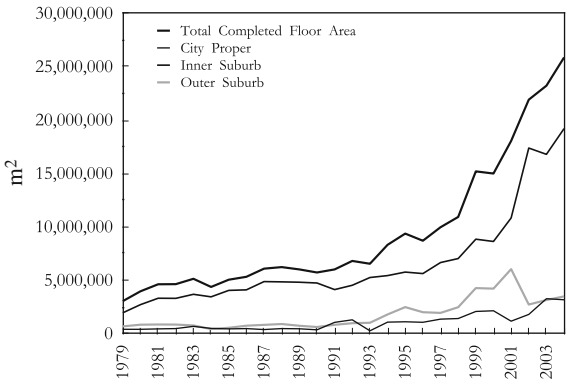

Fig. 2.29 Completed residential floor area per year, 1979–2004. *Sources* Drawn by author based on data from BMBS (2001, 2002–2006)

houses, or were pushed out of their original residential districts into the suburbs, and the migrant workers from the countryside concentrated in the "urban villages" with very poor living conditions. Although Beijing's municipal government has set up an "affordable housing" scheme and a "low-rent housing" scheme, with the purpose of helping low-income families, the trend towards residential segregation has become increasingly visible continued well into the new century. A further analysis of Beijing's trend towards residential segregation will be given in Part III.

2.5 Summary

In Beijing's history of urban development before the twentieth century, Dadu in the Yuan Dynasty produced a profound influence to the city thereafter. It initiated a central axis of the city, a chessboard pattern of the street system and a hierarchical layout of the main buildings within the city. Beijing in the Ming and Qing Dynasties more strongly reinforced the urban structure of Dadu, although some changes took place in the city walls and the gardens in the suburbs.

Beijing has witnessed remarkable changes during the twentieth century, particularly during the second half. *The Outline of City Planning of Beijing*, issued in 1941, was the first modern master plan of the city. Since then, six additional master plans have been produced (Table 2.3). *The Preliminary Plan of Urban Construction of Beijing*, issued in 1958, was perhaps the most influential of these, as it established a mono-centric urban structure for the city. Subsequent plans were all based on this mono-centric structure, which still dominates Beijing's development up to the present day. Urban planning policy during the period of the planned economy advocated "fully using the old city proper" and "giving priority to industrial development". This emphasis stopped with the 1983 master plan, *The Plan of Urban Construction of Beijing*. Then *The Master Plan of Beijing (1991–*

Table 2.3 The master plans produced for Beijing

Socioeconomic background	Issued in	Title of the plan	Focus
Period of Japanese occupation	1941	The Outline of City Planning of Beijing	New town for Japanese residents
Civil war after Japanese surrender	1946	The City Planning of Beiping	Improvement of the infrastructure
Early stage of the People's Republic of China	1953	The Draft Plan of Redeveloping and Expanding the City of Beijing	"Fully using and developing the Old City"
Period of the "Great Leap Forward"	1958	The Preliminary Plan of Urban Construction of Beijing	"Giving priority to industrial development"
Early period of the "Reform and Opening Up"	1983	The Plan of Urban construction of Beijing	Identified Beijing as a political and cultural centre, no industrial centre any more
Further reforms, market economy	1993	The Master Plan of Beijing (1991–2010)	Advocated a development of tertiary industry
Under the influence of global economy	2005	The Master Plan of Beijing (2004–2020)	Proposed a "poly-centric" structure for the city

Source Made by author

2010), issued in 1993, shifted the emphasis yet again by its advocacy of the development of tertiary industry.

During the twentieth century, the old city proper of Beijing has experienced various cycles of decline and redevelopments: and as has been discussed in this chapter, many courtyard houses have been demolished. Both the 1983 and the 1993 master plans targeted the protection of the Old City, and in particular, the "Old and Dilapidated Housing Redevelopment Project" (ODHRP), initiated in the 1990s, aimed to stop the decline of Beijing's traditional residential districts. However, because the old city proper remained a hot spot for real estate development, these policies seemed weak in the face of the redevelopment, and were evidently ineffective. Consequently, the old city proper has been seriously destroyed. Although more and more experts have appealed that the redevelopment of the traditional residential districts must be slowed down, there is no sign that this is actually happening. The questions to be asked are these: why did this urban redevelopment has such a destructive effect on Beijing's Old City, what is the underlying driving force of the redevelopments projects, and what is the fundamental solution to protect the traditional courtyard houses and the Old City itself? In 2005, a "poly-centric" structure was proposed in *The Master Plan of Beijing (2004–2020)*. This scheme, however, will be even less effective in protecting the Old City, as my analysis will show in Part II (Chaps. 4 and 5).

The city's progress in housing development during the twentieth century found expression chiefly in the improvement of living space per capita after China entered the market economy. During the period of the planned economy, urban housing development was restricted by the "Welfare-oriented Housing System" (WHS), and housing and its construction were far from meeting the demands of the residents. As has been shown in this chapter, living space per capita increased to 4.8 m^2 only in 1980, the first time that this indicator had exceeded that of the 1950s. Yet by 2004, living space had quadrupled to 19.1 m^2 per person. This rapid progress in urban housing, however, does not mean that living conditions have improved equally for all the residents of the city. Since the mid 1990s, Beijing's housing has been characterized by the new phenomenon of residential segregation. In Part III (Chaps. 6–8), I shall further discuss this transformation of Beijing's residential structure from a homogeneous type under the planned economy to a segregated type under the market economy. I shall analyze the reason for the residential segregation, and will suggest solutions for improving Beijing's housing security system.

Before moving on to Parts II and III, I shall also review the relevant literature on urban structure and the relevant studies on Beijing.

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Chapter 3
A Review of the Literature Concerning Urban Structure

Abstract This chapter attempts a brief review of the most important theories about physical and social urban structure and mainly explore the extent to which existing studies and methods may be used to support the analysis used in my study of Beijing.

Keywords Physical urban structure · Social urban structure · Studies on Beijing

The main task of this chapter is to review what has previously been written about urban structure. My aim is to explore the extent to which existing studies and methods may be used to support the analysis used in this book, and to justify the approach which I have taken. As the literature on urban structure is extensive, and contains many different theories, models and case studies, a full-blown review of the relevant literature will be beyond the scope of this book. In this chapter, I shall therefore attempt only a brief review of the most important research, and shall concentrate on that which is directly relevant to my study of Beijing.

In the Sect. 3.1, I shall introduce the literature to be reviewed in this chapter, and its classification. In the Sect. 3.2, I shall provide an overview of the theories on urban land use, mainly drawn from economics, and shall then introduce the way in which these theories might be applied to subsequent studies on the redevelopment of the traditional residential districts in Beijing's Old City (Chaps. 4 and 5 in Part II). In the Sect. 3.3, I shall review the theories on urban social structure, particularly, those concerned with residential segregation, which are mainly based on sociological and political economics. And at the end of this section, I shall introduce the way in which those theories which are relevant might be applied to a study of Beijing's residential segregation (Chaps. 6–8 in Part III).

3.1 Classification of the Theories

The most visible characteristic of cities is the pattern of their built-up environment. Many cities show unique characteristics in this respect, such as the North End in Boston, the waterfront in Barcelona, and the traditional courtyard houses in Beijing's

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Old City. Although some cities might outwardly seem to have very little in common, many of these share much similarity in their spatial structure. In most cities of the world, commercial centres and office towers are located in the city centres, which have given city centres a high construction density and a vertical skyline, while industrial areas are situated around the fringes. (However, as we shall notice in Chap. 4, Beijing's skyline does not follow that normal pattern.) Residential districts near the city centre are more densely populated, while there is a rather lower density of population in the suburbs. All these similarities define the structure of urban land use: as a general rule, land prices decline further away from the city centre, and land use intensity consequently increases as one moves closer to the city centre. Land prices positively correlate with location, or in other words, with the accessibility of the land.

In addition to their built-up environment, cities are also distinguished by their urban activities, namely, the economic, social and cultural activities which take place within them. For example, North American cities tend to have a defined Central Business District (CBD), and this has in consequence resulted in the appearance of disparate conditions in the immediately surrounding area. As manufacturing and related activities have been moved out of city centres, they have tended to leave behind them decaying neighbourhoods, residual elderly residents and a marginalized population. These urban developments suggest that cities also have a distinct social structure—in their population distribution, employment distribution and residential location—which has order and, in turn has spatial character.

A neat categorization of these theories, models and experimental studies is difficult, since more than one criterion can be used to classify them. For example, such literature can be categorized by the purpose of the theories (description, explanation and prediction of land use changes), by the disciplines employed by these theories or the approaches to theorization (economics, sociology and human ecology), by the spatial scale and level of spatial aggregation adopted (urban level, regional level and global level), or by the types of land use considered as the principal objects of analysis (residential use, industrial use and commercial use). For the sake of being consistent with my studies in the subsequent chapters of Part II (Chaps. 4 and 5) and Part III (Chaps. 6–8), the literature in this chapter will be reviewed under two main headings: that which relates to urban spatial structure or urban land use, and that which concerns urban social structure, particularly residential segregation. The first group draws mainly from economics-based fields, while the second group is chiefly based upon sociological and political economics-based fields.

However, as has already been indicated, this classification is not explicit, as one and the same subject could be studied by different disciplines. With the growing tendency towards interdisciplinary studies, boundaries have become blurred, particularly during the later decades of the twentieth century. Furthermore, it should be pointed out that some theories are models as well. They have been conceived simultaneously, and the use of the terms "theory" and "model" is therefore often interchangeable. Some of the literature, moreover, is merely symbolic, or concerned with operational models or empirical studies. The reason they have been selected in this review is that they might be used as references to this study of Beijing.

3.2 Theories of Urban Land Use

3.2.1 An Overview of the Theories of Urban Land Use

The urban structure of a city is the pattern of land use in urban space. In a market economy, both producers and consumers make trade-offs between the price of land and its characteristics in terms of locationaccessibility, quality, and other attributes. The final outcome of numerous location decisions by businesses, households and governments produces a complex urban pattern of business districts, manufacturing areas and residential communities, all of which are characterized by different land uses.

Theories of land use examine the causes and mechanism of structural changes in urban space. Many of these theories have adopted economics-based approaches. The best-known pioneer in this field is probably J.H. von Thunen. In the early nineteenth century, he studied the way in which rural land use might be best arranged around towns, and came to the conclusion that each piece of land should be devoted to the use that would yield the highest rent.

In his book, *The Isolated State*, published in 1826, von Thunen imagined an isolated market and created his model based on the following limited assumptions. He imagined a city located centrally within an "isolated state" which, bounded by a wilderness, was self-sufficient and had no external influences. The land surrounding the city was entirely flat and its fertility was uniform; and there were no navigable waterways or roads to the city. Farmers transported their goods to the market via oxcart, across land, directly to the city centre. Within this isolated state, von Thunen hypothesized that a pattern of several rings of agricultural activities around the city would develop. Different products would be grown in different concentric rings around the city centre, depending upon their "surplus" profit and transport costs to the city centre. The land-user producing more profitable products could bid higher land rents, and thus outbid other farmers who could not pay the same rent. In other words, within a mono-centric town, the land rent would decrease in relation to its distance from the town centre. In von Thunen's model, heavy products and perishables would be produced in the ring closest to the city, while timber and firewood could be produced in the second zone. The third zone would consist of extensive field crops such as grains. Ranching would be located in the final ring surrounding the city.

The basic principles of von Thunen's land use theory have influenced many land use theories thereafter. It can still be used to explain the distribution of land prices of Beijing in its urban space today. After 1992, when the urban land market was opened up in China, Beijing's land prices showed a similar pattern to von Thunen's model. The old city proper, at the centre, became the district with the highest land prices of the city, and prices declined as land became more distant from the city centre.

In the decades that followed, especially after World War II, the studies of land use have become dominated by microeconomics. In the context of land use studies, a household maximizes its satisfaction (utility) through purchasing the optimum

mix of goods (including housing) and services, taking into account its budget constraints. The urban land market theory developed by W. Alonso in 1964 is considered as a landmark study.

Alonso assumed the city centre to be the CBD where household dwellers work and shop. A household's utility (or satisfaction) is assumed to depend on housing (of a given floor space), distance from the city centre (reflected in the transportation costs), and all other goods and services. The household allocates its fixed budget among these three components with the aim of maximizing its utility. As with von Thunen, Alonso finds an inverse relationship between land rent and distance from the city centre: the rent decreases with distance from the city centre, in order to offset the increase in transport costs. This relationship can be also expressed in the form of distance–rent curves. As one might expect, these curves are downward-sloping from the city centre, and the steepness of their slope depends on transport costs and on the household's demand for space. Steeper curves mean better accessibility to the city centre, which is associated with lower transport costs and less demand for space. Flatter curves denote preferences for more distant locations, which are in turn associated with higher transport costs and more demand for space.

This model may also be easily extended from residential land use for households to cover other land uses, such as the retailing and manufacturing land use demanded by firms. Each type of activity in a city will place a different value on the accessibility of its location. For retailers, if they value access to consumers more than to manufacturers, and if the population is evenly distributed throughout the city, being located in the centre in order to maximize access to consumers is more advantageous. For households, it is likely that while many of them might value access to the city centre in order to minimize transportation costs, many others might also value open space and the lower density lifestyles of the suburbs. If this is the case, households will have a distance-rent curve that is flatter than that for retailers. As for manufacturers, access to markets and labour is important, but less important than for retailers. Thus, the slope of their distance-rent function will be less steep than that for retailers, but steeper than that for households. The different slopes of the distance-rent curves express the principle that, in the urban land market, each piece of land goes to the highest-bidding use (Alonso 1960).

Alonso's model reveals the basic characteristics of the urban structure of cities within a market economy. However, during the period of planned economy, Beijing presented a different pattern. Since China established state-ownership of land after 1949, and the state assigned the right to use land with no charge, the land use structure of Beijing was not affected by the mechanism of land market. In addition, under the policies of "giving priority to industrial development" and "fully using and developing the Old City", some factories were set up near the city centre. After China shifted to a market economy, and especially after 1992 when it opened its doors to the urban land market, the competition for land in the old city proper became intense. As a result, not only did the factories move out of the Old City, but the traditional residential districts were gradually replaced by commercial service centres during the redevelopment of the old city proper. A further analysis of this redevelopment will be given in Chaps. 4 and 5.

Based on Alonso's theory, a series of urban land use models were developed thereafter, such as Muth's in 1969, Casetti in 1971, Mills' in 1972 and Kanemote in 1980 (see Fujita 1989: 92). All of these models share a common theoretical basis, which is drawn from microeconomics. They describe and explain urban structure based on land rent functions and the assumption that one must pursue a policy of maximizing household utility or a firm's profits.

Muth, in 1969, presented his model of residential location, which differs from Alonso's approach in two ways. First, it deals with the determinants of the value of housing, such as the size of the house. Second, it considers a household's income as one of the determinants of transportation expenditures. Muth based his analysis on several assumptions concerning the housing market, transport costs and the centre of economic activity, and concluded that, as distance from the city centre increased, a household would bid less for each new location. Muth also analyzed the supply side of the housing market. He examined the effect of accessibility on housing rent and housing services per unit of land area (housing density), and derived from this a set of capital–land relationships under conditions of competitive, long-term equilibrium. Muth's model of the housing market "was the first formal, general equilibrium model of the housing market, and almost all subsequent mainstream housing market theory has evolved from it" (Arnott 1986: 969). Mills' model, similar to Alonso's and Muth's, also operates in the utility maximization spirit. However, in contrast to Alonso, who considered only the land area occupied by a house, Mills considered land as an intermediate factor in the production of housing, which was the final consumption objective. Mills formulated the equilibrium rent-distance function, a negative exponential form similar to that put forward by Muth. Frequently, the literature of land use refers to all three models, by Alonso, Muth and Mills, as the classical or standard models of the analysis of urban land use, because their analysis shares the same theoretical basis and employs the same methodological framework of utility maximization for calculating the relationship between the price of land and its usage.

A large number of the subsequent studies and models concerned residential land use, since this constituted the most extensive usage of land in urban areas. They attempted to relax some of the simplifying assumptions which underlay the above standard models by employing alternative forms of spatial demand and supply, as well as price and rent functions. They also tried to improve the static models by introducing dynamic factors, such as changes in population, income, transport costs, opportunity costs of land and the transportation component. Likewise, attempts were made to relax the mono-centric city assumption, as well as to consider the incidence of externalities.

In the final decades of the twentieth century, discrete choice models, also grounded in microeconomics, have been built, where the observation units were individual land parcels, with the aim of providing more realistic representations of urban land use and of relaxing the assumptions of the previous models. These latter models simulated the actual land use choice or land use conversion behaviour on a disaggregate level. The independent variables which determined these choices were the attributes of the individual land parcels. These models therefore allowed for a more realistic representation of land use changes. Models following this approach

were developed by Bockstael in 1996, Bockstael and Bell in 1997, and Irwin and Bockstael in 1999 (see Bell 2004).

3.2.2 *The Application of the Theories to This Study on Beijing*

Microeconomics theory-based approaches, as the most important approach to the analysis of land use, start from individual consumer behaviour and then aggregate over the behaviour of all consumers to yield the land use patterns which are produced when utility is maximized. This formulation of utility maximization has formed the starting point for a large number of theoretical and modelling studies in urban economics. Most of these refer to the location behaviour of the firm or of the household, and to the patterns which result when individual behaviour is aggregated over the whole urban area.

The standard models by Alonso, Muth and Mills are the main economics-based theories of land use. As models, they provide an explanation of urban land use in general. However, although Beijing's urban structure has been transforming into a pattern similar to Alonso's model ever since China transformed to a market economy, it is still difficult to apply them *directly* to the analysis of the redevelopment of Beijing's Old City. This is because some particular factors (such as, floor area ratio (FAR) and profits of redevelopment projects), which have produced the crucial impact on the practical redevelopment projects within Beijing's old city proper, are some different from the assumptions of these general models.

In practice, the urban spatial structure of a city is the physical outcome of complex and subtle interactions between land market forces, regulations, primary infrastructure investments and taxes (Anas 1997). The way in which urban land is used is fundamentally an economic process. Urban land, however, has special characteristics when compared with other economic goods. The supply of land is fixed, every parcel of land has a fixed location, and the use of a parcel of land affects the use and value of surrounding parcels (this is called the externality of land use). In the more realistic studies, values other than the market price for land exist. These include the environmental land value (which takes into account the impact of traffic congestion, air pollution and so on), social land value (such as the impact of residential segregation: more details will be given in next section), and non-revealed value (such as the impact of zoning restrictions). A particular site may also have some special individual significance, such as the historical value of the traditional townscape of Beijing's Old City. These values can be categorized as localized externalities.

The protection of Beijing's Old City has been a popular topic in Chinese architectural and city planning realms for long time. A large number of studies on this topic have been generated—particularly during the 1990s and beyond, when one problem after another emerged during the redevelopment of Beijing's old city proper. Many scholars appealed to the municipal government to adjust its policies

before it was too late to save the Old City. However, most of these studies were written from the viewpoint of history and culture, such as the "organic renewal theory" put forward by Wu (1995) and the "small-scale and progressive urban redevelopment" presented by other scholars (see, Li 1999; Li and Zhang 2003).

The core of the problems with the redevelopment of Beijing's traditional residential districts is the intensity of the development of the land within the old city proper, which can be represented by its FAR. This ratio has a vital bearing on the economic profits which developers get from their redevelopment projects, and indeed determines whether a redevelopment project is able to go ahead. In this book, rather than developing a general model, I have chosen to analyze the particular driving forces behind the redevelopment projects in Beijing's Old City. As I shall demonstrate in Chap. 5, in the world of Beijing's real estate market, it is land costs, housing prices, FAR and the profits made by the real estate developers which have constituted the main determinants of the redevelopment projects in Beijing's Old City. I shall, based on these determinants, undertake an economic analysis of those projects and will give a more realistic explanation of how these determinants have come to exert such extensive influence over Beijing's Old City.

3.3 Theories of Urban Social Structure

3.3.1 An Overview of the Theories of Urban Social Structure

The theories which describe urban social structures deal mainly with urban spatial structure and the human subjects that exist within it and interact with it, such as the distribution of employment, residential segregation, the urban underclass (poverty), and the gentrification of old neighbourhoods. Normally, such theories are considered within the broader framework of the social sciences, particularly sociological and political economics. In comparison with theories of land use, they are more diverse and variable—though some theories about urban social structure still deal with land use as well, albeit indirectly.

Ever since the beginning of the twentieth century, sociologists have paid particular attention to residential segregation, and research has been done systematically on its features and on the underlying reasons for its existence (van Kempen 2002: 36). Among the numerous studies, one of the most important is that of the Chicago School (also known as human ecology), which was developed by sociologists R. Park, E. Burgess, R. McKenzie and others. The concepts which it draws from the field of ecology, such as "community", "invasion", "succession", "adaptation", "dominance" and "competition", are used to describe social groupings and processes. Human ecology advances the proposition that urban structure is the outward manifestation of spatial competition and adaptation by social groups, which in turn corresponds with the ecological struggle for environmental adaptation found in nature.

As an early human ecological study, the work of the Chicago School made a great impact upon the studies which emerged during subsequent decades. Three typical models were developed in order to generalize the patterns of urban social structure in the early industrial cities of the US. These were the concentric zone model proposed by Burgess in 1925, the sector model proposed by Hoyt in 1939, and the multiple nuclei model suggested originally by McKenzie in 1933 and extended by C. Harris and E. Ullman in 1945. They are routinely mentioned in most texts on urban studies and planning.

The concentric zone model, based on the situation in Chicago, was created by E. Burgess, a sociologist, in 1923. According to this model, a city grows outward from a central point in a series of rings. The innermost ring represents the central business centre (CBD). It is surrounded by a second ring, the zone of transition, which is occupied by poor and old residential property and by run-down areas that have been invaded by business and light manufacturing as the CBD expanded. The third ring, the zone of independent workers' homes, contains housing for the working-class. The fourth ring is a high class residential area usually occupied by white-collar and middle-class families. This ring is called the zone of better residences. The outmost ring is called the commuter's zone. This zone represents those who choose to live in small villages and to commute into the centre to work. It is evident that the concentric zone model bears close similarities to the model by von Thunen.

The radial sector model was created by H. Hoyt, an economist, in 1939. In this model, Hoyt proposed that a city develops in sectors instead of rings, and that the same land uses occupied wedge-shaped sectors and extends outward from the city centre along transportation routes. In the case of housing, high-rent residential areas occupy certain sectors, and rents decrease in all directions away from those areas. Adjoining residential areas are occupied by intermediate income classes, while low-rent areas encompassed the other sectors extending outwards in the same way from the city centre. Hoyt's radial sector concept bears similarities to Burgess's concentric zone concept. To some degree this model is just a refinement of the concentric model rather than a radical restatement.

The multiple nuclei model was suggested originally by sociologist R. McKenzie in 1933, and was developed later by geographers C. Harris and E. Ullman in 1945. They managed to overcome some of the restrictive assumptions of the previous two models, especially the mono-centric city assumption. According to this model, urban land uses develop frequently around multiple nuclei rather than around a single centre. The number and functions of the nuclei differ from city to city. The mechanism of change in this structure—the emergence of new nuclei—is attributed, first, to the need for specialized facilities for certain activities, second, to the benefits of proximity and clustering (agglomeration economies), third, to incompatible usage (agglomeration diseconomies), and fourth, to the effect of land values on encouraging or discouraging certain activities.

These three models of human ecology were developed in order to generalize about the patterns of urban structure found in the early industrial cities of the US. Because cities characteristically become increasingly complex and differentiated

over time, all three models have since been criticized for being more applicable to cities in the US than to cities of other countries (van Kempen and Ozuekren 1998). In addition, they describe patterns of urban social structure in a generic city, but do not explain why these patterns came into being in the first place.

After World War II, studies of urban social area continued in this traditional field of human ecology, but meanwhile, the approaches of the studies changed from using the common technique of social area analysis to the more sophisticated one of factorial analysis. Since social segregation attracted widespread attention in this period, studies of urban social area focused on such factors as socioeconomic, family, and ethnic status in order to provide an explanation for observed differences in the location of particular activities—mainly, residential areas occupied by groups of varying socioeconomic traits.

These social area studies were pioneered by Shevky and Williams in 1949 and by Shevky and Bell in 1955, and were based on cities in the US (see Gist and Fava 1964: 142). In their studies, social areas are discrete areas within a city with distinctive socioeconomic, family status and ethnicity attributes. Of the three sets of factors, the socioeconomic factor normally plays an important role. In any housing market, residential location is largely based on the economic affordability of the households, and the variables used to measure this factor are often income, education and occupation. Because people's need for housing, and their acceptable commuting time and distance, vary at different stages of their lives or their family cycles, these form yet another factor in the spatial ordering of residents. The variables normally used for family cycles are family size, portions of the age pyramid and fertility. Ethnicity is also an important factor which continues to have a role in Western cities, and it is especially a reality in American social formation because of America's long-standing racial situation of "blacks" versus "whites". Thus, the variables used for ethnicity are: minority group concentration, dialects or languages, and length of residence.

Murdie, in 1969, generalized the spatial characteristics of these three sets of factors, and claimed that the socioeconomic factor exhibits a sectorial pattern (Johnston 1972: 331). The highest ranking group seeks the best location, as defined by accessibility, environmental quality, or the historical and cultural background of the neighbourhood. The family status factor shows a concentric ring pattern, with small families, or single-person families headed by very young or very old persons, predominating in the innermost ring, while large families headed by mature to middle-aged people are predominate in the suburbs. The clustered pattern is seen as a characteristic of the ethnicity factor. Affinity in culture, language, religion and place of origin are important causes for enclaves of minority races. It is particularly attractive to—and hence is often reinforced by—new immigrants. The internal structure of the city is but a combination of the spatial patterns of these three sets of spatial behaviour of the people and the physical infrastructure of the city.

Alonso's model also attempts to explain residential segregation from the viewpoint of the urban land market (see Alonso 1960). As mentioned in the previous section, the distance-rent curves are downward-sloping from the city centre, and the steepness of their slope depends on transport costs and on the demand of the

household for space. Households normally have a distance-rent curve that is flatter than that for retailers but steeper than that for industries. The distance-rent curves vary for households of different incomes. This is because some families—particularly those on lower incomes—value access to the city centre in order to minimize transportation costs (which also means less demand for living space), while many other families—particularly those on higher incomes—often prefer the open space and lower density lifestyle of the suburbs (despite their higher transportation costs). Therefore, the distance-rent curve for higher income households is flatter than that for lower-income households. The different slopes of these distance-rent curves indicate the different preferences of higher income and lower income families with regard to residential locations.

Numerous subsequent studies in many large Western cities (Saunders 2001: 44; Feagin 2001: 132) confirmed the general existence of urban social segregation, thus showing a high degree of similarity to those revealed by Shevky, Williams and Bell. In some US metropolises like Chicago and Detroit, racially based residential segregation is extreme (Ribeiro et al. 2000: 87). This phenomenon may perhaps have been one of the essential qualities of US metropolises in the second half of the twentieth century (Goldsmith 2002: 132), where segregation of residential areas into black and white districts was particularly marked (Denton 1999; Farley et al. 1993). Although segregation by income increased in all big US cities after 1970 (Fernandez 2003), further researches have also shown that segregation by income normally still expresses itself spatially as a racial phenomenon, because whites tend to be wealthier and are therefore able to live in communities that many blacks cannot afford (Wachtel 2001: 220).

As for the situation in Europe, after World War II, European cities have avoided residential segregation based on racial differences to some extent. Unlike the USA, where public housing is usually located in low-income areas, public housing in the UK is scattered throughout metropolitan areas (Fainstein and Campbell 2002: 10–11). However, despite these efforts, the 2001 Census revealed that the population of Britain has become more or less geographically polarized in comparison with the situation in 1991 and before (Dorling and Rees 2003). By the end of the twentieth century, the development of the global economy and increases in foreign migration have led "residential segregation in big cities throughout Europe [to] take on more and more the features of 'race' and ethnic struggle, as has long been the case in the United States" (Goldsmith 2002: 38–39). Therefore it can be seen that, although there is no single cause for residential segregation, these highly visible phenomena show that racial segregation is an essential feature and a leading cause of concern in Western cities.

Apart from these studies, begun in the 1980s, about the social areas in Western cities, works have also been published on Eastern European cities (see Ruoppila 2004). Normally, it is widely believed that there was less social segregation under socialism than under capitalism, and studies on socialist cities by some researchers shared the belief that the socialist allocation of housing succeeded in preventing residential segregation. Contrary to such a view, however, other studies argued that the socialist system also created urban inequalities. For instance, Hegedüs and

Tosics, in 1983, argued that people had different positions in the socialist housing system, and that there were significant inequalities of opportunity with regard to changing one's place of residence. Musil, in 1987, argued that different housing types and tenures at different locations were constructed to accommodate different social groups. Szelényi, in 1987, took this idea further by arguing that inequalities in the distribution method were expressed in different spatial patterns, because the socialist urban planning and construction system favoured the development of large homogeneous areas at once. Weclawowicz, in 1996, argued less categorically that the allocation policy displayed the tendencies of the "egalitarian distribution of housing conditions" in its "granting of privileges to certain social and professional groups". Given this, Smith, in 1996, concluded that residential differentiation in socialist cities was very general (Ruoppila 2004).

During the process of residential segregation, in which housing normally "filtered down" from higher to lower income families, the city centre tended to become the site of residential blocks for large quantities of poor people. The situation, however, underwent a change because of the gentrification of old neighbourhoods. Gentrification first emerged in Britain in the 1960s (Fulford 2004), and spread throughout America, Europe and other Western countries over the subsequent two decades.

Gentrification is a complex phenomenon, and scholars define it differently. Generally speaking, it is "the rehabilitation of lower-income housing into higher income housing, which results in the displacement of lower-income residents and generally occurs when an older neighbourhood is revitalized" (PANC). Elaborating on the cause of gentrification, it has been argued that, because it is "often associated with new investment in the built environment, gentrification may be small-scale and incremental, or be associated with major redevelopment and regeneration schemes" (PEARSONCMG). Gentrification usually results in rapidly rising housing values that displace long-term residents and neighbourhood businesses in favour of higher income newcomers and trendy shops, bars, restaurants, and service providers (Zukin 1987). Based on the above, several basic characteristics of gentrification can be deduced. First, it often occurs in a traditional neighbourhood that is undergoing a decline. Second, in the process of gentrification, higher income newcomers from outside the region gradually replace the lower income residents who had been living in the region before, thus leading to a change in the population structure. And third, in regions that have experienced gentrification, living conditions and public service facilities have improved, and these improvements have resulted in a rise in house prices.

Since the 1990s, because of the large-scale redevelopment of the Old City, Beijing has experienced a kind of gentrification similar to that of Western cities. Many original residents of the old neighbourhoods have been pushed out of the old city proper, and many traditional residential districts have been replaced by commercial centres or office blocks. In Chap. 7, I shall give a further analysis of the impact of these redevelopment projects on the original residents of Beijing's old city proper.

Although studies on the urban social structure date from more than half a century ago, the questions they evoke are not outdated. Questions about the "how" and "why" of urban social segregation, and its meaning for different neighbourhoods, are still main subjects of urban discourse. Kempen introduced the concept of a "dual city" (Kempen 1994). He claimed that, while terms such as "dual city", "social polarization" and "urban underclass" may have replaced terms such as "zonal city", "personal competition" and the "vicious" and "deviants", the vision of the relationship between life chances, and the behaviour of people and the environment in which they are living has not changed that much, despite the moral implications of the words used.

Since the 1990s of the twentieth century, the globalization of economic, social, political and cultural life has been a key feature of the world. The increasing interconnection between countries brought "time-space compression" and made the world appeared to shrink to a "global village" (Harvey 1991: 240). Globalization has allowed businesses to take advantage of national borders rather than considering them as constraints, and has also allowed social activists, labour organizers, journalists, academics and many others to work on a global stage. This has increased opportunities, but it has also increased competition.

Many studies on urban social structure have focussed on the effects of globalization, such as social polarization, urban industrial restructuring, and structural trends in the evolution of jobs. In fact, the appearance of social polarization has actually corresponded with a new tendency in global labour distribution which has become evident during recent years. This tendency has manifested itself through an increase both in skilled and high-salary working positions and also in informal and low-salary jobs (Gu and Kesteloot 1997a). It is the transformation of occupational structure that has begotten this new social polarization, which has been likened to a "sandglass-like" social structure (Sassen 1991). While cities are becoming "global village", increasing social polarization, both global and domestic, has become a central concern of social scientists and politicians because it will further exacerbate residential segregation all over the world.

3.3.2 The Application of the Theories to This Study on Beijing

The studies concerning urban social areas summarize the reasons behind residential segregation into three factors: socioeconomic, family and ethnic status. Behind these three sets of factors lie social processes of modernization and urbanization. In a market economy, modernization will increase differentiation, and hence, the spatial segregation of people by income, education and occupation. The mobility of people, their fertility and life-cycle changes and ethnicity, can be attributed to urbanization.

Social segregation was a phenomenon unfamiliar to Beijing during the period of the planned economy. The fundamental reason is that, during that period of time,

China implemented a ruling philosophy of equity in a classless society through the ownership of land and control over the allocation of urban housing. The "Welfare-oriented Housing System (WHS)" gave state regulation a dominant role and reduced the role of the market to insignificance. In other words, the roles of government intervention and the market were reversed. The nominal and relatively uniform rents for state-owned housing, and cheap and generally flat fare rates for public transport, reduced the possibility of residential segregation on the grounds of income, status or race. Of course, particular situations were always there to affect housing allocation—for example, new and better housing was more likely to be given to certain group of people, particularly those in prestigious professions or those working in important positions. However, in comparison with cities in market economies, residential segregation in Chinese cities during the period of planned economy as a whole was absent, or at least much reduced. The housing supply system and housing policy should be emphasized in explaining the pattern and dynamics of residential structure in socialist cities. These, however, are rather neglected by the studies mentioned in the previous section, which have accentuated the degree of inequality in East European socialist cities. In Chap. 6, I shall examine China's "WHS" and will analyze the features of Beijing's homogeneous residential structure during the period of the planned economy.

Socialist equity has been gradually shaken ever since China has been on a transitional path towards a market economy. Residential segregation has become evident in Beijing since the mid-1990s. Nevertheless, the situation in Beijing is rather different from that of Western cities, where racial segregation, as mentioned above, has become an essential feature and a leading cause among the three factors (socioeconomic, family, and ethnic status). The main cause for the residential segregation in Beijing—as I shall show in Chap. 7—is not the ethnic factor but the socioeconomic factor, and in particular the variations in household incomes which have become increasingly apparent since China shifted to a market economy.

The earliest studies on Beijing's urban social structure appeared in the mid-1990s. These studies were interested in the impact of the urban housing reform—a transformation from a "welfare system" to a "market system"—on each family's housing choices (see He 1995; Xi 1996; Xiang 1995; Lü 2001; Huang and Clark 2002). However, they normally confined themselves to a comparison between different living conditions—housing quality (facilities) or housing quantity (living space). They seldom addressed the question of housing location. At the beginning of the twenty first century, some scholars applied mathematical statistics in order to evaluate the effect of factors, such as income, education and occupation upon the residential structure of Beijing (see Gu and Kesteloo 1997b; Gu et al. 2003; Gu and Shen 2003; Feng and Zhou 2003a, b). These studies attempted to assess the overall significance of each factor, rather than to analyze the extent to which (that is, "how") any specific factor (such as household income) might have exerted a particular influence on the residential structure of the city. In this book, in place of examining the overall effect of all these factors, I shall, in Chap. 8, study "how" the key factor—household income—has had a crucial impact upon the residential segregation of Beijing. I shall examine the distribution of the housing prices in different districts of

the city, undertake an economic analysis of the housing affordability of Beijing's families, both rich and poor, and analyze how the families yielded to the influences of the housing affordability in regard to their housing choices.

3.4 Summary

The economics-based theories of land use have many features in common. The most important aspect of these features is that they are based upon the principles of utility or profit maximization. Individual households and firms compete for space, thus generating an equilibrium pattern of land rent. Meanwhile, equilibrium prices allow for the optimum allocation of land to households and firms, and these, in turn, maximize their utilities. This theory has been the foundation of several prominent models of land use in urban areas. In this book, however, rather than building a general model, I shall undertake a realistic economic (cost and benefit) analysis based on the actual situation of the redevelopment projects in Beijing's Old City. In addition to those determinants (such as land costs, housing prices and the profits of developers) of the redevelopment projects, I shall particularly take into account, in my economic analysis, the FAR—a crucial factor in the protection of Beijing's traditional townscape—as the local externality of land use. In contrast with the general models, this analysis will simulate the actual choice of land use, and will thus give a more realistic explanation of how those determinants profoundly influenced the redevelopment projects within Beijing's Old City.

Residential segregation is the most typical theme in any discussion about the theories which concern urban social structure. The earliest models, developed from human ecology, do not, however, satisfactorily explain the reason why this segregated social structure came into being. The three sets of factors (socioeconomic, family and ethnicity), which are summarized by Sheky and Williams in their social area studies, goes some way towards describing why segregation developed as it did in the cities of the US: but these factors are difficult to apply directly to socialist cities such as Beijing. In this book, rather than examine all the relevant factors to have impacted upon Beijing's residential structure, I shall focus on household income, since I believe this to be the main reason behind the residential segregation which has occurred here since the 1990s. I shall assess the housing affordability of Beijing's families and analyze the impact of this factor on their housing choices.

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Part II
Decline of Courtyard House and Protection of Beijing's Old City

In Part I, a general review of Beijing's urban development process during the twentieth century and the relevant literatures were presented with the purpose of supplying a historical and theoretical background for the further studies thereafter. In Part II, which will be composed of this and the subsequent chapters (Chaps. 4 and 5), I will focus on the transformation of Beijing's courtyard house and its Old City as well as the problems they encounter today.

As the traditional type of housing in Beijing, the courtyard house has lasted for hundreds of years. It has, however, gradually declined since the 1960s and suffered large-scale demolition especially during the redevelopment of the Old City since the 1990s. How to protect the courtyard house and Beijing's Old City has been a topic of heated debate by Chinese architects and urban planners for many years. In addition, Beijing's municipal government has instituted many policies and regulations such as zoning control and the creation of the "Historic and Cultural Conservation Districts" (HCCD). The situation, however, has not improved. In fact, along with China's rapid economic development and the increasingly intense competition for land within the old city proper, the demolition of the traditional residential districts has accelerated and the original residents have increasingly been urged to move out of their original neighbourhoods.

The main task of Part II is to investigate the reasons underlying the demolition of a large number of the traditional courtyard houses during the redevelopment of Beijing's Old City (Chap. 4) and to search for a solution that would reduce the damages to the courtyard houses and thus protect Beijing's Old City from further demolition (Chap. 5). The main thesis of Part II is that the apparent reason why the redevelopment projects have caused great damage to Beijing's Old City is that these projects were undertaken on a large-scale by developers with the purpose of maximizing economic profits. The most basic cause, however, is that Beijing's current mono-centric urban structure has caused intensive competition for the land in the old city proper and thus aggravated the difficulties in protecting the Old City. The fundamental solution to protect the courtyard houses and Beijing's Old City is to

establish a polycentric urban structure in order to reduce the demand for the land within the Old City. It is necessary to clarify that a “polycentric” scheme was proposed in the Master Plan of Beijing (2004–2020) in 2005. However, the polycentric urban structure I proposed in this dissertation is substantially different from it.

Chapter 4
The Decline of the Courtyard House and the Large-Scale Redevelopment of the Old City

Abstract This chapter investigates the reasons why Beijing's redevelopment of the traditional residential districts has caused serious damage to its Old City. It is argued that the decline of the courtyard house is mainly due to the municipal government's policy during the period of planned economy. Although the reasons why the redevelopment project has not stopped the decline but caused further damages to the Old City are complicated, this chapter shows that the most important and direct reasons are the measure of large-scale urban redevelopment adopted by real estate developers in maximizing economic profits.

Keywords Decline of courtyard house · Large-scale redevelopment · Economic profits

The main task of Chap. 4 is to investigate the reasons why Beijing's redevelopment of the traditional residential districts has caused serious damage to its Old City. I shall first examine the features of the traditional courtyard house and Beijing's Old City, and then investigate the reasons for the decline of the courtyard house. Finally, I shall assess the impact of the redevelopment project on Beijing's Old City. It will be argued that the decline of the courtyard house was mainly due to the municipal government's policy during the period of planned economy, which confiscated the property rights of courtyard house owners. The reason why the redevelopment project has not stopped the decline but caused further damages to the Old City is that, in order to maximize the economic profits, the real estate developers tried to enlarge the scale of the redevelopment projects (both floor area and land area) to the largest extent.

The courtyard house, as the typical form of traditional housing in Beijing, was formerly one of the unique features of the city. Furthermore, it also has an isomorphic relationship with the historic urban structure of Beijing's Old City, which finds expression in their similarities in a hierarchical spatial structure, the arrangement of central axis and the layout of the garden space. All of these features are virtually the reflections of Chinese traditional culture in the urban space of Beijing. In the first section of this chapter I shall examine these unique features to

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provide the reader with a preliminary understanding of Beijing's courtyard house as well as its Old City.

Many scholars have already explored the reasons for the decline of the courtyard house. They typically attribute the decline of the courtyard house to its outdated facilities or poor structural qualities. Although by nature the facilities in the courtyard houses are old-fashioned and the quality of their wood and brick structures is poor, I conclude that these were not the fundamental reasons why so many of these accumulated to became "Old and Dilapidated Houses" (ODH) by the end of the 1980s. As I shall show in the second section of this chapter, the ultimate reason for the decline of the courtyard house was the government's policy of confiscating the property rights of house owners.

With the purpose of improving the condition of these ODH in the old city proper, Beijing's municipal government embarked on the "Old and Dilapidated Housing Redevelopment Project" (ODHRP) in the 1990s. It will be shown that this redevelopment project that was meant to remedy the situation did not stop the decline of the courtyard house, and on the contrary, brought further serious damages to Beijing's Old City. Although the reasons why the ODHRP caused damage to the Old City were complicated and manifested themselves in various ways, I shall show in the final section of this chapter that one of the most important and direct reasons was the measure of large-scale urban redevelopment adopted by real estate developers in maximizing economic profits.

4.1 The Courtyard House as a Traditional Residence

4.1.1 The Structure of the Courtyard House

The courtyard house is a typical form of the traditional residences in Beijing. Its hierarchical structure reflects Chinese cultural traditions, most notably the ideas about social grades and order, and one's personal importance with regard to one's family status.

A standard courtyard house (see Fig. 4.1) usually has a courtyard with independent houses along its four sides. Each house has its own name. The house which stands on the north side and faces the courtyard entrance is called the "principal house" or "north house". The houses which stand on the east and west sides of the courtyard are called "wing houses" or "side houses". The house which stands at the south end and faces north is called the "reversely-set house" or "south house". Houses of gentry and officials are usually strung together by corridors or verandas, which shelter the houses from sunshine and rain in summer and from wind and snow in winter, and thus make the residents comfortable in all seasons.

In the past, the houses facing in different directions were allotted to different people. Whether the principal house had three, five or seven bays, the middle one was always the parlour where people received guests, offered sacrifices to their

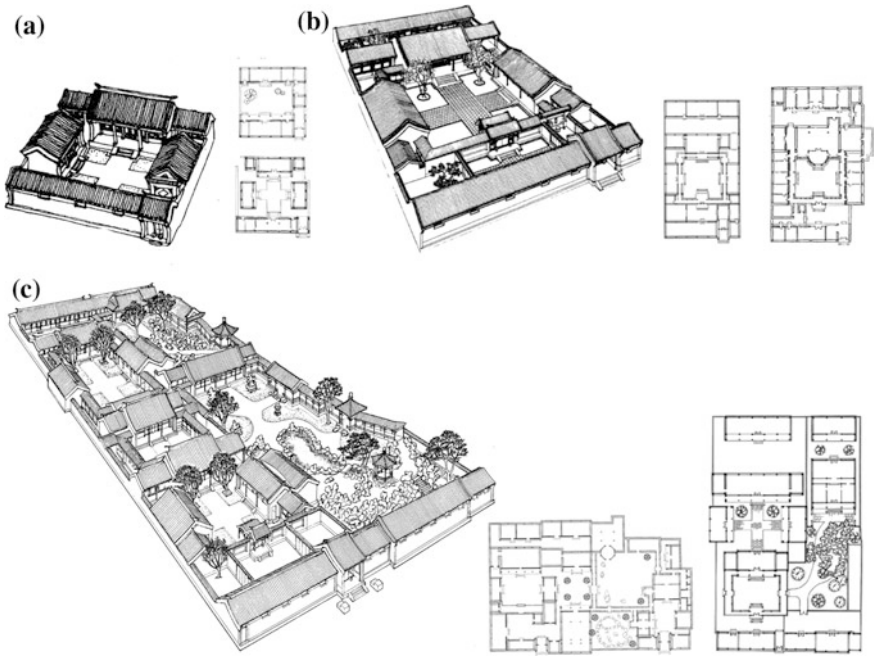

Fig. 4.1 Small-sized courtyard houses (**a**), medium-sized courtyard houses (**b**) and large-sized courtyard houses (**c**). *Source* Ma (1999: 7, 227)

ancestors, held family feasts or stayed up all night on New Year's Eve. The head of the family and his wife usually lived in the side bay to the east of the parlour. If he had a concubine, she lived in the side bay to the west of the parlour. Conventionally Chinese people regarded the left (East) as the higher position than the right (West). This practice was also introduced into ordinary Beijing's courtyard houses. If the man had no concubine, the extra side bays were used as a study. The wing houses were used as the quarters of the younger generations or of less important members of the family or to accommodate guests. The south house was used as a storeroom, kitchen and bedrooms for servants. The allocation of the rooms in a courtyard reflects an ideology related to social status and an ethical order based on seniority.

Courtyard houses for ordinary families were usually made up of just one courtyard. Those for titled or rich families would have two or more courtyards, one behind another, which were usually inhabited by big traditional extended families of several generations. By contrast, for poor people, several families might live together in one courtyard.

Beijing's courtyard houses fall into three categories according to their sizes: large-sized, medium-sized and small-sized (Fig. 4.1a–c). The courtyard house described above is a small-sized one, which is the standard courtyard house with the basic structure. The medium-sized one is a little more complicated than the

small-sized one, and houses, corridors and walls are added to the basic structure. In all of elements added, a partition wall is a very important one since it divides the whole courtyard into an outer yard and an inner yard. A gate is opened in the middle of this partition wall. Unlike ordinary gates, what matters about this gate is not its sturdiness, but its decorative effect. It is usually adorned with colourful patterns or carved with designs of flowers. This gives the gate the name "pendant gate" or "screen gate". Behind the main house there would be a lesser house to the rear, which is called the "rear hood house". This house serves as a protective screen at the back of the courtyard and is normally used as storage for odds and ends of furniture. The large-sized courtyard house is much more complex than the small- and medium-sized ones. It is made up of more than two courtyards, some of which may have gardens attached to them, and a few of which may have pools in the gardens.

Beijing's courtyard houses provide a closed world for their residents. Most of them normally have only one main entrance opening to the outside (although a large-sized one may have side gates). Within a courtyard all the doors of each house are opened to the courtyard. No matter what happens inside, outsiders can hardly discover it as long as the gate is tightly shut. It is a little world, very private and suitable to traditional Chinese families.

If we compare the courtyard house to the urban tissue of Beijing's Old City, the "hutong"[1] can be regarded as the structural skeleton of these tissues. A hutong is a narrow lane or passage formed by lines of courtyard houses. As shown in Fig. 4.2 one courtyard house joins with another to form a hutong, and many hutongs connect with one another to form blocks. All of them make up the basic structure of the old city proper. In Dadu, the former name of Beijing in the Yuan Dynasty (1272–1368), almost every passage possessed a well; thus people often took "well" as another name for passage (Lu and Wang 1996: 25). Apart from their function as passages, hutongs provide a space for residents to communicate with their neighbours. Therefore, to some extent, the residents of courtyard houses regard hutong as a public space of their neighbourhood. From the engraving of Fig. 4.3 we can get what the courtyard houses and streets in Bejing's Old City look like by the end the nineteenth century.

4.1.2 The Historic Urban Structure of Beijing's Old City

The plan of Beijing's Old City accorded exactly with the traditional Chinese hierarchical system. The oldest and most authoritative document, which dominated thought on urban planning in ancient China, is *Zhou Li*, one of the classic

[1]The word hutong came from the Mongolian language about 700 years ago. Its original meaning in Mongolian is "water well".

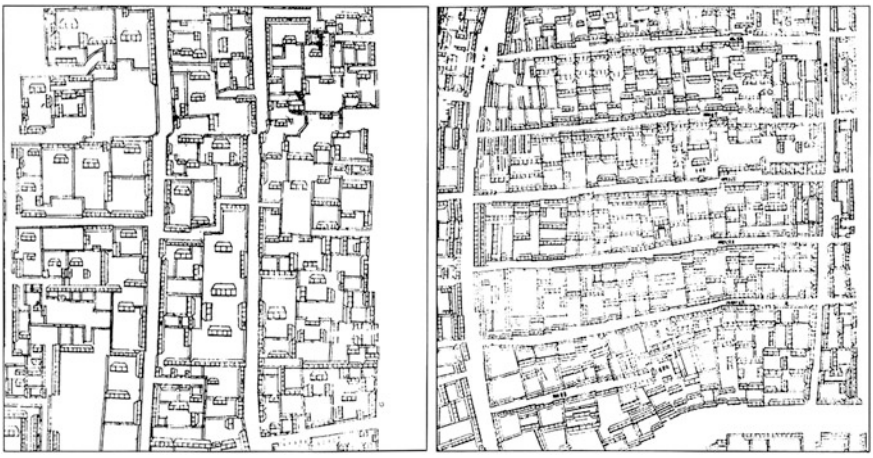

Fig. 4.2 The layout of hutongs in the old city proper of Beijing in 1750: in the upper-class district in the Inner City (*left*), and in the business district in the Outer City. *Source* Skinner (1997: 530–531)

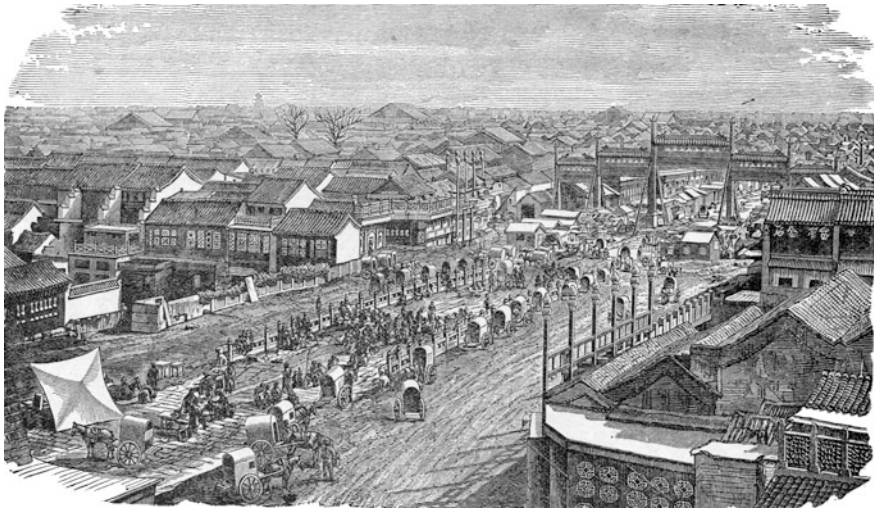

Fig. 4.3 Street scene in Beijing's old city by the end of nineteenth century. *Source* McCabe (1879: 681)

Confucian books dating from the Western Zhou period (B.C. eleventh century—B. C. 771). The last chapter of the book, entitled "Kao Gong Ji" (Examination of Construction), articulates the specifications for the ideal city plan of a Chinese capital (Sit 1995: 62). This ideal plan was handed down, along with Confucianism

Fig. 4.4 Portrait of Confucius (B.C. 551–B.C. 479). *Source* Cheng (1946: 56)

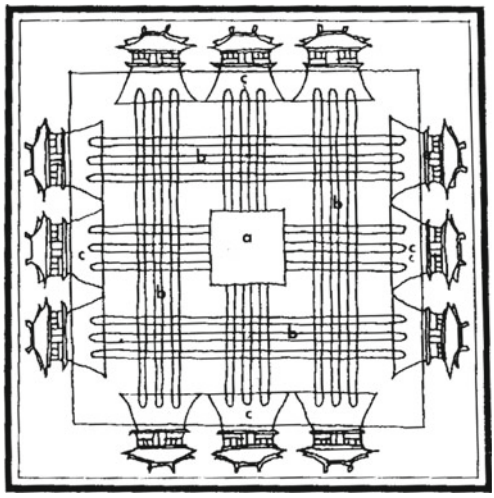

Fig. 4.5 Map of capital city of Zhou Dynasty (B.C. eleventh century—B.C. 221), the Chinese ideal capital city. An illustrative plan drawn by Nie Chongyi in his book of *San Li Tu* in Song Dynasty (960–1279), according to the remarks in the chapter named Kao Gong Ji in the book of *Zhou Li* in Westtern Zhou Period (B.C. eleventh century —B.C. 771). *Source* Hou and Li (2002: 8)

(Fig. 4.4), from dynasty to dynasty until it reached the hands of the Yuan rulers, more than 1300 years later. Each dynasty drew on elements from this blueprint in constructing its capital, but it was the Yuan capital, Dadu, which most closely resembled the ideas expressed in this classically authoritative document than any city that had gone before it.

The main rules for the layout of the ideal Chinese capital, set out in the chapter of "Kao Gong Ji" (see Fig. 4.5), concern the size of the city, the number of the gates, and the arrangement of the streets. In the chapter it is said that the city should be a square of 9 li (about 3735 metres) on each side, on which there are three gates. There are nine longitudinal and nine latitudinal streets. The palace is at the centre,

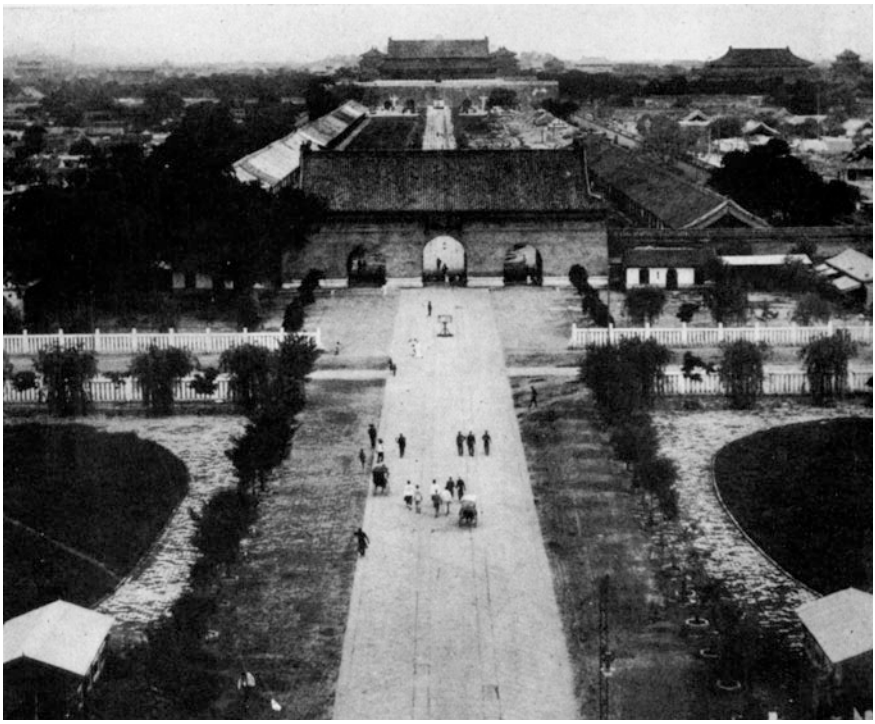

Fig. 4.6 Daqing Gate to the Imperial City in 1920. The Gate was demolished and the site was turned into Tiananmeng Square in 1950s. *Source* Muller (1920)

Fig. 4.7 Portrait of Laozi (about B.C. 571–B.C. 471). *Source* Brown (1938: 88)

with the temple of ancestors on the left and the altar of soil and harvest on the right. The court is in front of the palace and the market is behind it. "Kao Gong Ji" also specifies the location of the imperial palace, the temples and altars, the administrative offices and the markets. It shaped the urban spatial structure of traditional Beijing, such as its walled enclosure, its north–south axis and its symmetrical layout.

With regard to the walled enclosure, Beijing consisted of several cities, one enclosed inside the walls of another. The Outer City surrounded the southern side of the Inner City; the Inner City surrounded the Imperial City; and the Imperial City surrounded the Forbidden City. All the cities were centred on the Forbidden City, which was intended to give special sovereign status to the imperial palace. Furthermore, the main buildings of the city were laid out symmetrically. For example, the city gates, the landmarks of the city, were arranged either exactly on the central axis or bilaterally and symmetrically along the city walls. The main streets ran straight in either a north-south direction or an east-west direction, which, taking a bird's-eye view, appeared to form a big chessboard (see Fig. 4.6).

In general, ancient Chinese cosmology tended to find expression in classical Chinese cities (Wright 1977: 33). However, it is still miraculous that the ideal plan of a capital described in "Kao Gong Ji", which emphasized order and hierarchical relationships, found such excellent expression in Beijing's Old City. All the city walls, the palaces, the temples and their locations, reflected the theme of hierarchical system—the demonstration of the supremacy of the imperial power by means of architecture (He 1985: 55).

While following a strictly man-made system in urban space, Chinese people also believe that a city should ideally be designed in such a way as to express the harmony which exists between human beings and nature. These ideas were articulated in Taoism, a philosophy that took Laozi (see Fig. 4.7) as its founder, and in some ways was complementary to the Confucianism which exerted strong influence

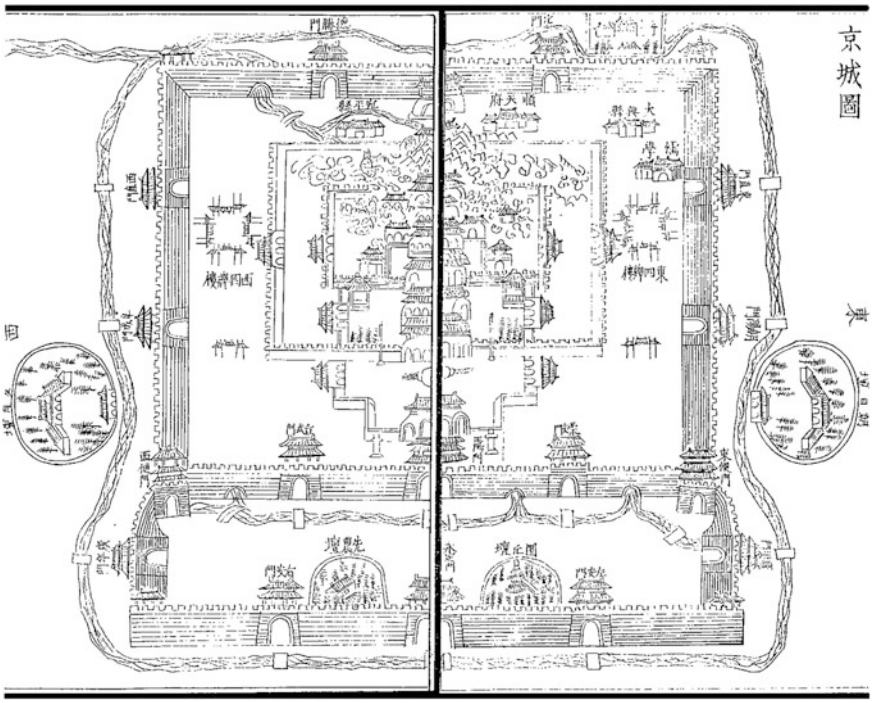

Fig. 4.8 The urban spatial structure of Beijing shown on a map made during the early Qing Dynasty 1684. *Source* Naquin (2000: 428)

on the thinking of Chinese people in the traditional society (Wright 1977). In Beijing's Old City they revealed themselves in the introduction of garden space which flowed naturally into the strictly organized urban layout.

A text called *Guan Zi*, written by a statesman and a philosopher named Guan Zhong in the Spring and Autumn Period (B.C. 770–B.C. 476), is an ancient document about statecraft and kingship. It concerned many aspects, such as politics, economy, military strategy, geography, astronomy and agriculture. It was an important source of the philosophy of Taoism which appeared later. In his geographical section, Guan Zhong advocated the philosophical ideal that human settlements should be coherent with their environments. In urban planning, "natural conditions can be relied on, and the productive advantages of the land can be beneficial to humans" (Xu 2000: 40). The "rational" and "natural" principles emphasized by *Zhou Li* and *Guan Zi* complement each other, and together constitute the theoretical basis for the distinctive traditional Chinese urban structure (Fig. 4.8).

In the case of Beijing, the city, as has been said, was laid out symmetrically on a north–south axis, which ran through the central part of the city. This central axis is one of the most important elements that make Beijing the unique architectural embodiment of the order of the unified empire and the supreme imperial power. In contrast to this strict, straight axis, six lakes in Beijing's old city proper curve from

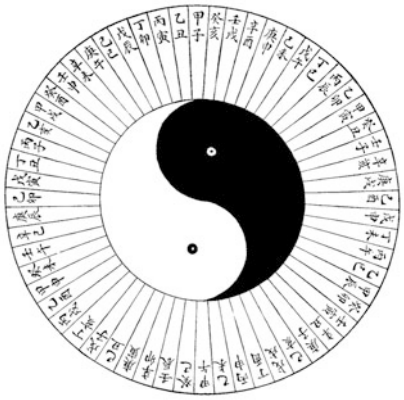

Fig. 4.9 Yin Yang Symbol: an ancient symbol for complementary forces of yin and yang, which is the paired harmony of female and male, dark and light, low and high, and form the starting point of Chinese philosophy. It is said the symbol was revised by Daoist sage Chen Tuan (A.D. 872–989), based on the Taiji image in *Yi Jing*. *Source* Martin (1897: 6)

North to South and make up a naturally flowing green space which forms a sharp contrast with the strictly ordered palace buildings constructed along the central axis.

While Confucian philosophy urges its followers to "join society" and "be positive and dynamic", Taoist philosophy emphasizes "inaction" and "return to nature". The most ideal choice is to find the appropriate balance between the two (Wei 1999), which could be represented by the ancient Yin Yang symbol (see Fig. 4.9). Yin Yang symbol is a Chinese philosophy of the celestial and terrestrial phenomena, represented by the shape of a circle. The two fish embracing one another signifies their mutual generation and interdependence. The two dots symbolize that each time one of the two forces reaches its extreme, it contains in itself the seed of its opposite. In the case of Beijing's Old City, the rigidly organized central axis of the ideal city implies the behavioural rules which people should obey, mirroring Confucianism; however, on the other side, the introduction of naturally flowing garden space is a Taoist element: garden space creates an artistic area in which people may aspire towards returning to nature and may thus place themselves far away from the sophistication and complexity of human society.

4.1.3 The Isomorphic Relationship Between the Courtyard House and Beijing's Old City

During the examination of Beijing's historic urban structure in the previous section, we may even find that, if we compare the structures of Beijing's Old City to those of a courtyard house, they have similarities in many aspects, or, in other words, they have an isomorphic relationship in spatial structure.

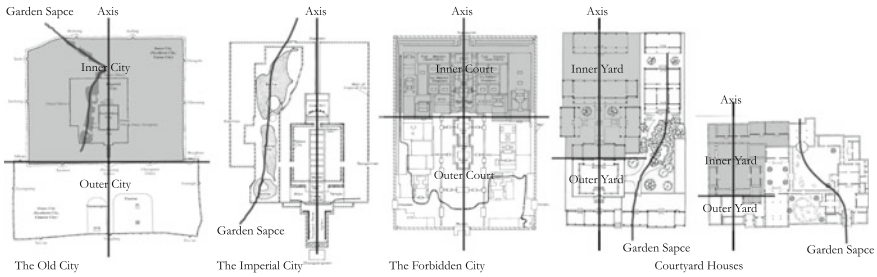

Fig. 4.10 Comparison of the isomorphic structure of courtyard houses and Beijing's Old City. *Source* Drawn by author

This isomorphic relationship is reflected in the following three aspects as shown in Fig. 4.10. First, both Beijing's Old City and the courtyard houses possess a hierarchical spatial structure with several courtyards or several cities. Second, both adopt a symmetrical layout along a central axis. Third, both have introduced naturally flowing garden space into the rigidly organized urban or courtyard layout, consequently forming a sharp contrast.

First, concerning the hierarchical spatial structure, traditional Beijing was a city mainly made up of courtyard houses. The courtyard house was not a pattern used only for residential houses, buildings in traditional Beijing, no matter whether they were palaces, temples, governmental mansions or dwelling houses, were built mostly on the pattern of the courtyard house. Therefore, Beijing really can be called a city made up of courtyard houses, big or small, one after another but spatially ordered and surprisingly similar. Beijing's Old City comprises an inner city and an outer city; the old palace comprises an inner court and an outer court, and similarly the courtyard house also comprises an inner yard and an outer yard.

Second, concerning the symmetrical layout, both Beijing's Old City and the courtyard house have a central axis running through them from North to South. This not only fulfils the function of keeping the architectural complex symmetrical but also reflects hierarchical order in urban space. In the case of Beijing's Old City, the old palace standing on the central axis is the centre of gravity for the whole city; while for a courtyard, the principal house on the central axis forms the centre of gravity.

Third, concerning the naturally flowing garden space, no matter whether in Beijing's Old City or in a courtyard house, such a garden space is often introduced into the rigidly organized plan in order to break up the over-ponderous spatial structure. In the case of Beijing's Old City, six lakes (three of them were for the imperial garden) beside the city central axis perform just such function. In some large-sized courtyard houses, the traditional Chinese-style gardens, which create natural views, also bring about the same effect.

From the analysis above we have found that there is an innate isomorphic relationship in spatial structure which exists between Beijing's Old City and the courtyard house. Therefore from this point of view, we can say that Beijing's Old City is a courtyard-like city while the courtyard house is a city-like house.

4.2 The Decline of the Traditional Courtyard House

4.2.1 From the Classic Courtyard House to the "Old and Dilapidated House"

As the traditional type of residence in Beijing, the courtyard house established a complete set of methods in its layout. They may be different in scales, but all have almost the same pattern in spatial structure. According to historical records (EBHUCB 1992: 441), until 1949 when the People's Republic of China was founded, buildings in Beijing's Old City, including palaces, temples, governmental mansions and dwelling houses, were built mostly on the pattern of the courtyard houses, with a total floor area of over 17 million m^2. Of this area more than 11 million m^2, accounting for 65 %, were devoted to dwelling houses. After 1949, the courtyard houses and Beijing's Old City experienced unprecedented changes, and especially since the 1960s, the courtyard house, which had survived for hundreds of years in the city, began to decline.

As mentioned in Chap. 2, after Beijing was selected to be the capital of the People's Republic of China, advisors from the Soviet Union, together with Chinese experts, started to debate the question of whether the old city proper or the western suburbs of the city should be selected as the new administrative centre. The result was that the opinions of the Soviet Union advisors got the upper hand; and after that, Beijing's municipal government established an urban development guideline of "fully using and developing the Old City" (Song et al. 2004; Shen 2000). Under the guideline, the newly established government began to construct new administrative departments and public facilities in the old city proper, and many of the courtyard houses therefore were demolished.

Nor did the open space in the courtyard houses which were not demolished survive. As mentioned in Chap. 2, on account of the shortage of housing, from the 1960s, residents have begun to build additions in the courtyards themselves (Fig. 4.11). Particularly, due to the violent earthquake with its epicentre in Tangshan city, 150 km away from Beijing, in August 1976, residents begun to build temporary additions on a large scale, in order to protect them from earthquake damage. When, after several months, the earthquake period passed, the municipal government did not require the residents to demolish these additions, but consented them to use them instead as temporary buildings in order to solve their housing problems.

Consequently, of the approximately 5 million m^2 of courtyard houses which then existed in the old city proper, about 2 million m^2 were covered by additions built by the residents themselves, making the construction density of courtyard houses rise by 15 %, from 45 % to 60 %. And by 1986, owing to this kind of self-built additions, the construction density of courtyards increased to 70 % or even higher (Zhang 1997). At this point, the majority of the classic courtyard houses in Beijing's Old City had already turned into the cluttered courtyard houses in very poor living conditions, which were categorized by the government as "Old and Dilapidated Houses" (ODH). Entering any of them, one would find small and

Fig. 4.11 An original courtyard house in the 1950s (*left*), and courtyards with many additions in 1980s (*right*). *Source* By courtesy of the Reference Room of the School of Architecture, Tsinghua University

Fig. 4.12 The typical decline of a courtyard house in Beijing. Early 1950s: a courtyard complex, with a total floor space of 2441 m^2 (*1*). Late 1970s: a multi-household compound, with a total floor space of 3197 m^2—131 % of that of the early 1950s (*2*). After 1987: a courtyardless compound, with a total floor space of 3787 m^2—155 % of that of the early 1950s (*3*). *Source* Wu (1994: 62)

low brick huts built on every corner of the yard left only a narrow gap between each other. Between the huts, tricycles, junks, and piles of briquette and cabbages littered the ground, and lines for airing laundries stretched chaotically between huts. Figure 4.12 shows the typical decline of a courtyard house from a classic one to an "old and dilapidated" one.

4.2.2 Reasons for the Decline of the Courtyard House

Scholars have conducted many analyses to explain the reasons for the decline of the courtyard house. Many of them attribute this decline to the outdated facilities of courtyard house, which could not satisfy residents' demands for improvements in their quality of life (Wang 2001a); or to the degenerative structure of the houses, which were normally built of wood and brick (Chen 2004); or to the over-narrow road (hutong) system, which blocked the development of modern traffic patterns (Liu and Wang 2004). However, I do not consider that these are the fundamental reasons.

By today's standards, the facilities of most courtyard houses, such as the water supply, sewage and heating systems, were relatively outdated. But as far as the building structure is concerned, from my observations in Britain, Beijing's courtyard houses, notwithstanding their building materials and technical construction, are no less structurally sound than the equivalent 100-year-old wood and brick house in Britain, and some are even better. Why did the conditions of courtyard houses in Beijing's Old City continue to deteriorate, to the point that their roofs leaked and even their walls collapsed? Why were the facilities of courtyard houses not improved as time went by?

Apart from the reasons that the facilities and the structure of courtyard houses were outdated, or had degenerated over time, the underlying reason for their decline was that, during the era of the socialist planned economy, Beijing's municipal government in fact deprived owners of property rights to their courtyard houses for about two decades, which made it difficult for the courtyard houses to have maintenance and renovation done before it was too late.

Before 1949, the majority of the courtyard houses in Beijing were privately owned. According to the government statistics (EBHUCB 1992: 414–416), privately owned houses accounted for 67 % of the total floor space of the buildings in Beijing's old city proper in 1949, publicly owned buildings for 24 %, guildhalls, communities, temples and the like for 5.7 %, and foreign owned buildings for 3.3 %. After the People's Republic of China was founded and established a planned economy system, the state carried out the so-called socialist transformation of urban private housing. In 1958, nearly 6000 privately owned houses were confiscated by the municipal government. During the "Great Cultural Revolution" (1966–1976), another 80,000-odd privately owned houses were forcibly taken over.

Under the planned economy, Chinese government implemented a "Welfare-oriented Housing System" (WHS) in the cities, where public houses were let to urban residents at very low rents. On account of its long-term low-rent policy, the maintenance of the public houses put a heavy financial burden on the government, which had meant that housing maintenance normally could not be implemented. As for those private houses which were confiscated, the municipal government was responsible to rent them out as public housing. The owners of these houses were paid rent at a low and standardized rate regardless of the differences between the conditions and locations of their houses. Even in cases where

houses were still privately owned, rents were also settled by the government. After the "Great Cultural Revolution", Beijing's municipal government returned property rights to the former owners of those confiscated private houses. However, in a fairly long period of time after that, they still required owners to enter into a lease with the tenants who had already moved into the houses: and the rents were still set by the government.

If the property rights of private house owners had been respected, and a housing rental market had been established, it is unlikely that these courtyard houses would have been maintained by their owners. However, since the owners' property rights did not have the relevant guarantees, they lacked the enthusiasm to maintain their houses. Moreover, the municipal government itself could not afford to pay for all housing maintenance. By the time the government corrected their policy, so many years had gone by that many courtyard houses had become "old and dilapidated" by the end of the 1980s. Therefore, I conclude that the government's policy of confiscating the property right of private house owners is the main reason which resulted in the decline of the courtyard houses.

4.3 Impact of the Large-Scale Redevelopment on Beijing's Old City

4.3.1 The Destructive Effect of the Large-Scale Urban Redevelopment

Since living conditions in courtyard houses became worse and worse, Beijing's municipal government embarked on a redevelopment project for the "Old and Dilapidated Houses" (ODH) in 1990, namely, the "Old and Dilapidated Housing Redevelopment Project" (ODHRP).

In the beginning, the ODH to be reconstructed were mostly situated in the shabbiest blocks on the fringe of the old city proper. Since more than 60 % of the former residents were allowed to move back when the redevelopment was finished, this ODHRP gained universal support from the inhabitants (Wen 1998). However, after 1992, China's land market opened up, and this quickly boosted the real estate market in Beijing (Shu and Hu 1998). Real estate investment became diversified, and some foreign-capital enterprises also invested in it (Zhu 2001). The old city proper, thanks to its location advantages, soon turned into a pot of gold for real estate developers to compete for, thus attracting abundant investments before very long. The scale of the ODHRP therefore enlarged rapidly, extending into the central area from the fringe regions step by step. The method of the redevelopment usually adopted was not a renovation of the existing structure but a levelling of them and a construction of new, bigger ones (Lü 1997). Before the ODHRP, the threat to the traditional courtyard houses came merely from the insertion of new constructions

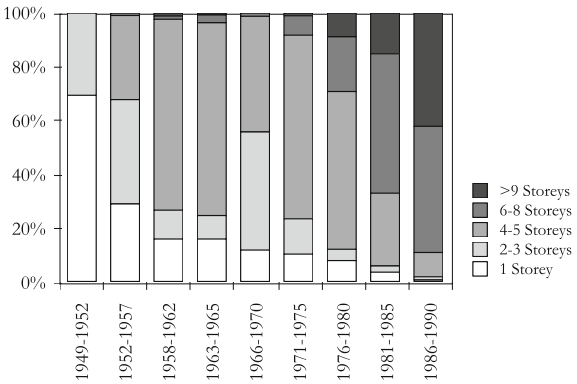

Fig. 4.13 The proportion of residential building with different number of storeys in the whole area of Beijing, 1949–1990. *Source* Drawn by author based on data from Hu (2004)

and extensions into them, but after 1992, the threat came rather from the redevelopment which bulldozed the courtyard houses block by block.

The ODHRP not only failed to stop the decline of the traditional courtyard houses, but also brought about new and greater damage to Beijing's urban spatial and social structure, which manifests itself mainly in the following two aspects: first, the historic urban spatial structure of Beijing's Old City has been destroyed, and second, the former social structure of the traditional residential districts in the old city proper has been torn apart at the same time.

The new high-rise buildings now concentrated within the old city proper are the most outstanding illustration of the damage to the historic urban structure of Beijing's Old City. Before 1949, the old city proper was mostly composed of one-storey courtyard houses, which accounted for over 80 % of the whole floor area of constructions in the city. The other constructions were mostly two or three-storey ones (Hu 2004). During the 12 years from 1960 to 1971, Beijing constructed only 8 nine-storied buildings, less than one building per year on average; but in 1976 alone, altogether 31 high-rise flats were constructed on Qiansanmen Street, which is nearly at the centre of the old city proper. This became the starting point for the development of tower-blocks in Beijing (EBHUCB 1992: 283). The situation became much more serious during the process of ODHRP in the 1990s. Not only high-rise flats but also a great number of high-rise office buildings and hotels were built in the old city proper; and by 2000, the number of high-rise flats with over 10-storeys[2] and non-residential tower-blocks with a height of over 30 m in Beijing's old city proper had reached about 500 (Zhang 2002). Figure 4.13 shows the changes in the residential buildings with different number of storeys which have been constructed in the whole area of Beijing from 1949 to 1990.

In 1990, Beijing's municipal government issued the *Regulations Strictly Restricting the Construction of High-rise Buildings* in order to restrict the height

[2]According to China's Criteria for Housing Design, a 1–3-storey house is a low-rise, a 4–6-storey house is a medium-rise, a 7–9-storey house is a medium–high-rise, and a house of 10 storeys or above is a high-rise (MCC 2005).

Fig. 4.14 The Oriental Plaz in the 1990s in the city centre. At the time of its construction the project represented the largest civil building in Asia. *Source* Taken by author

and floor area ratio (FAR) of the new buildings constructed in the old city proper. However, some influential real estate developers took countermeasures to violate these restrictions. For example, the Oriental Plaza (Fig. 4.14), situated in the commercial centre of Beijing's Old City, Wangfujing, which was constructed with 2 billion US dollars of investments, occupies an area of 100,000 m^2, and the total floor area has even reached as much as 800,000 m^2. It has a FAR of over 6, and is over 70 m high, even though the height limit permissible in this region is only 30 m. This jumbo, which integrates official business, hotel accommodation, commerce and entertainment, is said to be the largest construction complex in Asia. It resembles a city within a city, with a scale much bigger than Beijing's traditional architecture, rudely breaking up the historic urban structure of Beijing's Old City.

With more and more new high-rise buildings constructed in the old city proper, the courtyard houses were constantly being nibbled away, to the point that even some traditional residential districts with historical value cannot survive. For instance, Niujie (Fig. 4.15), the only densely populated residential district for Chinese Muslims in the old city proper, was identified as one of the "Historic and Cultural Conservation Districts" (HCCD) by the municipal government in 1990. However, being the largest redevelopment project in Beijing, even this protected district, which occupies an area of 35.9 ha, was completely reconstructed in 1999. Only one mosque—a historic site protected as a state-level cultural relic—was conserved, all the old houses in an area of 340,000 m^2 were dismantled, and 7500 households had to be relocated (Jiang 1999). The newly constructed communities have taken on a totally built-up, "modern" look, but one which is much different from that of Beijing's traditional courtyard houses in its layout, scale and colour. By 2003, when a new street with a width of 40 m in Niujie was open to traffic, the traditional cityscape had completely disappeared, and the mosque looked like a tiny model on this square-built street.

Fig. 4.15 Niujie neighbourhood under reconstruction (*left*) and the mosque, the only one old building left after the reconstruction (*right*). *Source* By courtesy of the Reference Room of the School of Architecture, Tsinghua University

This kind of ODHRP caused the old city proper of Beijing to be filled with a lot of high-rise buildings, which have seriously destroyed its historic urban structure. The municipal government's efforts to control the height of constructions in the old city proper, and to preserve Beijing's traditional "bowl-shaped" skyline that had the old palace (the Forbidden City) as the centre, have been breached entirely as shown in Fig. 4.16. These high-rise buildings have made the broad streets inapproachable in today's Beijing, leaving them looking no different from any other new city. These changes have caused some experts and scholars to worry, and to ask, "Is this speed of urban renewal really for the best?" (Meng 2000). Some experts pointed out that this great damage to the Beijing's historic urban structure, which had taken hundreds of years to come into being, would cause Beijing to degenerate into a "second-hand (valueless) city" (Fritz Neumeyer, cited by Wu 1998). This is why, in recent years, there have been constant appeals to slow down the process of urban redevelopment, and to protect the historic features of Beijing's Old City (see Wei 2000; Song et al. 2004; Wu 1998).

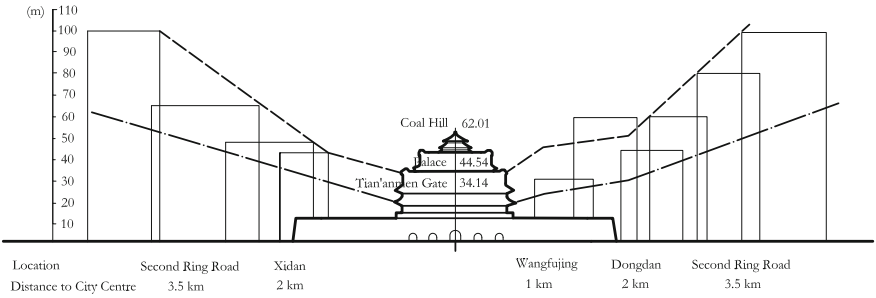

Fig. 4.16 Efforts to control the height of buildings have been breached entirely. The solid lines indicate the height limit specified in the master plan of the city, while the broken lines indicate the height of the constructions in reality. *Source* Li (1996)

Apart from the damage to the historic urban spatial structure, the second way in which damage to the city, caused by the ODHRP, is that the former social structure in the traditional residential districts has been torn apart. Since a great deal of residential land has been developed into land for large complexes devoted to finance, commerce and the like, large numbers of the former residents were prompted to move out of the old city proper (Wen 1998; Zhou 2002). Even though some buildings have kept their residential function after redevelopment, many original residents are still unable to move back, since they cannot afford the high house prices. The damage that is being done to former residential structure in the old city proper will be discussed further in Chap. 7 in the context of gentrification.

4.3.2 The Deficiencies of the Urban Redevelopment Project

In this Section, I shall analyze the reasons why this ODHPR failed to stop the decline of the courtyard houses but instead brought new and greater damage to the Old City. The deficiencies of this project revealed themselves mainly in the following three points. First, the criteria used by the government for evaluating the blighted urban area to be redeveloped were decoupled from the reality of the situation in Beijing's Old City; second, due to the institutional barriers, the relevant laws and regulations which governed the protection of historical urban districts were not implemented seriously by the government departments concerned; and third, the government had little experience of dealing with the profit-seeking developers, and the redevelopment of the old city proper was dominated by real estate developers and undertaken on a large scale.

With regard to the first point, in 1990 Beijing's municipal government, without thoroughly surveying the status of the courtyard houses in the old city proper, pressed ahead with its redevelopment project, and worked out certain criteria for evaluating the blighted urban area expressed in terms of "Old and Dilapidated Housing Redevelopment District" (ODHRD). With this criterion, the buildings were summarized into five standards according to their conditions, ranging from Class 1, in a normal condition, to Class 5, in a dangerous condition.[3] Urban districts where more than 70 % of the houses were of Classes 3–5, and furthermore where, of these, over 30 % were of Classes 4 and 5, could be listed as ODHRD, needing to be redeveloped. However, in Beijing's old city proper at that time, houses in Classes 1 and 2 accounted for approximately 20 % of the total, houses in Class 3 for about 60 % and houses in Classes 4 and 5 for about 20 %. What is more, houses in different classes often existed alongside each other. That is to say, if people judged Beijing's Old City according to the above standards, most of the residential districts

[3]According to the relevant standards for building conditions issued by China's Ministry of Construction in 1984, a building of Classes 1–2 is in normal condition; a building of Class 3 is in slightly poor condition; a building of Class 4 is in seriously poor condition, and a building of Class 5 is in a dangerous condition (Li and Pu 2000).

in the old city proper possessed a 70 % ratio of houses in Classes 3, 4 and 5, and could therefore be counted as ODHRD that is in need of being redeveloped.

When China's urban land market opened up in 1992, Beijing's real estate market heated up as well and a large number of real estate projects in the name of ODHRP emerged. If a real estate developer selected a piece of land and reported it to the urban housing management section for identification in accordance with the evaluation criterion, it would generally be easy for it to be identified as an ODHRD. For instance, during less than half a year in 1992, the government of Dongcheng District, one of the four districts in Beijing's old city proper, sanctioned 12 ODHRP (Wei 1997).

With regard to the second point, some traditional residential districts, which should have been kept from destruction, were ultimately completely demolished because of further institutional barriers. The redevelopment of Niujie is a typical example. In 1990, Beijing's municipal government earmarked 25 traditional residential districts, including Niujie, in the old city proper as "Historic and Cultural Conservation Districts" (HCCD), but the corresponding municipal departments failed to establish corresponding protection policies or a conservation program. Moreover, they even failed to designate the specific scope of these HCCD (Li 1995). As a result, these districts remained on the municipal government's list, but nothing was done. Since there were no operable laws and regulations to be followed, the management commission of urban planning could not exert effective protection over them (Ping 1999). This allowed Niujie, one of the HCCD on the list, to be entirely dismantled as one of the ODHRD and subsequently reconstructed as a brand new residential district with clusters of tower buildings.

With regard to the third point, the government hoped that the ODHRP would improve the city's image and its infrastructure, as well as boosting the development of its economy. The government, however, was short of necessary funding and capital investment, and this led to the ODHRP being dominated by real estate developers. The developers, who were normally designated by the municipal government, were committed to be responsible for the whole process, from planning, and construction to sale. After 1992 especially, attracting developers to invest in the real estate market of Beijing became practically the only way to promote the urban redevelopment of the Old City. As the institutional culture of the government departments were still rooted in the planned economy, they were inexperienced in dealing with the profit-seeking developers. As long as the real estate developers agreed to invest, the government would give them strong support (Fang 2000: 71), and would even make concessions in some important requirements by the master plan of the city (Wei 1998). However, the motivation for the developers to invest was the pursuit of economic profits. Therefore, they often exceeded the statutory limitations of urban planning by finding reasons to enhance a building's height and FAR, and this made it fairly difficult for the municipal departments of urban planning to exercise their control.

In addition, since they wished to maximize their economic profits, developers normally tried to increase the scale of each single redevelopment project to the largest extent. In the early period of redevelopment, there was a restriction on the

scale of these projects. No more than 4 ha of the land area could be redeveloped per project. However, in reality, many projects exceeded this limitation (Wei 1997). The government statistics (CCH) show that, among all the redevelopment projects, no fewer than 88 occupied an area over 4 ha, accounting for 68 % of the total; while 51 projects occupied an area over 10 ha, accounting for 39 %; and the largest blighted urban area, Niujie, mentioned in previous section, occupied a land area of up to 36 ha.

To judge from the experience of Western cities, protection funds for the maintenance of historic cities need to come from diverse sources, such as governmental allocations or subsidies, loans, sponsorship from social associations or individuals, the deduction of rents and taxes, or the utilizing of fines. It is evidently inadvisable to obtain capital totally from developers. Indeed, China established a special fund for the protection of historic and cultural cities in 1997, and every year 30 million Yuan have been transferred in order to protect the historic districts of the whole country (Wei 1998). However, in the case of Beijing's Old City, with so long a history and so large an area, such a fund is undoubtedly far from enough. As a result, in present-day Beijing, urban redevelopment still has to rely mainly on developers' capital in order to proceed. Therefore, the developers can continue to inflict damage on the Old City with their large-scale redevelopment projects. This was, and perhaps will be, the factor which has exerted the most influence on the redevelopment of the city.

4.4 Conclusion

The courtyard house had survived in Beijing for hundreds of years. Since the 1960s, however, it declined rapidly. By the end of the 1980s, many courtyard houses had become "Old and Dilapidated Houses" (ODH). The municipal government's "Old and Dilapidated Housing Redevelopment Project" (ODHRP), which was intended to stop the decline and improve the living conditions of the traditional residential districts, in fact caused further destruction to Beijing's Old City.

The decline of courtyard houses and their eventual demolition on a large scale was due to various causes. In addition to elaborating upon the widely accepted hypotheses about their outdated and degenerative facilities, the discussion in this chapter suggested that the underlying reason for their decline was ultimately due to the policy that the municipal government implemented during the period of planned economy. It deprived owners of their property rights to their courtyard houses; and without such rights, these owners lost the incentive to keep their houses in good condition. This policy was especially unfortunate because the government itself was short of financial resources for the upkeep of these houses. Many of them, therefore, suffered several decades of deterioration, and became seriously run down by the end of the 1980s. As it has been shown in this chapter, by 1990, about 60 % of the

courtyard houses were in a slightly poor condition and about 20 % were in a seriously poor or even a dangerous condition: only 20 % were in a normal condition.

The ODRHP, embarked upon by the government with an original aim at improving the poor living conditions of the ODH, turned out soon to be the main way of redeveloping the old city proper after 1992 when the land market opened up and real estate development flourished rapidly. Numerous real estate development projects, in the name of ODRHP, bulldozed the courtyard houses block by block. Their destructive effect produced on Beijing's Old City found expression not only in the demolition of its historic urban structure but also in its compulsory relocation of large number of their original residents.

The reasons why redevelopment projects have inflicted serious damage on Beijing's Old City are demonstrated in various ways. For example, the inappropriate definition of the "Old and Dilapidated Housing Redevelopment District" (ODHRD) by the municipal government resulted in redevelopment projects which were too many in number and too large in scale. Due to the institutional barriers, government departments failed to coordinate with each other, which in turn diminished their power to enforce the preservation of the "Historic and Cultural Conservation Districts" (HCCD). My research in this chapter also suggests that a more important and direct reason was that, since the government had little experience of dealing with profit-maximizing developers and made concession even in some important requirements by the master plan. The redevelopment of Beijing's Old City was dominated by developers, and developers therefore have been enlarging the scale of the projects in order to maximize economic profits. As has been shown in the discussion, although there was a restriction by the government on the scale of redevelopment projects, each of which was to cover no more than 4 ha, 68 % of these were actually larger than 4 ha and the biggest one, Niujie, actually occupied a land area of up to 36 ha.

Because of the shortage of government's funds, investments by developers were, and perhaps always will be, the most convenient choice that municipal government could make in order to allow urban redevelopment to proceed. Then, what can we do for protecting Beijing's traditional courtyard houses and its Old City? A further analysis from the viewpoint of economics will be given in the next chapter.

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Chapter 5
Protecting Beijing's Old City by Establishing a Polycentric Urban Structure for the City

Abstract This chapter searches for a solution to protect Beijing's courtyard houses and its Old City. It begins with an economic analysis of the redevelopment projects in the Old City, and then analyzes the conflict between the protection of the Old City and the keen competition for land in the old city proper. It is argued that Beijing's current monocentric urban structure has aggravated the difficulties of protecting the courtyard house and its Old City, and the fundamental solution would be to replace its monocentric urban structure by a polycentric one.

Keywords Floor area ratio · Land prices · Profits of real estate development · Monocentric structure · Polycentric structure

In the previous chapter, I analyzed the decline of the traditional courtyard house and concluded that one of the most important reasons why the "Old and Dilapidated Housing Redevelopment Project" (ODHRP) has caused great damage to Beijing's Old City is that the projects were undertaken on such a large scale by developers in order to maximize their economic profits. Nevertheless, because of the government's shortage of funding and its aspiration for investment by developers, this pattern has dominated the redevelopment of Beijing's Old City to this day.

The main task of this chapter is to search for a solution to protect Beijing's courtyard houses and its Old City. I shall begin with an economic analysis of the redevelopment projects in the Old City, and then analyze the conflict between the protection of the Old City and the intensive demands for land in the old city proper. Finally, I shall offer some suggestions for protecting Beijing's courtyard houses and its Old City. It will be argued that Beijing's current monocentric urban structure has aggravated the difficulties of protecting the courtyard house and its Old City, and the fundamental solution would be to replace its monocentric urban structure by a polycentric one.

As mentioned in Chap. 3, Beijing's Old City, over the years, has been the focus of many studies concerned with Chinese architecture and urban planning. Most of these analyses were done from a historic or cultural perspective, but neglected the economic value of the city. In the first section of this chapter, I shall undertake an

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economic analysis, in particularly, a cost-benefit analysis of the redevelopment projects in Beijing's old city proper. It will be shown that in order to maximize profits, developers tended to expand the scale of the projects as much as possible.

High land costs within the old city proper represent the intensive and competitive demands for urban space there. Although the government set restrictions on floor area ratio (FAR) in its master plan for the city, the serious land demand made those restrictions ineffective. In the second section of this chapter, I shall, using Beijing's benchmark land price system, produce an estimate of the impact of the FAR on the profits of redevelopment projects in the Old City. It will be shown that Beijing's monocentric urban structure is the underlying cause of the keen competition for land in the old city proper, which makes the protection of the Old City all the more difficult.

The ultimate solution to protect Beijing's Old City is therefore to decentralize the urban functions which were previously concentrated within the Old City; this would, in turn, reduce competition for land there. In the last section of the chapter, I would propose a polycentric urban structure for Beijing to replace its current monocentric one. Although a "polycentric" scheme has been proposed in the newly revised Master Plan of Beijing (2004–2020), I shall show that this "polycentric" structure would not offer substantive help with reducing the high land prices within the old city proper.

5.1 Economic Analysis of the Redevelopment Project in Beijing's Old City

5.1.1 The Economic Principles of Real Estate Development

5.1.1.1 Costs, Revenues and Floor Area Ratio

As mentioned in Chap. 3, theFAR has a vital bearing on the economic profits the real estate developers get from the redevelopment project and determines whether redevelopment project can go on. Before making an economic analysis, I shall introduce the concept of FAR in advance.

FAR is the ratio of the gross floor area of all buildings on a particular lot in comparison with the gross area of the lot. FAR is also known as plot ratio. Consider this in terms of the formula

$$\mathrm{FAR} = \frac{S_{\mathrm{B}}}{S_{\mathrm{L}}}$$

where S_{B} is the amount of floor area of all buildings, and S_{L} is the amount of lot area. Since $S_{\mathrm{B}} = S_{\mathrm{L}} \times D \times N$, we can write

$$\text{FAR} = \frac{S_{\text{L}} \times D \times N}{S_{\text{L}}} = D \times N$$

where D is construction density ($0 \leq D \leq 1$), and N is the average number of storeys of a building. FAR is one of the key indicators by which the intensity of urban land development may be measured. The bigger the FAR, the higher the intensity of urban land development and utilization ratio of land use, and vice versa.

In order to analyze the relationship between FAR and cost as well as benefit in real estate development, some concepts from Microeconomics must be introduced. In Microeconomics (Maddala and Miller 1989: 195–207), the costs concerned with production are known as total cost (TC), total fixed costs (TFC) and total variable costs (TVC). Fixed costs—unlike variable costs—are costs that do not change with output. TC is the sum of TFC and TVC, i.e. TC = TFC + TVC.

The costs of real estate development consist mainly of two parts: land costs and construction costs. The land costs are fixed costs, and the construction costs are variable costs. Land costs are the costs that a real estate developer pays for a piece of land. No matter how the FAR changes, the land costs would be the same.[1] Therefore, for a given lot, we can write

$$\text{TFC} = P_{\text{L}} \times S_{\text{L}} + K = \text{Constant}$$

where P_{L} is land price, S_{L} is plot area and K refers to the potential other costs. Hence, TFC does not change with the increase of FAR.

Construction costs mainly include costs for construction and installation, costs for site construction and costs for community service facilities. Among these, the costs for construction and installation consist of the costs for materials, equipment and labour, which account for the highest proportion of TVC. It is obvious that, along with the increase in FAR and in floor area, the input of materials, equipment and labour will increase as well. Hence, TVC increases with an increase in FAR. Referring to Microeconomic principles, we can get a typical TVC curve (Maddala and Miller 1989: 195; Fleming 1969: 97). Furthermore, considering the equation, TC = TFC + TVC, we can get a typical TC curve as well. These relationships are illustrated in Fig. 5.1.

The next concepts introduced from Microeconomics are the average cost (AC) and marginal cost (MC). AC is simply the cost per unit of output. Being similar to TC, average TC consist of average fixed costs (AFC) and average variable costs (AVC). Marginal cost is the cost of the additional unit of output. Consider these concepts in terms of the formulas:

$$\text{AFC} = \text{TFC}/Q, \quad \text{where } Q \text{ is output}$$

[1]In order to simplify the analysis here, it is supposed that the land cost does not change with the increase in FAR. However, after Beijing adopted the benchmark land price system in 1993, land costs have changed with changes in FAR. This situation will be discussed later.

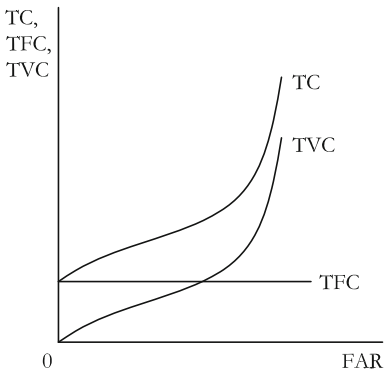

Fig. 5.1 The TFC, TVC and TC curves. *Source* Drawn by author

$$\mathrm{AVC} = \mathrm{TVC}/Q$$

$$\mathrm{ATC} = \mathrm{AFC} + \mathrm{AVC} = \mathrm{TC}/Q$$

$$\mathrm{MC} = \Delta\mathrm{TC}/\Delta Q = \Delta\mathrm{TVC}/\Delta Q$$

where MC can be expressed either as the ratio of change in TC to a change in output or as the ratio of change in TVC to a change in output. This is because FC does not change with output. Any change in the TC must result from a change in the cost of the variable input.

Graphically, ATC is the slope of a line from the origin to a point on the TC curve, and MC is the slope of the TC curve (Heikkila 2000: 2–7). ATC in real estate development refers to the cost of a unit of floor area. Here we take the area of the lot as a unit of floor area, and then we can write

$$\mathrm{AFC} = \frac{\mathrm{TFC}}{\mathrm{FAR}} \quad \mathrm{AVC} = \frac{\mathrm{TVC}}{\mathrm{FAR}}$$

There is a relatively straightforward relationship between AFC and FAR. TFC is fixed, hence AFC is in inverse proportion to FAR. That is, if FAR is rising, then AFC is falling. The relationship between AVC and FAR, however, is more complicated, though on the whole, follows the regularity described below.

Under the economies of scale, a rise in FAR causes AVC to fall. This is because an increase in FAR will cause a decrease in construction costs per unit of floor area. But when the real estate development exceeds the economies of scale, if FAR is rising, AVC will be rising as well. This is because an increase in FAR will cause an increase in the number of storeys in a building, and furthermore some changes in a building's structural system: for example, from a composite structure with brick for low-rise buildings to a concrete structure, or even to a composite structure with steel for high-rise buildings. These changes will bring more difficulties in construction work, and will hence cause an increase in labour costs and a prolongation of the construction period.

Since ATC is the sum of AFC and AVC, and furthermore, AFC falls as FAR increases, ATC and AVC get closer as FAR rises, we can, therefore, obtain an AC curve that follows the following rules.

Under the economies of scale, if FAR is rising, both AFC and AVC will be falling: ATC, the sum of AFC and AVC will, therefore, be falling as well. If FAR keeps on rising, AVC will eventually also begin to rise and will gradually climb above AFC, finally causing ATC to rise rather than fall. Furthermore, ATC will reach its minimum at a FAR larger than that at which AVC reaches its minimum (Maddala and Miller 1989: 201).

In real estate development, the marginal cost (MC) is the increase in cost that results from building one extra unit of floor area which is equal to the lot area. Consider this in terms of the formula

$$\mathrm{MC} = \frac{\Delta \mathrm{TC}}{\Delta \mathrm{FAR}} = \frac{\Delta \mathrm{TVC}}{\Delta \mathrm{FAR}}$$

where ΔTC is the increment of TC, ΔTVC is the increment of TVC and ΔFAR is the increment of FAR. The relationship between MC and FAR is much more complicated, but the same relationships that we considered above between ATC and FAR will hold true for MC and FAR, i.e. MC will initially decrease and later increase. Furthermore, we can learn from Microeconomics that MC must intersect with ATC at its minimum point and that MC must also intersect with AVC at its minimum point (Maddala and Miller 1989: 201). These relationships are illustrated in Fig. 5.2.

In Microeconomics, total revenue (TR) is the total money received from the sale of any given quantity of output. In real estate development, the TR is the income from selling properties. Thus we can write

$$\mathrm{TR} = P_{\mathrm{H}} \times \mathrm{FAR} \times S_{\mathrm{L}}$$

where P_{H} is the housing price and S_{L} is the lot area. It is obvious that there is a direct relationship between FAR and TR, i.e. the bigger the FAR, the higher its TR.

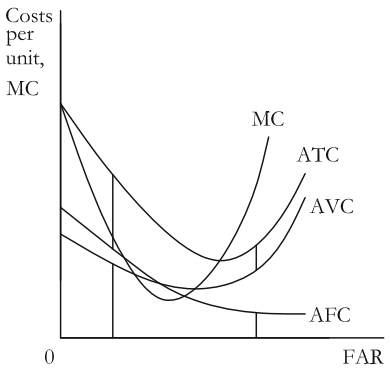

Fig. 5.2 The AFC, AVC, AC and MC curves. *Source* Drawn by author

In the same way, the concepts of average revenue (AR) and marginal revenue (MR) are drawn from Microeconomics. AR is TR divided by the number of units sold. MR is the extra revenue which an additional unit of product will bring to a firm. Graphically, the MR is the slope of the TR curve (Heikkila 2000: 2–7). AR in real estate development represents the income from selling a unit floor area of building, so this can be regarded as the housing price as well. Here I suppose, as above, that a unit of floor area is equal to the lot area, i.e. mathematically, AR = TR/FAR. MR is the income from selling an extra unit of floor area, and so mathematically, MR = ΔTR/ΔFAR.

If AR, i.e. the housing price, does not change with the increase in FAR, then AR is equal to MR. Thus, we can write

$$\mathrm{AR} = \mathrm{MR} = P_{\mathrm{H}} \times S_{\mathrm{L}} = \mathrm{Constant}$$

where both AR and MR are constants and do not change with the changes of FAR. However, if FAR rises, the supply of properties on the market will increase, and housing prices are likely to go down as the TR′ curve shown in Fig. 5.3a. According to the notion of diminishing marginal utility in Microeconomics (Heilbroner 1972: 18), both AR and MR will decrease as the AR′ and MR′ curves shown in Fig. 5.3b.

5.1.1.2 The Profits of Real Estate Development

The profit (P_{f}) in real estate development is made up of the result of TR minus TC, i.e. $P_{\mathrm{f}} = \mathrm{TR} - \mathrm{TC}$. It is obvious that real estate developers are driven by profit. Thus in order to maximize profits, the difference between TR and TC must be maximized. According to the Microeconomics theory, we know also that a real estate development project will maximize its profits only at the FAR, i.e. output level, which satisfies the condition that MR equals MC, i.e. MR = MC.

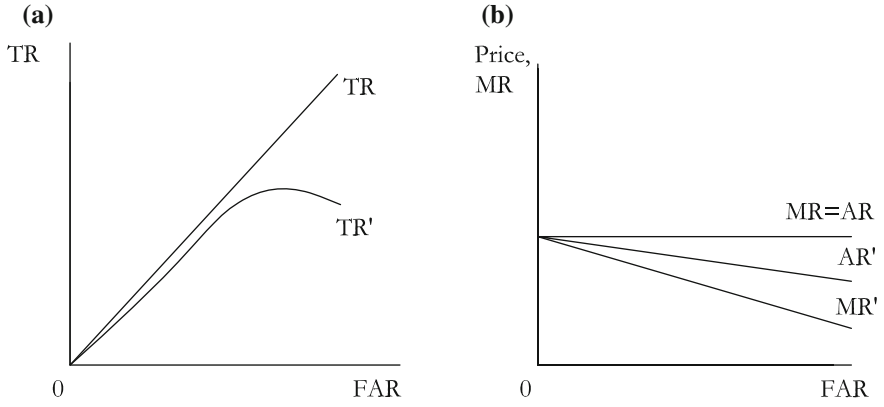

Fig. 5.3 **a** TR and FAR curves. **b** AR, MR and FAR curves. *Source* Drawn by author

In the following paragraph I will analyze the relationship between profit from real estate development and FAR in two different situations. First, I shall examine one in which the housing price does not change with the rise of FAR, and second, I shall examine one in which the housing price falls with the rise of FAR.

In the first situation, as shown in Fig. 5.4a-1, 2, 3, before FAR reaches F_1, AR is smaller than ATC and TR is smaller than TC as well: hence P_F is negative and the real estate development makes a loss. When FAR increases to F_1 where AR equals ATC and TC equals TR, P_F is, hence, zero. But when FAR keeps on increasing, AR will be bigger than ATC and TR will be bigger than TC at the same time: hence P_F becomes positive. At the point where MR equals MC, i.e. FAR is F_{opt}, the P_f reaches its maximum P_{fmax}, which means that profits from real estate development are maximized. After this point, MC becomes bigger than MR again, hence P_f falls down until it drops to zero again at F_2, where TR equals TC. After FAR exceeds F_2, P_f is negative and real estate development makes a loss again. It is obvious that it is only when FAR is at somewhere between F_1 and F_2 that the profit is positive. That is, it is between F_1 and F_2 that there is scope for real estate development to make profits. So the values of F_1 and F_2 are called critical FAR.

In the second situation as shown in Fig. 5.4b-1, 2, 3, the relationship between profit and FAR is similar to that of the first situation. Only when FAR is between F_1 and F_2 real estate development can make a profit, and at the point where MR equals MC, the profit maximizes. But both the P_{fmax} and the F_{opt} in the second situation are smaller than those in the first situation.

Furthermore, according to the relationship between ATC, MC and TC, and also the relationship between AR, MR and TR in Microeconomics (Heikkila 2000: 3–4), there are two other graphical ways to express P_{fmax}: by the shadowed area of D in Fig. 5.4a-2, b-2, or by the shadowed area of A minus those of B and C in Fig. 5.4a-3 and b-3.

5.1.2 Methods by Developers for Maximizing Profit

5.1.2.1 The Costs of Real Estate Development in the Old City Proper

In this section, I shall analyze the difference between the costs of real estate development projects in Beijing's old city proper and those of development projects in its new city districts. I shall then determine the main characteristics of the costs which relate to Beijing's Old City.

In July 2004, I conducted an investigation on the costs and benefits of two real estate projects (Guanyuan redevelopment project and Xi Diaoyutai project), one located within Beijing's old city proper and the other one outside the old city proper (see Sect. 5.5 Case Studies). The data shown in Table 5.1 express the costs of the two projects.

Table 5.1 shows that the TC per square metre of the project in the old city proper are 40 % higher than those outside the old city proper. That cost difference mainly

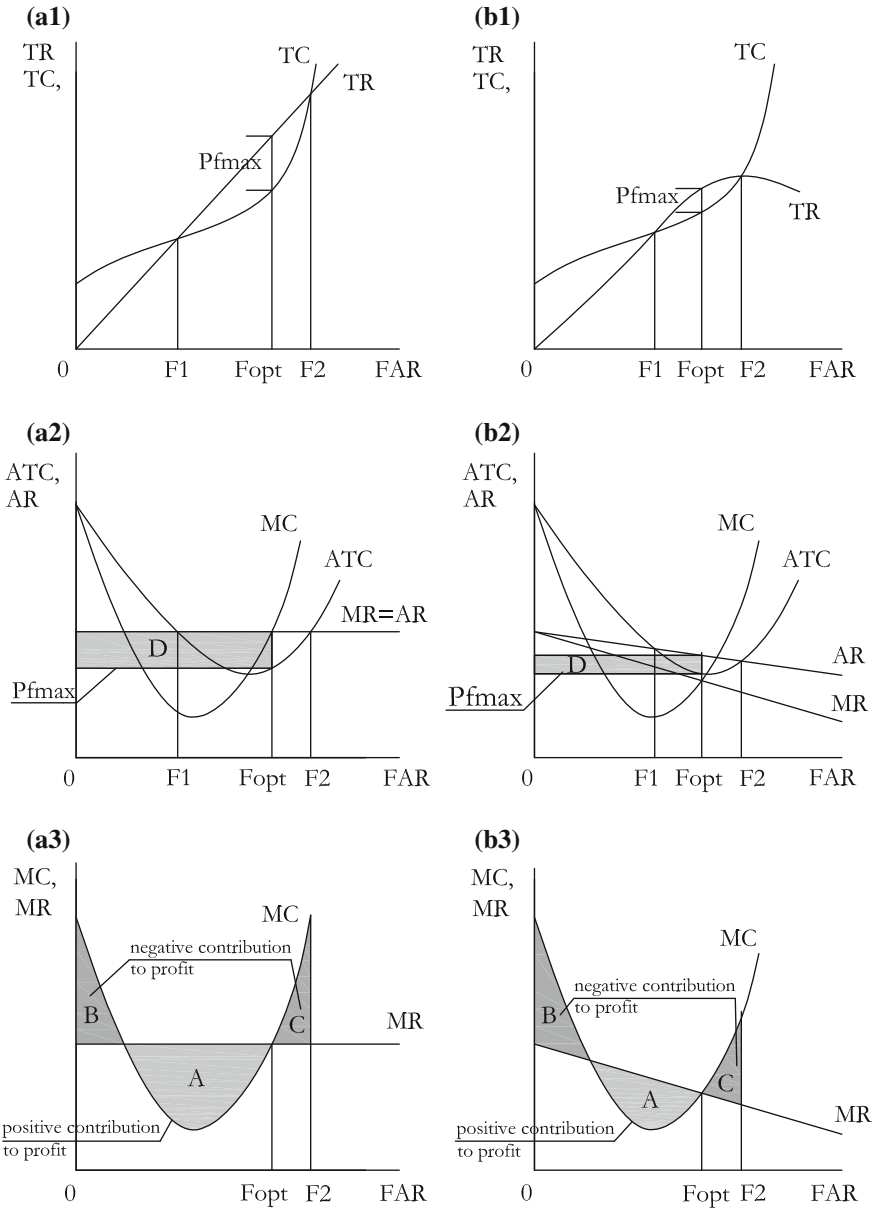

Fig. 5.4 **a-1**, **2**, **3** Profit and FAR curves if housing prices do not change. **b-1**, **2**, **3** Profit and FAR curves if housing prices fall. *Source* Drawn by author

results from the difference in land costs. The latter are 7396 Yuan/m^2 within the old city proper, but only 3051 Yuan/m^2 outside the old city proper. Although Table 5.1 shows that there are about 1000 Yuan difference between the construction costs of

Table 5.1 The costs of real estate projects within the old city proper and outside the old city proper in 2004

Items			Guanyuan project (in the old city proper)		Xi Diaoyutai (outside the old city proper)	
			Costs (Yuan/m^2)	%	Costs (Yuan/m^2)	%
Land costs	Land rent		3773	35.8	305	4.0
	Costs for urban infrastructure and public utilities	Urban Infrastructure Cost			2746	36.2
		Public utilities cost				
		Community Utilities Cost				
	Costs for land development	Land requisition Cost	3623	34.3		
		Relocation cost				
Subtotal land costs			7396	70.1	3051	40.2
Construction costs	Costs for preconstruction		2783	26.4	97	1.3
	Costs for construction and installation				3410	44.9
	Cost for site construction				319	4.2
	Costs for community service facilities					
	Administration fees					
Subtotal construction costs			2783	26.4	3826	50.4
Taxes and fees			343	3.2	504	6.6
Interest on loan			29	0.3	206	2.7
Total costs			10,551	100	7587	100

Source Made by author based on investigation

Note "Costs for Urban Infrastructure and Utilities" are collected by the Beijing Municipality for the development of urban infrastructure and utilities, which mainly include the costs for urban infrastructure and public utilities, such as the water supply, the sewage system, the gas supply and heating system, and community utilities. "Costs for Land Development" are the relocation costs in the old city proper, which are the costs for the compensation and resettlement of former inhabitants; and the land requisition cost in the new city districts, are the costs of converting agricultural land to construction uses. "Costs for Pre-construction" are such as costs for planning and design, etc. "Costs for Community Service Facilities" are the costs that real estate developers have to pay, according to the relevant regulations issued by the Beijing Municipality, for the construction of some public installations in the community, such as kindergartens, schools and administrative buildings. "Taxes" are a tax for the real estate transaction and a tax for urban maintenance and development. "Fee" is a fee for education development

the two projects, because the houses of Xi Diaoyutai have high-grade decoration but the houses of Guangyuan have no any interior decoration (house buyers have to pay extra money for interior decoration), and the cost for decoration in Xi Diaoyutai project is 800–900 Yuan (see Table 5.20 in Sect. 5.5 Case Studies), the construction costs of the two projects are almost identical. The taxes and interest do not have much influence on the TC. These cost figures compare very well with those published by Wand Shihao in 1997 (Wang 1997).

5.1.2.2 Methods for Maximizing Profits in Real Estate Development

As mentioned in the previous sections, the TR from real estate development is made up of income from selling property. Housing prices depend on the relationship between demand and supply in the housing market. Because of the housing shortage caused by the planned economy, the housing demand in Beijing has been strong ever since China's gradual transformation to a market economy after 1979. This in turn has caused house prices to rise. Furthermore, when considering the characteristics of house prices in Beijing, it can be found that location is the most influential factor, and that FAR for a particular real estate project does not have too much impact on housing prices for either the project itself or the whole housing market in the city. Therefore, in this analysis I conclude that AR does not change with an increase of FAR, i.e. AR is equal to MR.

It is evident that the expensive land costs in Beijing's old city proper have a negative influence on the profit of real estate development. As can be seen in Fig. 5.5, an increase in land costs produces an increase in AC, which is equal to an upward move of the AC curve. If the AR curve stays the same, then the scope of critical FAR is reduced from [F_1, F_4] to [F_2, F_3], i.e. the scope for making a profit declines. Although F_{opt} does not change, the profit decreases significantly.

According to the analysis presented in the previous section, maximizing profit is, graphically, equal to enlarging the shadowed area of D as illustrated in Fig. 5.4a-2. If we keep the TC curve and the MC curve unchanged, the shadowed area can be enlarged in three ways: first, by moving the AC curve downward, second, by moving the AR curve upward, and third, by moving the F_{opt} curve outward (see Fig. 5.6).

As to the first situation (Fig. 5.6a), moving the AC curve downward is equal to reducing the construction costs for the building. However during a particular period of time and under certain technical conditions, the construction costs would not differ very greatly from one project to another. We already saw in the previous section that the construction costs for redevelopment in Beijing's old city proper were almost the same as those in the new city districts. Therefore, normally there

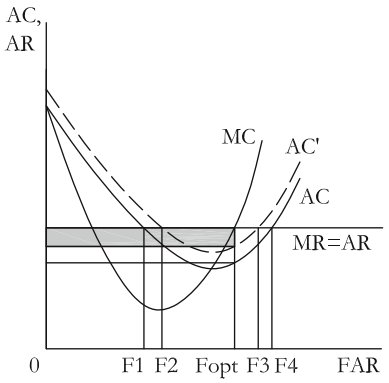

Fig. 5.5 The profits change with the rise of AC. *Source* Drawn by author

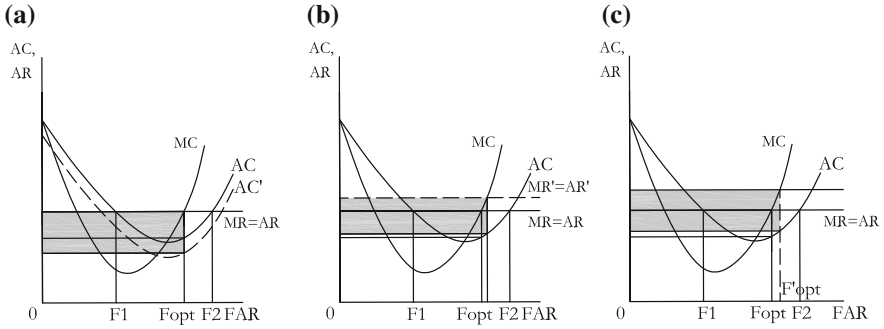

Fig. 5.6 Three methods to make a larger profit. *Source* Drawn by author

would be little possibility of increasing profit by reducing variable costs. Concerning the second situation (Fig. 5.6b), moving the AR curve upward is equal to increasing the housing price, and it is certainly a direct way to gain more profit. Concerning the third situation (Fig. 5.6c), moving the F_{opt} curve outward is equal to increasing the floor area of a house, e.g. FAR, and this also means an increase in development intensity.

The changes in the AR curve and the changes in the F_{opt} curve are in fact mutually related. Moving the AR curve upward will cause the F_{opt} curve to move outward at the same time, and vice versa (see Fig. 5.7).

The two methods of raising house prices and increasing FAR, can be applied separately or jointly. However, it is necessary to point out that there is no doubt that the higher the housing price, the greater the profit. But the same relationship does not hold true for FAR and profit. FAR and AR or house price are mutually related. After FAR exceeds the optimum point, profit will decrease (see Fig. 5.8).

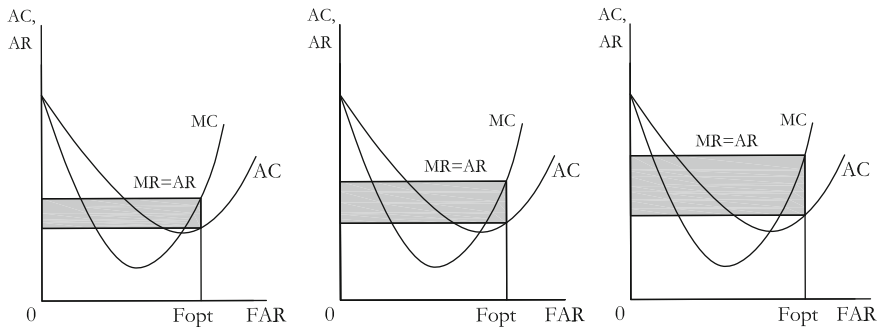

Fig. 5.7 The relationship between the changes in MR (AR) and in F_{opt}. *Source* Drawn by author

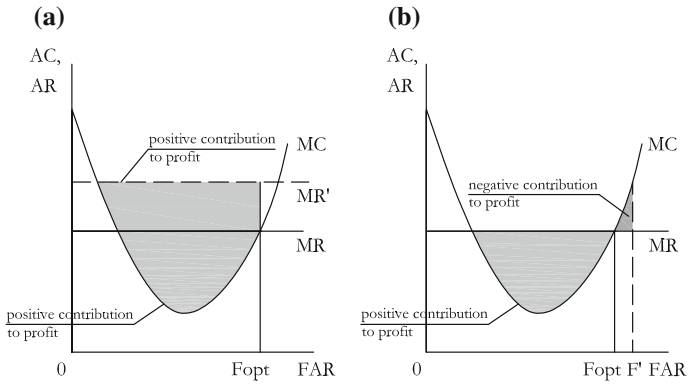

Fig. 5.8 **a** Profits change with a rise in house prices; **b** Profits change with an increase in FAR. *Source* Drawn by author

5.1.3 Effects of Maximizing Profit on Beijing's Old City

On the basis of the above analysis, it is not hard to understand the impact on the urban redevelopment of Beijing's Old City which has resulted from the real estate developers' pursuit of maximizing profits. First, the increase in FAR has resulted in damage to the traditional townscape of the old city proper. Second, the rise in housing prices has resulted in the gentrification of the traditional residential districts. Third, the change of land use has resulted in the compulsory relocation of a great number of former residents of the old city proper. Fourth, the lack of capital investment has resulted in the further blight of some traditional residential districts.

With regard to the first point, the increase in FAR in the urban redevelopment of Beijing's Old City has resulted in damage to the traditional townscape. We can examine the case of Niujie as an example. Before its reconstruction, this district, which occupied an area of 37 hectares, was basically made up of traditional courtyard houses and some slab-type houses, and its FAR was about 1. When the redevelopment finished, altogether 340,000 m^2 of old buildings had been demolished and replaced by 800,000 m^2 of new buildings. Many new high-rise flats were more than 20 storeys high: and the FAR in this district increased to 2.56. Through this redevelopment, the living conditions of residents were improved, as the dwelling space per capita grew to 20 m^2 from its previous one of less than 5 m^2, and about 90 % of the original residents were able to return after redevelopment (Fang 2005; Jiang 1999). However, nothing was left of the traditional look of this district. Similar examples can easily be found elsewhere in Beijing's Old City. Since it was very common for the government's managerial department to indulge the real estate developers, many of the ODHRP violated the restrictions on building height, FAR and land use.

With regard to the second impact, the rise in housing prices has resulted in a tendency towards gentrification in the traditional communities. We can see this situation in the case of Nanchizi (Fig. 5.9). Located in the centre of Beijing's Old

Fig. 5.9 Nanchizi, after the redevelopment in 2003 (*left*) and its situation before (*right*). *Source* Lin and Wang (2003)

City, Nanchizi was a district which consisted of traditional courtyards. For the most part, it retained its primary traditional look after redevelopment; but among its former 1060 households, over 700 had to move out of the district (DDG 2003). Meanwhile, the new-style courtyard houses rebuilt on the host site were only affordable to richer classes at prices of nearly 10 million Yuan per house (Nan 2003).

Also, those traditional districts which had previously been redeveloped continued to undergo a process of gentrification. For instance, Ju'er Hutong (Fig. 5.10), redeveloped in the early 1990s, won the World Habitat Award 1992 by United Nations, thanks to its extremely successful achievement in conserving Beijing's traditional type of residence. But according to present investigations (Liang and Zong 2005), among the residents living in Ju'er Hutong, the rich account for a large proportion, which is quite different from the previous situation. The resale price of the houses in the community has already reached 8000–9000 Yuan/m^2, and the rent for a 3-bedroom unit is over 4000 Yuan/month, far higher than in other residential communities nearby. In recent years, former residents have moved out, and those who have replaced them are mostly of the rich business class: some even come from

Fig. 5.10 Ju'er Hutong, after the redevelopment in 1993 (*left*) and its situation before (*right*). *Source* Wu (1994: 1, 4)

Hong Kong, Taiwan or other countries. The influence of the gentrification to the original residents of Beijing's old city proper will be discussed further in Chap. 7.

Third, the change in land use has resulted in the compulsory relocation of a large number of former residents of the old city proper. Looking at the prices of the different properties in Beijing shown in Fig. 5.11, the price of office buildings is the highest and those for high-grade apartment and commercial building are the second highest. All of them are much higher than the price of normal houses. In order to ensure large profits, developers build as many office buildings, commercial buildings or high-grade apartments as possible, and few normal houses. Therefore, in the traditional residential districts with good accessibility, the developers have often tended to change part, or all, of the land use, by dismantling courtyard houses and rebuilding them as office towers, commercial centres, and high-grade apartments, thus resulting in the compulsory relocation of most or even all of the former residents.

Fourth, concerning the blight of some traditional residential districts in the old city proper due to lack of capital investment, not all districts in the old city proper possessed the same development potential as the project discussed above. Districts situated in the sectors with good accessibility and relatively low residential population and construction density were usually redeveloped first, owing to the high profits which resulted from them. By contrast, those which were badly in need of redevelopment but stood far away from the main streets, with high residential population density and backward infrastructure, received little attention, due to the high redevelopment costs and low profits involved (Zhou 2002; Zhang 2002). Furthermore, for such districts, which had been categorized by the government as "Old and Dilapidated Housing Redevelopment District" (ODHRD), normal maintenance was not done during the period while they were waiting for investment,

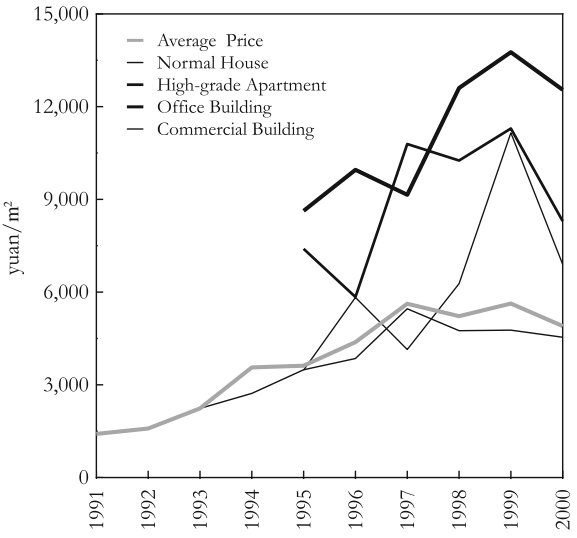

Fig. 5.11 Prices of the different properties in Beijing, 1991–2000. *Source* drawn by author based on data from [BMBS 2001]

thus inducing an even quicker blight on numerous houses. In accordance with the relatively conservative estimate of the housing management department, the area of old and dilapidated houses in the old city proper was increasing at a rate of about 150,000 m^2 every year in late 1990s (Fang 1998).

5.1.4 The Social Costs of Real Estate Development

First of all, from the formula for FAR noted above, let us observe the properties of FAR associated with the aspects of society and the environment. If the indicators which are related to population are included in the formula, FAR can be described as follows:

$$\mathrm{FAR} = \frac{S_B}{S_L} = \frac{P \cdot S_{LP}}{S_L} = D_P \cdot S_{LP}$$

where P is population, S_{LP} is floor area per capita and D_P is density of population. This equation shows the social property of FAR. If D_P is fixed, FAR is in direct proportion to S_{LP}, and vice versa. Hence, in the redevelopment of the old city proper, if the population density remains unchanged, FAR will have to be increased: alternatively if FAR remains unchanged, some residents will have to move out of the blocks.

If we include the indicators which are related to the quality of environment in the formula, FAR can be described as follows:

$$\mathrm{FAR} = \frac{S_B}{S_L} = \frac{S_{NB} \cdot N}{S_L} = D_C \cdot N = (1 - R_G - S_P - R_O) \cdot N$$

where S_{NB} is net building area, N is average number of building's floor levels, D_C is construction density, R_G is the ratio of green space, S_P is parking coverage and R_O is the ratio of open space. This equation shows the environmental property of FAR. If D_C is fixed, FAR is in direct proportion to N; if N is fixed, FAR is in direct proportion to D_C, and in inverse proportion to R_G, S_P and R_O. Hence, in the redevelopment of the old city proper, if FAR is high, open space and public facilities such as parking space will decrease, and vice versa.

In today's Beijing, the supply of land is becoming tighter, while the population is becoming larger and the requirements for high quality environmental conditions are becoming higher. Therefore, FAR is becoming more and more conspicuous with its impact on social and environmental settings. The determination of FAR will thus be restricted by the need to find a balance between the pursuit of revenue for the improvement of society and the environment, and the pursuit of revenue for purely economic purposes.

As mentioned in Chap. 3, from the standpoint of Microeconomics, the properties of FAR in relation to social and environmental aspects can be regarded as external

effects or externalities (Maddala and Miller 1989: 530–535), whose costs are external costs. The costs for real estate development can be regarded as private effects, whose costs are private costs. A combination of private and external costs is known as social cost. According to the Microeconomics theory, the social cost is the total of all the costs associated with an economic activity, and includes both those costs borne by the economic agent and those borne by society at large. Thus we can write

$$\mathrm{MSC} = \mathrm{MPC} + \mathrm{MEC}$$

where MSC is marginal social cost, MPC is marginal private cost and MEC is marginal external cost. As shown in Fig. 5.12a, the typical MPC curve is in the shape of a U. Since MSC is equal to MPC plus MEC, MSC rises faster than MPC, i.e. the gap between MSC and MPC will be larger and larger with the increase in FAR. Since we are assuming that there are no externalities in housing demand, the demand curve (DD), therefore, represents the MR completely (Maddala and Miller 1989: 530–535). Generally speaking, it goes downward with the increase in intensity of real estate development.

If there were no restrictions on FAR—in other words, if the social cost was not taken into account—real estate developers would always try to increase their development intensity to the point where MPC equals MR; then the optimum FAR would be F_2. If, however, the social cost is taken into account—in other words, if there are restrictions on FAR—the optimum FAR is F_{opt}, which should be somewhere between $[F_1, F_2]$.

As shown in Fig. 5.12b, when demand in a real estate market is high, the slope of the DD curve will flatten out and the risk for real estate developers will be low. In order to make more profit, they will increase the development intensity as much as they can. In this situation, if there were no controls on FAR, FAR would approach F_2. When public demand for environment with high quality increases, external costs will merge into private costs, and the MPC curve will move closer to the MSC curve. In this situation, the intensity of real estate development will be reduced, and social value and private value will be close to each other, so FAR will approach F_{opt}.

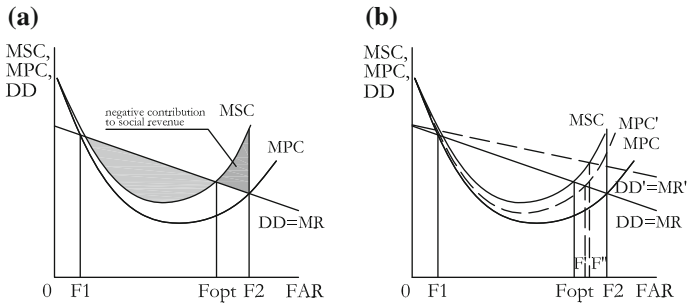

Fig. 5.12 **a** MSC curve, MPC curve and MR. **b** The optimum FAR changes with changes in DD and MPC. *Source* Drawn by author

It is necessary to point out that the definitions of social costs and social revenues should be determined by the entire society, not by a single person or group. In practice, however, developers actually are able to calculate exactly their monetary losses caused by the restrictions on FAR. As for social costs, there is no way to calculate exactly in currency terms with the changes of FAR, and it is thus difficult to judge the optimal FAR under which social benefits are maximized. Therefore, taking social costs into consideration, governments usually set mandatory restrictions on FAR, such as zoning regulations, which are adopted by many cities over the world. In the case of Beijing, with the aim of protecting Beijing's traditional cityscape, the municipal government set restrictions on FAR in the master plan of the city, which we examined in Chap. 4 (see Fig. 4.10). These restrictions, however, have subsequently come into significant conflict with the intensive demand for the land in Beijing's old city proper, and have therefore been unable to take effect. In the following section, I shall analyze this conflict by making an estimate of the impact of FAR on the profits of urban redevelopment in Beijing's Old City.

5.2 Problems with Beijing's Monocentric Urban Structure

5.2.1 *Estimate of the Impact of FAR on Profits of the Redevelopment*

In this section, I shall make use of Beijing's benchmark land price system to make an estimate of the impact of FAR on the profits of urban redevelopment in Beijing's Old City. Benchmark land prices were introduced into China along with the opening of urban land market. Beijing's municipal government issued the benchmark land price system of the city for the first time in 1993. According to the *Regulation of Urban Land Evaluation* issued by China's land management department (Wang et al. 1999), benchmark land prices are the average values of urban lands in various locations and with various functions. They are appraised based on the land prices in practical transaction, and therefore represent the overall level of the urban land prices of a city as well as the overall distribution of these prices within its urban space (Ouyang 1996). They can be used by governments to determine land taxes and also in macro control of the urban land prices of a city (Wang et al. 1999). Beijing's benchmark land prices take the form of a "floor land price", and therefore it is necessary to introduce the concept of the floor land price in order to make the estimate.

Unlike the land price, which is the land costs paid for per unit of land area, the floor land price is the land costs paid for a unit of floor area. We can describe this as

$$P_{\mathrm{FL}} = \frac{P_{\mathrm{L}} \times S_{\mathrm{L}}}{S_{\mathrm{B}}}$$

where P_{FL} is the floor land price, P_{L} is the land price, S_{L} is the size of the lot area and S_{B} is the floor area of all buildings on the lot. Since $S_B = \mathrm{FAR} \times S_L$, thus we have

$$P_{\mathrm{FL}} = \frac{P_{\mathrm{L}}}{\mathrm{FAR}}$$

So it can be seen that the floor land price equals the land price divided by FAR.

We knew from the previous sections that the profits of real estate projects are strongly related to its FAR. Therefore, in big cities like Beijing, where land resources are scarce, real estate developers, when operating a housing project, normally are not only concerned about the amount of lot area they could get, but also, or are even more concerned about the amount of floor area they would be allowed to build, i.e. considered the FAR more important than the lot area. While land prices indicate the land costs that a developer would pay for a unit of land area, floor land prices indicate the land costs that developers would pay for a unit of floor area. The latter reflects more clearly the costs that developers would pay for FAR than the former, and thus reflects more accurately and directly the influence of FAR on land values than the former as well. Therefore, in Beijing, the government issued the benchmark land prices in the form of a floor land price (see Table 5.2). Moreover, in recent years, many Chinese cities, particularly the big ones, have gradually set floor land price as the indicator of the benchmark land prices of those cities (Wang et al. 2004; Wang 2001).

Within Beijing's benchmark land price system, land sort—in terms of land location—has been divided into 10 categories, from the highest level (1) to the lowest level (10), and the land function has four divisions, which range through commercial building, high-grade house, normal house to industrial building.[2]

The land rent shown in Table 5.2 is the price with a FAR equal to 1. If FAR exceeds 1, it should be emended by the FAR emendable coefficient (k_1) (Table 5.3). Consider this in terms of the formula:

$$P_{\mathrm{FL}} = A \times k_1/\mathrm{FAR} + B + C + D \times k_2 + E(\mathrm{or}F)$$

where P_{FL} is the floor land price, k_1 is the FAR emendable coefficient and k_2 is the emendable coefficient for relocation.

[2]In 2002, Beijing's benchmark land price system was revised for the first time. The land rent for each "Land Sort" was almost the same as it was in 1993, the land areas with higher "Land Rent" in the old city proper, however, were extended extremely. As for the reason why the "Land Rent" did not change greatly with the rapid rise of actual land prices, the government explained that the "Land Rent" set up in 1993 was some higher than the actual land transactions due to the shortage of historical transaction data when China just opened its urban land market in 1992. The most significant changes within the revised benchmark land price system in 2002, therefore, found expression in the changes in "Land Sort", which means, along with the rapid rise of land prices, many urban areas have transferred from "Land Sort" with lower "Land Rent" to the one with higher "Land Rent".

Table 5.2 The benchmark land price of Beijing (unit: Yuan/m^2)

Land Sort	Land Rent				Costs for Infrastructure and Utilities		Costs for Land Development		
	Commercial building	High-grade house	Normal house	Industrial building	Urban infrastructure and public utilities	Community utilities	Relocation fee	Land requisition fee in inner suburbs	Land requisition fee in outer suburbs
	A	A	A	A	B	C	D	E	F
1	3200–5400	3000–4600	2000–2700	320–540	460–800	150–400	5900–7800	150–450	
2	2400–3200	2200–3000	1500–2000	240–320	460–800	150–400	5900–7800	150–450	
3	2000–2400	1800–2200	1000–1500	180–240	460–800	150–400	5900–7800	150–450	
4	1500–2000	1400–1800	800–1000	140–180	460–800	150–400	5900–7800	150–450	
5	1000–1500	1000–1400	600–800	100–140	460–800	150–400	5900–7800	150–450	
6	500–1000	500–1000	400–600	70–100	460–800	150–400	5900–7800	150–450	75–180
7	400–500	300–500	150–400	30–70	460–800	150–400	5900–7800	150–450	75–180
8	70–400	70–300	50–150	25–30	460–800	150–400			75–180
9	50–70	40–70	30–50	20–25	460–800	150–400			75–180
10	40–50	30–40	20–30	15–20	460–800	150–400			75–180

Source Made by author based on data from Bao and Wang (1995)

Table 5.3 The FAR emendable coefficient, 1993

FAR	1 or <1	2	3	4	5	6	7	8	9	10
Emendable coefficient (k_1)	1.00	1.91	2.74	3.50	4.20	4.90	5.60	6.30	7.00	7.70

Source Made by author based on data from Bao and Wang (1995)

Table 5.4 An estimation of the impact of FAR on the profits of the real estate developer in the case of Xicheng District in the old city proper (unit: Yuan/m^2)

Item	FAR	1	1.2	1.5	1.8	2	2.5	3	4
Land costs	Land rent	2100	2083	2044	2018	2006	1957	1918	1838
	Urban infrastructure and public utilities	630	630	630	630	630	630	630	630
	Community utilities	275	275	275	275	275	275	275	275
	Land requisition and relocation	7800	6500	5200	4333	3900	3120	2600	1950
Subtotal of land costs		10,805	9488	8151	7256	6811	5982	5423	4693
Construction costs		1825	1725	1625	1525	1525	1625	1825	2025
Taxes and fees		340	340	340	340	340	340	340	340
Interest on loan		200	200	200	200	200	200	200	200
Total costs		13,170	11,753	10,316	9321	8876	8147	7788	7258
House price		11,000	11,000	11,000	11,000	11,000	11,000	11,000	11,000
Profits		−2170	−753	685	1679	2124	2853	3212	3742
Profit margin (%)			−6.41	6.64	18.01	23.93	35.02	41.24	51.56

Source Made by author based on investigation

Here, using Beijing's benchmark land prices, let us do a rough estimate of the impact of FAR on the profits of a redevelopment project (see Table 5.4). Let us assume that a traditional residential neighbourhood in Xicheng District, one of the four districts in Beijing's old city proper, could be reconstructed. According to real estate statistics (BREIN 2004), Xicheng District is the district with the highest housing price of the city proper, where the average housing price is 11,000 Yuan/m^2 in 2003. In Beijing's benchmark land price system, land of Xicheng District in the city centre ranks as level 1 and the rest of the land in this district ranks level 2. If the land were to be used for a normal house, from Table 5.2 we can take 2100 Yuan/m^2, the median price of level 1 and level 2, as the cost of the lend rent, and the median prices of 630 and 275 Yuan/m^2 as the cost of the urban infrastructure and public utilities, and the cost of community utilities. Considering that Xicheng District is the district with the highest housing price of the city, we may take 7800 Yuan/m^2, the highest cost, as the relocation fee. Let us assume that, in this estimate, FAR is between 1 and 4, and the FAR emendable coefficient (k_1)

can be found in Table 5.3. The FAR of a district made up of courtyard houses is about 0.7, and if there are a few multi-storey buildings existing in the district as well, the FAR could be assumed as 1. The emendable coefficient for the relocation fee results from the FAR before and after reconstruction.

In order to simplify the estimation, let us assume that the emendable coefficient for the relocation fee (k_2) is equal to the FAR after reconstruction divided by the FAR before reconstruction. According to the relevant statistics (BREIN 2004), average construction costs are 1625 Yuan/m^2. We already knew in the previous discussion that the construction costs per square metre would decrease at first and then tend to increase along with increase in FAR. Thus, after a reasonable readjustment, we have the "Construction Costs" for each FAR from 1 to 4. Because the "Taxes and Fees" and "Interest on Loans" have not changed much since the mid 1990s, we may take 340 and 200[3] Yuan/m^2 for them from Table 5.1. After calculation, we can obtain the TC of real estate development in Xicheng District. As we already knew that the average housing price in this district is 11,000 Yuan/m^2, then we can calculate the profits and profit margin for the real estate developer.

Table 5.4 shows that if the FAR for a real estate project in Xicheng District is smaller than 1.5, the real estate developer will obtain no profit. In my investigation on costs of benefits of the redevelopment projects in Beijing's Old City (see Sect. 5.5 Case Studies), several developers admitted privately that the average profit margin of Beijing's housing market was typically above 20 %, higher than in other Chinese cities. The developers thus pursue an FAR about 2. In the same way, we can take Xuanwu District as an example of another similar estimate. In contrast with Xicheng District, Xuanwu is a district with the lowest housing price (6500 Yuan/m^2) in the old city proper. Its land ranks as level 3 in the benchmark land price system. After calculation, we may conclude that if the FAR for a real estate project in Xuanwu District is smaller than 3, the real estate developer will obtain no profit.

The maximum FAR of a residential district is constrained by many factors, of which the natural conditions—mainly sunlight[4]—is the most important one (see Mass and MVRDV 1998: 195–213). In the case of Beijing, according to my experience as an architect there, for a redevelopment project in the old city proper, a project with FAR at 2 means that all the old courtyard houses would have to be demolished and replaced by buildings with 8–12 storeys. As for a project with FAR at 3, this means that all buildings in the project must be buildings with 12–22 storeys. Niujie, a redevelopment project located in Xuanwu District, which was discussed in the previous sections, is a good example of this kind of situation. After redevelopment, most of its areas were filled up with tower flats with about 18 storeys, and its FAR reached 2.56. There is no doubt that these kinds of

[3]Because Guanyuan project get financial support form bank, the loan interest for it is much lower than that for Xi Diaoyutai project. However, not all redevelopment projects can get this kind of support. I therefore take 200 Yuan/m^2 as the loan interest into this estimation.

[4]The minimum time of direct sunlight on a building's facade everyday.

redevelopment projects would cause much damage to the traditional cityscape of Beijing's Old City. With a further examination into the "Subtotal of Land Costs" in Table 5.4, it can be seen that the substantial decrease in land costs with the corresponding increase in FAR was the main factor that shifted the developers from making no profits to making significant profits. In other words, the high price of land in the old city proper is the main factor which spurs developers to increase FAR, and accordingly, bring damages to Beijing's Old City.

5.2.2 *Conflict Between Protecting Beijing's Old City and Its Monocentric Urban Structure*

The high land costs in the old city proper reflect the intense competition for urban land. This competition has become extremely serious due to the monocentric urban structure of the city. From Beijing's benchmark land price system it can be seen that, within this urban structure, the whole city takes the old city proper as its only centre. The closer a plot of land is to the city centre, the higher the level of its land sort, and the higher its consequent price (see Fig. 5.13). In 2002, Beijing's benchmark land price system was revised. The distribution of land sorts was

Fig. 5.13 The distribution of the land sorts in Beijing's benchmark land price system, 2003. (The map shows only the land sorts from 1 to 7. The land sorts from 8 to 10 are located in the outer suburbs or counties.) *Source* Drawn by author based on data from BMBLH (2003)

basically the same as it was in 1993. The land areas with high price levels in the old city proper, however, were extended. This meant that the heavy demand for the land in the old city proper increased.

In a monocentric urban structure, no matter how far the urban area extends, the land supply of the city centre will always be limited. Furthermore, the extension of the urban area may conversely create further shortages of space in the central area as its relative accessibility increases. For example, the downtown of the city centre, with the extension of the urban area outwards, has had to extend its services to more people than before. Thus, its land price keeps rising. This leads to further shortages of land in the city centre, and makes it more difficult to restrict the construction of high-rise buildings.

The urban land market theory, reviewed in Chap. 3, tells us that urban land is not a homogenous resource. Some kinds of land are more profitable than others, where rents can rise because of differences in fertility or location. Differences in fertility are reflected in marginal productivity and therefore in a demand for different kinds of land. Usually commerce, finance and service industries can easily be found in a city centre, and certainly the rents they pay are likely to be the highest ones in the city. "Land is always used to yield its highest current income, for its 'highest and best use'" (Evans 2004: 81). Under such conditions, the urban structure of a city is gradually established through the shift in different uses of land, with commercial and financial land located in the city centre, surrounded by land used for residential and industrial purposes (Barlowe 1978: 186). Normally, land prices decline as one moves from the city centre to the outer areas, and the city centre is the site of the highest buildings with the maximum FAR. However, in the case of Beijing, both the FAR of the old city proper, formed in the past, and the FAR designed in the master plan of the city for the future, diverge from the above-mentioned rule.

As for protecting the traditional cityscape of Beijing's Old City, the crucial element is to restrict the height of buildings so as to keep the traditional "bowl-shaped" skyline as shown in Fig. 4.9. Here, however, an unavoidable problem emerges. From Fig. 5.14, it can be seen that such a restrictive measure, because it acts against the general rule governing the urban structure for a city centre,

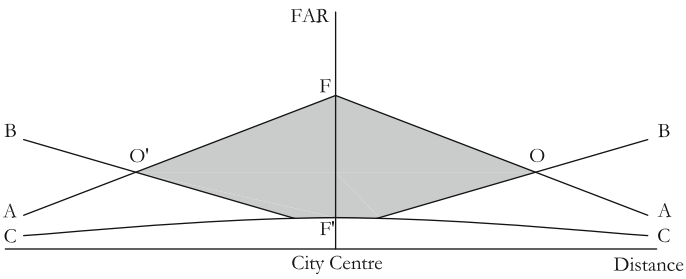

Fig. 5.14 FAR curves and distance from city centre. AFA is the ordinary FAR curve for most cities; BF′B is the FAR curve indicated in the Master Plan of Beijing; CF′C is the FAR curve of Beijing's Old City formed in the past; the shadow area of FOF′O′ shows the loss of the "opportunities for making profits" due to the restrictions on FAR. *Source* Drawn by author

prevents the old city proper from containing its high density of buildings, and thus gives rise to a serious conflict between the conservation of the Old City and the intensive demands for land there. It is the "opportunities for making profits", shown as the shadow area in Fig. 5.14, that has driven a number of real estate developers, and even the government, to encroach on the old city proper, block by block, thus constituting a serious menace to the traditional cityscape of Beijing.

5.3 Establishing a Polycentric Urban Structure

5.3.1 Proposal of a Polycentric Urban Structure for Beijing

Due to its monocentric structure, Beijing concentrates many urban functions into its old city proper. According to one relevant study (Hou 2005), although the old city proper occupies only 8 % of the area of the city as a whole, because of the multiple urban functions which it performs, over 50 % of the traffic and commercial activities of the whole city is concentrated within it. The competition for land there has caused serious conflict between the conservation of the Old City and the intensive demand for land there. This, in turn, renders most of the protective statutes and regulations issued by the government ineffective. To settle this essential conflict at its root, one could replace the monocentric urban structure by a polycentric one in order to decentralize the functions that the Old City performs, and thus release the pressure on land within the old city proper.

In this section, I shall offer a proposal of a feasible pattern of a polycentric urban structure for Beijing. This polycentric urban structure would be made up of four new city centres in a series to the north and the east of the old city proper (see Fig. 5.15). Three of them, as the subcentres of the city, are already being built. The Central Business District (CBD) to the east of the old city proper has been under construction since 2000. With a land area of 4 km^2 and a floor space of 10 million square metres, the new CBD could be one of the new city centres within the polycentric urban structure. The Olympic Sport Centre for 2008, at the north of the city, could be further developed to become another new city centre designed to offer not only sports facilities but also services connected with conferences and exhibitions. Zhongguancun High-tech Research Centre at the northwest of the city could be further developed to become a new city centre supplying facilities for high-tech industries. Apart from the above three centres, which would be developed from the existing subcentres of the city, I would suggest a new one: a Second Administrative Centre. This would be the key point in forming the polycentric urban structure of the city. I shall discuss this Second Administrative Centre under four aspects: the function which could perform, the scale which might be suitable, its possible location and whether Beijing could afford for it.

The Second Administrative Centre should absorb most of the administrative functions that the Old City currently performs. As mentioned in Chap. 3, the Old City

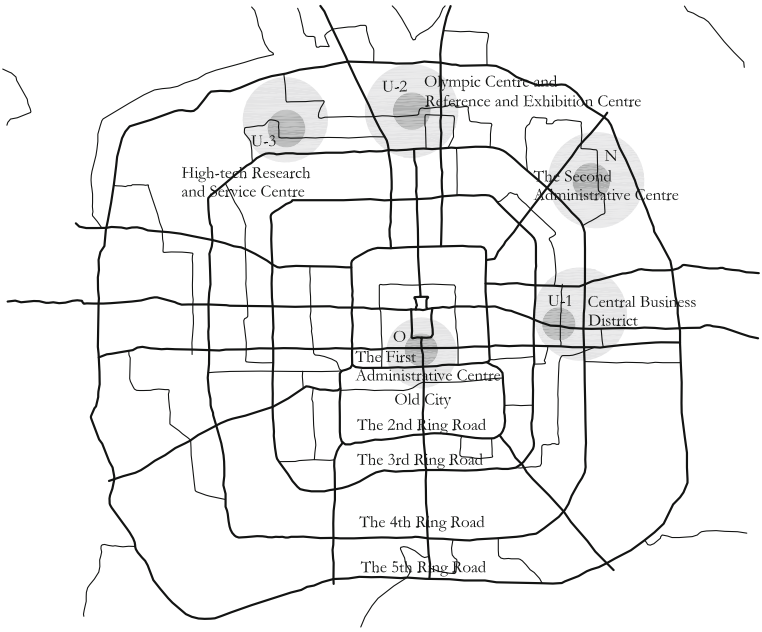

Fig. 5.15 A proposal of polycentric urban structure for Beijing. *Source* Drawn by author

was designated as the administrative centre in the 1950s after the People's Republic of China was founded. Since then, apart from some branches in the inner suburbs, most of the national and municipal government agencies were located within the old city proper. In order to decentralize the urban functions that the Old City performs, most of the government agencies, apart from those concerned with the highest national administrations, should be moved out of the old city proper. I suggest that a Second Administrative Centre should be built outside the old city proper.

As for the scale of the Second Administrative Centre, besides its current population, it should have the capacity to accommodate a population greater by some hundreds of thousands. The old city proper accommodated 2.3 million people in 2004. According to the master plan of the city, the municipal government wished to cut the resident population in the old city proper to 1.1 million by 2020 (Hou 2005)—that is to say, more than one million residents would have to move out over the next 15 years. The Second Administrative Centre, besides the administrative functions it would perform, should fill the important role of reducing the population density of the old city proper. Meanwhile, moving the government agencies to the Second Administrative Centre would help to improve the urban infrastructure of this new city centre, and would thus increase its attraction to the population in the old city proper.

The location of the Second Administrative Centre should be at some distance from the old city proper but not as far as a satellite town. Because of land limitation within the Fourth Ring Road, the only two potential options would be either the

area outside the Fourth Ring Road or the area outside the Fifth Ring Road. The Fourth Ring Road is 8–9 km away from the old city proper, and the Fifth Ring Road is 10–15 km away from it. Due to the relative proximity, the first option has the advantage of attracting the residents from the Old City. Its disadvantage is that its scale would be limited because of the relative shortage of land supply in this area. The opposite is true for the second option. The second location would therefore be less able to effectively perform the functions of a Second Administrative Centre and might thus turn into a satellite town. In addition, a convenient traffic connection between the city centres would also be an important factor to be taken into account for the location of an additional city centre. Apart from the Second Administrative Centre, the other city centres would be developed on the conditions of their status quo. Therefore, the ideal location for the Second Administrative Centre would to be the northeast of the city between the fourth and fifth ring roads. With the Second Administrative Centre at this location, a "corridor" composed of several new city centres along the fourth and fifth ring roads to the east and north of the city would then come into being. In addition to the current fourth and fifth ring roads, more convenient high-speed traffic systems, such as an underpass, could be constructed between these future city centres in order to help this "corridor" to link up them more efficiently.

This polycentric urban structure would likely have a positive effect on Beijing's Old City. It would decentralize the functions to the new city centres, reduce the burden on the infrastructure in the old city proper and improve the living conditions of the traditional residential districts. In Fig. 5.14, we concluded that the "shadow area" determined by the lines scribed FOF′O′ illustrated those "opportunities for making profits" from real estate development which have driven developers to redevelop the old city proper. From Fig. 5.16 it can be seen that establishing a new city centre away from the old city proper would efficiently reduce this "shadow area". In other words, it would reduce the economic force which drives developers, and would thus alleviate the heavy demand for the land within the old city proper. This is essential for the protection of the Old City. As the new city centres would not, like satellite towns, be far away from the Old City, the demand for land within

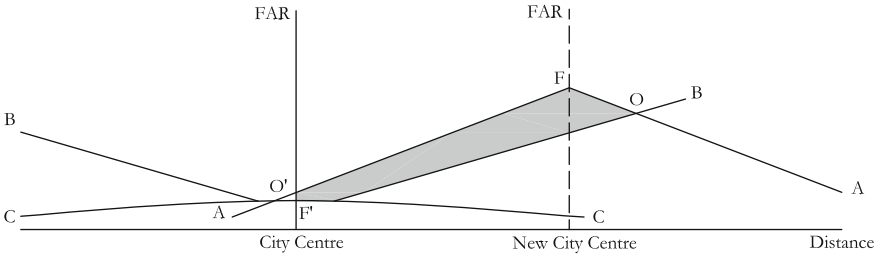

Fig. 5.16 FAR curves in the polycentric urban structure. AFA is the FAR curve for the new city centre; BF′B is the FAR curve for protecting Beijing's Old City; CF′C is the FAR curve of Beijing's Old City formed in the past; the shadow area of FOF′O′ shows the loss of "opportunities for making profits". *Source* Drawn by author

the old city proper would be maintained at a certain level. This would benefit the redevelopment of the old city proper and prevent it from falling into decline.

But how much would establishing an additional city centre cost? Here I will construct a rough estimate of the costs of establishing a Second Administrative Centre for the city. For simplicity, I will limit the estimate to cover only the costs for residential housing. According to Beijing's current benchmark land price system, the cost of land in the area of the Second Administrative Centre ranks at level 4. After turning this area into one of the city centres, the land costs would rise. Assuming that its benchmark land price would then rise to level 2, I use the median land rent for level 3, i.e. 1250 Yuan/m^2, for this estimate. In addition, I assume that the future FAR in this area would be 3, that is, most of the houses would be buildings with 12–18 storeys. From relevant statistics (BMBS 2001, 2002–2006), it can be seen that since the mid 1990s, the average construction costs of residential housing in Beijing have not changed very much, swinging between 1550 and 1700 Yuan/m^2. Taking 1700 Yuan/m^2 as the construction costs, total cost per square metre for residential housing in the Second Administrative Centre would be about 6800 Yuan/m^2. In 2004, average living space per capita in Beijing was 19 m^2 (BMBS 2005). If we assume that this figure would rise to 25 m^2 within the next 5–8 years, and furthermore, that half a million new residents would move to the Second Administrative Centre, the total living space needed in this area would be about 12.5 million square metres, and the TC of these houses would be about 85 billion Yuan.

According to the statistical yearbook (BMBS 2005), the total floor space of residential housing completed in Beijing in 2004 was 20.1 million square metres, which is nearly twice as much as the proposed living space in the future Second Administrative Centre. In addition, the investments in residential housing during that year were 77.6 billion Yuan, roughly similar to the TC of residential housing in the proposed Second Administrative Centre. This is, of course, a very rough estimate because I did not take into account any investments for urban infrastructure and public facilities. However, it still can be seen that it would be both reasonable and feasible for Beijing to establish a new Second Administrative Centre in the future perhaps within the next 5–8 years.

5.3.2 Criticism of the Master Plan of Beijing (2004–2020)

In 2005, the Master Plan of Beijing (2004–2020), newly revised by Beijing's municipal government from the 1993 version, was approved by the State Council of China. In this master plan, a "polycentric" scheme, comprising the "bi-axes, bi-wings and polycentres", was proposed (see Fig. 5.17).

According to this plan, the so-called "bi-axes" are the historic central axis of the Old City which runs from south to north, which we mentioned in Chap. 4, and the axis of Chang'an Avenue, a street running from east to west, which has been built since the 1950s and contains many government agencies. Numerous "subcentres"

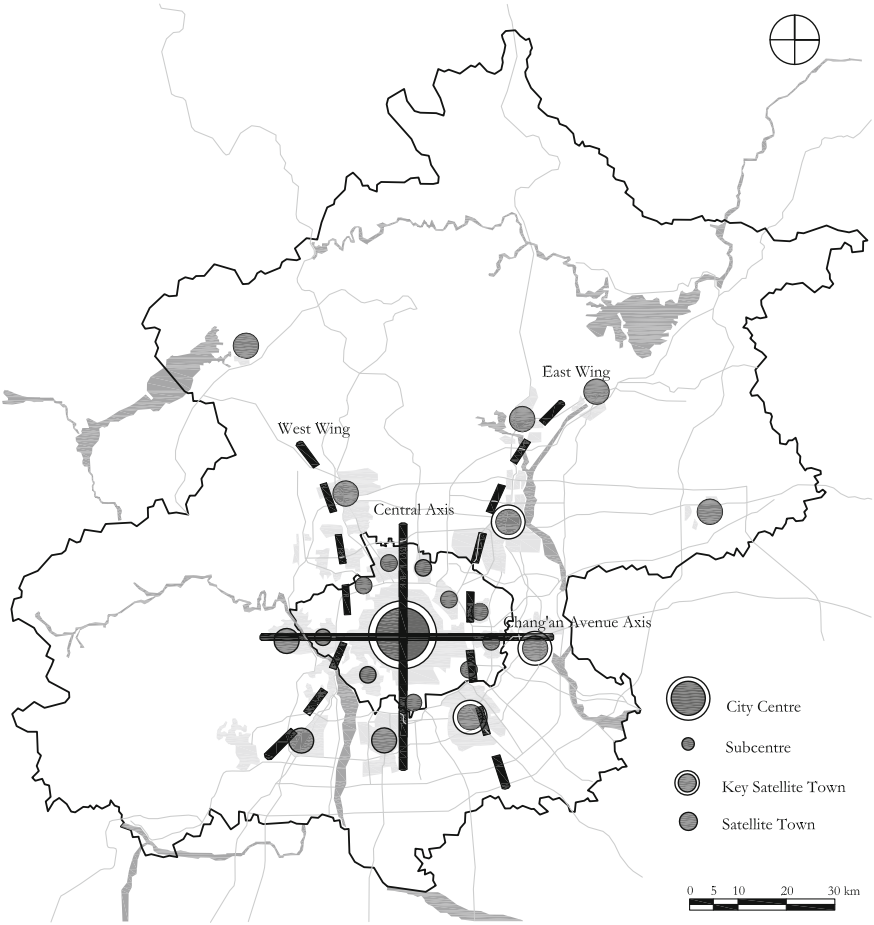

Fig. 5.17 The "bi-axes, bi-wings and multicentres" proposed in the Master Plan of Beijing (2004–2020). *Source* redrawn by author based on data from (BMG 2005)

are distributed on the "bi-axes" or around the suburbs of the city. The "bi-wings" are the "eastern development wing" and the "western development wing". Both of these consist of several "key satellite towns" and "satellite towns". It was said that this scheme would transfer Beijing's "homocentric" structure into a "polycentric" one, and thus would be of advantage in reducing the pressure on Beijing's Old City (EDBPR 2005). However, this "polycentric" scheme is clearly different from the one I suggested in the previous section. I do not think it would have any significant effect on reducing land competition in the old city proper, and thus on the protection of Beijing's Old City. This "polycentric" scheme manifests its problems in the following two ways.

First, in this "polycentric" scheme, whether the "subcentres" or the "satellite towns", all are deployed either on the axes or symmetrically around the old city proper. The Old City remains as the centre of the city, and its central position would actually be further strengthened, rather than weakened, by these "subcentres" and "satellite towns". Beijing's current monocentric urban structure, therefore, would not be fundamentally changed. Second, in this "polycentric" scheme, there is no any "subcentre" proposed to perform the administrative function in particular. The Old City remains the only administrative centre of the city. As discussed in the previous section, moving the administrative functions out of the old city proper would be the key to decentralizing the functions that the Old City performs, Beijing's Municipal Committee of Urban Planning, however, has a different opinion. Its head has announced that the relocation of the administrative centre will not be incorporated into the master plan of the city at the moment (Shen 2005). Therefore, it is clear that this "polycentric" scheme, because it still takes the Old City as its centre, would engender no fundamental change to Beijing's current monocentric urban structure.

5.4 Conclusion

After China shifted to the market economy, especially with the opening of the urban land market in 1992, economic profits have become the main driving force for urban development. The redevelopment of Beijing's Old City was carried out against this background.

During the redevelopment of Beijing's Old City, in order to maximize economic profits, real estate developers usually operated their projects by the means of enlarging the scale of the development area, which caused many of the traditional residential districts to be demolished completely, and enhancing FAR, which caused more and more high-rise towers or blocks of buildings to be squashed into the old city proper.

Although Beijing's municipal government has set restrictions on FAR in its master plan for the city, my analysis shows that there was a serious conflict between

the restrictions on FAR and the intensive land demands in the old city proper. Furthermore, due to the monocentric urban structure which takes the old city proper as the only centre of the city, the competition for land resulted in land costs in the old city proper to be much higher than those in the suburbs. This spurred the developers to break the government's restrictions on FAR in the master plan of the city. Under the increasing influence of the global economy in recent years, the competition for land within the old city proper has become more serious than ever before, and the protection of Beijing's Old City is thus becoming more difficult.

In order to reduce the demands for land in the old city proper, the fundamental answer would be to establish a polycentric urban structure for the city, and thus decentralize the urban functions which the Old City performs. Within the polycentric urban structure proposed in this chapter, the Second Administrative Centre is a crucial one. Because of its location, a "corridor" with several city centres along the fourth and fifth ring roads could come into being. Furthermore, my rough economic estimate shows that it would be feasible for Beijing to establish a Second Administrative Centre in the near future. Nevertheless, the "polycentric" scheme in the Master Plan of Beijing (2004–2020) is clearly different from the one I suggested. It still took the Old City as the centre of the city and would thus be less effective in reducing competition for land within the old city proper. It would, therefore, offer no substantive help with protecting Beijing's Old City.

5.5 Case Studies: An Investigation into the Costs and Benefits of the Redevelopment Projects in Beijing's Old City Proper

The task of this investigation is to survey the costs and benefits of the redevelopment projects in Beijing's old city proper. The cases to be surveyed are the Guanyuan redevelopment project, whose developer is Beijing Xidu Real Estate Development Company, and the Xi Diaoyutai project, whose developer is Beijing Xisong Real Estate Company. The Guanyuan district is located at the west of the old city proper (Fig. 5.18). When I conducted this survey in July 2004, the project was under construction, but the relocation of the original residents was already complete. The relocation costs in this survey are derived from real data from the developer, and the costs for construction and installation refers to a feasibility analysis done by the Beijing Project Consulting Company for the developer. Due to business confidentiality, it is difficult to investigate the profits that developers make from redevelopment projects even after those projects are finished. In the case studies, I shall estimate the profits of the Guanyuan redevelopment project through a comparison with the house prices of similar projects nearby.

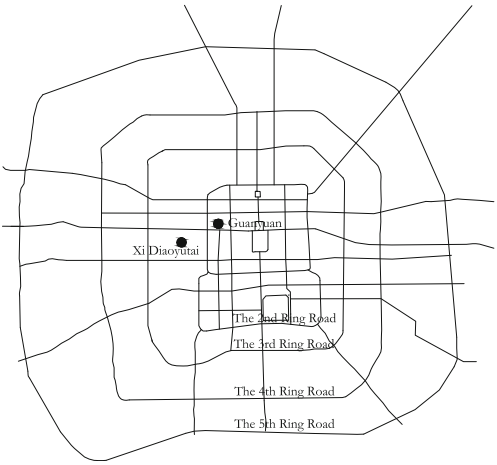

Fig. 5.18 Locations of Guanyuan district and Xi Diaoyutai district. *Source* Drawn by author based on investigation

5.5.1 Introduction of the Redevelopment Project

Guanyuan is a traditional residential district within the Xicheng District, one of the four districts of Beijing's Old City. Its edges are Pinganli West Street to the north, Shoubi Street to the south, the Second Ring Road to the west and Zhaodengyu Road to the east. The total land area of the Guanyuan project is 19.9 ha. Of which, 17 ha of the land are used for the project directly and 2.9 ha of the land are used for the infrastructure of the city. As early as 1993, the Government designated the area around Guanyuan as an "Old and Dilapidated Housing Redevelopment District" (ODHRD). After many years of redevelopment, this area has taken shape. The Guanyuan project is part of the whole redevelopment project, which has not finished yet.

The Guanyuan redevelopment project is composed of seven subprojects: new houses, apartments, new courtyard houses, service complex, primary school, central green space and roads reconstruction. They are presented in Table 5.5.

Table 5.5 Subprojects of the Guanyuan redevelopment project

Item	Land area (m^2)	Floor space (m^2)	Net FAR
New houses	21,000	47,800	2.28
Apartments	35,000	122,200	3.49
New courtyard houses	1200	1200	1.00
Service complex	5430	20,116	3.70
Primary school	9000	6150	0.68
Central green space	3800		
Roads reconstruction	58,000		

Source Made by author based on investigation

5.5.2 Costs of the Redevelopment Project

The TC of the Guanyuan redevelopment project include land rent, compensation to relocated residents, costs for construction and installation of buildings and roads, and other costs and fees.

The compensation for relocation to the residents of the Old City accounts for a large proportion of the TC of a redevelopment project. Table 5.6 shows the itemized relocation costs for one of the Guanyuan's subprojects of new houses. Because the Guanyuan district became an investment destination after Pinganli West Street was reconstructed, the Beijing Project Consulting Company, in its feasibility analysis, defined 5400 Yuan/m^2 as the benchmark land price of this district, and 1000 Yuan/m^2 as the benchmark house price. In addition, according to the quality of the houses to be dismantled and the FAR of the new buildings to be constructed, the FAR emendable coefficient was defined as 1.3, and the additional value of houses was defined as 800 Yuan/m^2. According to the municipal government's regulation, the compensation paid for moving household equipment amounts to 400 Yuan for air-conditioners, 235 Yuan for telephone lines and 350 Yuan for cable TVs. In order to encourage residents to move house as early as possible, developers normally gave 5000 Yuan to those families who moved ahead of the developer's schedule and 20,000 Yuan as a cooperation fee.

Table 5.6 sets out the relocation costs for one of the subprojects. As the relocation work of the original residents had been finished already when I carried out this investigation in 2004, I obtained the real relocation costs for each subproject, and I have presented these in Table 5.7. As can be seen, 1647 families and 10 work-units were relocated, and the relocation compensation amounted to about 657 million Yuan.

Since the project was under construction when I carried out this investigation, the data describing the construction costs and installation of the total redevelopment project and of each subproject refers to the feasibility analysis done by the consulting company, which is presented in Tables 5.8, 5.9, 5.10, 5.11, 5.12, 5.13, 5.14 and 5.15.

The TC of construction and installation for the development project are about 504 million Yuan (Table 5.8).

The roads to be reconstructed around the Guanyuan district are Xizhimen Nanxiaojie, Dayu Hutong and Shoubijie. The costs involve the construction of the roads, traffic facilities, roadside planting and lighting installations (Table 5.14).

The costs of the central green space involve the construction of gardens and green facilities (Table 5.15).

In addition to the relocation costs, land rents are an important proportion of land costs. As mentioned above, the benchmark land price and the FAR emendable coefficient are defined as 5400 Yuan/m^2 and 1.3, and the total floor area of the project is 97,466 m^2. The total land rents are therefore about 684 million Yuan.

Table 5.6 The relocation costs for new houses

Item		Floor space to be dismantled (m^2)	Families to be relocated	Unit price (Yuan/m^2)	Emendable coefficient	Total prices (Yuan)
Compensation for house	Benchmark lend rent	9430		5400		50,922,000
	FAR emendable coefficient				1.3	66,198,600
	Benchmark house price	9430		1000		9,430,000
	Additional value of house	9430		800		7,544,000
Subtotal of compensation for house						83,172,600
Compensation for move	Prize for move house ahead of schedule		469	5000		2,345,000
	Air-condition remove		469	400		187,600
	Telephone line remove		469	235		110,215
	TV cable remove		469	350		164,150
	Move house	9430		20		188,600
	Fee for cooperation		469	20,000		9,380,000
Subtotal of compensation for move						12,375,565
Payment for dismantlement work		9430		60		565,800
Other fees	Fee of house appraisal				1.0 %	831,726
	Fee of move service				1.2 %	1,146,578
Subtotal of other fees						1,978,304
Total						98,092,269

Source Made by author based on investigation

The other costs and fees involve costs for preconstruction (such as the costs for feasibility analysis, planning and design, insurance premium, and costs for supervision of construction), administration fees and preparative fees. Summing up the tables above, the TC of Guanyuan redevelopment project amount to about 1.9 billion Yuan (Table 5.16).

Table 5.7 The relocation costs of each subproject in the Guanyuan project

Item		Households to be relocated	Work-units to be relocated	Floor space to be dismantled (m^2)	Relocation costs (Yuan)
New houses		469		9430	98,100,000
Apartments		699	6	12,250	109,000,000
New courtyard houses					11,600,000
Primary school		149		2008	22,200,000
Service complex		330	4	1148	42,760,000
Central green space					
Subtotal		1647	10	24,836	283,660,000
Roads reconstruction	Xizhimen Nanxiaojie				98,000,000
	Dayu Hutong				75,000,000
	Shoubijie				200,000,000
Total					656,660,000

Source Made by author based on investigation

Table 5.8 The total costs of construction and installation of Guanyuan redevelopment project

Item	Costs (Yuan)
New houses	79,766,000
Apartments	305,062,000
New courtyard houses	6,476,000
Service complex	59,807,400
Primary school	14,776,000
Central green space	380,000
Roads reconstruction	38,130,000
Total	504,397,400

Source Made by author based on investigation

5.5.3 *Profits of the Developer and the Affordability by the Original Residents*

Due to business confidentiality, it is difficult to learn the exact profits that developers make from real estate projects. Through comparison with house prices of other similar projects nearby, I shall estimate the profits that Beijing's Xidu Real Estate Company is probably making from the Guanyuan redevelopment project. I have surveyed seven residential properties near Guanyuan and eight official properties in the Xicheng District. These houses prices are presented in Tables 5.17 and 5.18.

The Guanyuan redevelopment project builds and sells New Houses, Apartments and New Courtyard Houses. Because a part of the Service Complex will be used as a service centre for the community, I am assuming that only half the floor area will be for sale. According to Tables 5.17 and 5.18, I assume 15,000 Yuan/m^2 as the

Table 5.9 The costs of construction and installation for the new houses

Item		Floor area (m^2)	Unit cost (Yuan/m^2)	Costs (Yuan)
Costs for construction and installation	Structure	47,800	810	38,718,000
	Decoration	47,800	300	14,340,000
	Water supply and sewerage Work	47,800	60	2,868,000
	Lighting and power supply	47,800	130	6,214,000
	Light-current system	47,800	50	2,390,000
	Fire prevention system	47,800	50	2,390,000
	Central heating	47,800	30	1,434,000
	TV, telephone and network Structure	47,800	30	1,434,000
	Security device	47,800	10	478,000
	Elevator equipment	15	300,000	4,500,000
Subtotal costs for construction and installation				74,766,000
Costs for site construction				5,000,000
Total costs				79,766,000

Source Made by author based on investigation

Table 5.10 The costs of construction and installation for the apartments

Item		Floor area (m^2)	Unit cost (Yuan/m^2)	Costs (Yuan)
Costs for construction and installation	Structure	122,200	1000	122,200,000
	Decoration	122,200	800	97,760,000
	Water supply and sewerage work	122,200	100	12,220,000
	Lighting and power supply	122,200	130	15,886,000
	Light-current system	122,200	50	6,110,000
	Fire prevention system	122,200	50	6,110,000
	Central heating	122,200	30	3,666,000
	TV, telephone and network structure	122,200	30	3,666,000
	Security device	122,200	20	2,444,000
	Elevator equipment	50	400,000	20,000,000
Subtotal costs for construction and installation				290,062,000
Costs for site construction				15,000,000
Total costs				305,062,000

Source Made by author based on investigation

Table 5.11 The costs of construction and installation for the new courtyard houses

Item		Floor area (m^2)	Unit cost (Yuan/m^2)	Costs (Yuan)
Costs for construction and installation	Structure	1200	1000	1,200,000
	Decoration	1200	2000	2,400,000
	Water supply and sewerage Work	1200	80	96,000
	Lighting and power supply	1200	200	240,000
	Air-condition work	1200	250	300,000
	Light-current system	1200	50	60,000
	Fire prevention system	1200	50	60,000
	Central heating	1200	30	36,000
	TV, telephone and network Structure	1200	50	60,000
	Security device	1200	20	24,000
Subtotal costs for construction and installation				4,476,000
Costs for site construction				2,000,000
Total costs				6,476,000

Source Made by author based on investigation

Table 5.12 The costs of construction and installation for the service complex

Item		Floor area (m^2)	Unit cost (Yuan/m^2)	Costs (Yuan)
Costs for construction and installation	Structure	20,116	1000	20,116,000
	Decoration	20,116	800	16,092,800
	Water supply and sewerage work	20,116	80	1,609,280
	Lighting and power supply	20,116	200	4,023,200
	Air-condition work	20,116	300	6,034,800
	Light-current system	20,116	90	1,810,440
	Fire prevention system	20,116	80	1,609,280
	Central heating	20,116	30	603,480
	TV, telephone and network structure	20,116	50	1,005,800
	Security device	20,116	20	402,320
	Elevator equipment	3	500,000	1,500,000
Subtotal Costs for Construction and Installation				54,807,400
Costs for Site Construction				5,000,000
Total Costs				59,807,400

Source Made by author based on investigation

Table 5.13 The costs of construction and installation for the primary school

Item		Floor area (m^2)	Unit cost (Yuan/m^2)	Costs (Yuan)
Costs for construction and installation	Structure	6150	810	4,981,500
	Decoration	6150	300	1,845,000
	Water supply and sewerage Work	6150	60	369,000
	Lighting and power supply	6150	130	799,500
	Air-condition work	6150	250	1537,500
	Light-current system	6150	50	307,500
	Fire prevention system	6150	50	307,500
	Central heating	6150	30	184,500
	TV, telephone and network structure	6150	30	184,500
	Security device	6150	10	61,500
Subtotal costs for construction and installation				10,578,000
Costs for site construction	Basketball court	840	200	168,000
	Playing field	4100	300	1,230,000
	Others			2,800,000
Subtotal costs for site construction				4,198,000
Total costs				14,776,000

Source Made by author based on investigation

Table 5.14 The costs of roads reconstruction

Item	Length (m)	Width (m)	Land area (m^2)	Unit cost (Yuan/m^2)	Costs (Yuan)
Xizhimen Nanxiaojie	450	30	13,500	700	9,450,000
Dayu Hutong	750	15	11,250	872	9,820,000
Shoubijie	950	35	33,250	567	18,860,000
Total			58,000		38,130,000

Source Made by author based on investigation

Table 5.15 The construction costs of central green space

Item	Land area (m^2)	Unit cost (Yuan/m^2)	Costs (Yuan)
Central green space	3800	100	38,000

Source Made by author based on investigation

Table 5.16 The total costs of Guanyuan redevelopment project

Item	Costs (Yuan)	In proportion to total costs (%)
Costs for relocation	656,660,000	34.3
Land rent	684,000,000	35.8
Costs for construction and installation	504,397,400	26.4
The other costs	5,140,000	0.3
Reserve fee	62,100,000	3.2
Total costs	1,912,297,400	100

Source Made by author based on investigation

Table 5.17 House prices of the projects nearby Guanyuan district

Item	House prices (Yuan/m^2)
Kaiwei Qinqiba Apartment	7500
Bailing Apartment	7288
Jinguan Garden	9600
Guoyin Apartment	16,700
Guodian Zhongxin Garden	9600
Huifenyuan Apartment	9800
Yuyuan New Garden	7800

Source Made by author based on investigation

Table 5.18 House prices of the official properties in the west of Beijing's old city proper

Item	House prices (Yuan/m^2)
Guorun Complex	15,800
Zhidi Xinzuo Complex	17,600
Jinze Complex	17,000
Fukai Complex	17,500
Xihuan Plaza	15,000
Guoyin Number One	9750
Lihao Garden	12,500
Wuhua Complex	10,000

Source Made by author based on investigation

Table 5.19 Total sales of the Guanyuan redevelopment project

Item	Floor space (m^2)	Unit prices (Yuan/m^2)	Total prices (Yuan)
New houses	47,800	7500	358,500,000
Apartments	122,200	15,000	1,833,000,000
New courtyard houses	1200	250,000	300,000,000
Service complex	10,058	15,000	150,870,000
Total	181,258		2,642,370,000

Source Made by author based on investigation

unit prices of the Apartments and the Service (Office) Complex. Furthermore, in accordance with the average unit prices of new courtyard houses and normal new houses in Xicheng District, I assume 7500 Yuan/m^2 and 250,000 Yuan/m^2 as the unit prices of the New Houses and the New Courtyard Houses in Guanyuan project. This means that the TR of the redevelopment project will amount to about 2.6 billion Yuan (Table 5.19), and the developer's pre-tax profits will be about 730 million (=2642 million–1912 million) Yuan. After deducting the sales tax (5.5 % of the total sales) and income tax (33 % of the pre-tax profits), the profits from the project will amount to about 345 million Yuan, which means that the final profit margin is about 18 %.

Table 5.20 Costs and profits of Xi Diaoyutai project

Item		Floor space or land area (m^2)	Unit price (Yuan/m^2)	Total price (Yuan)	In proportion to total costs (%)
Costs of land	Land rent	262,200	305	80,000,000	
	Costs for relocation and fee for transferring of the project	262,200	2746	720,000,000	
Subtotal of costs of land		262,200	3,051	800,000,000	40.2
Costs for preconstruction	Consulting fee	262,200	5	1,340,000	
	Land preparation	262,200	10	430,000	
	Fee for design	262,200	70	18,350,000	
	Others	262,200	20	5,240,000	
Subtotal of costs for preconstruction		262,200	97	25,360,000	1.3
Costs of Construction and Installation	Houses	186,204	2600	484,130,000	
	High-grade decoration of houses	186,204	800	148,960,000	
	Apartments	44,663	2600	116,120,000	
	High-grade decoration of apartments	44,663	900	40,200,000	
	Public facilities	9960	2300	22,910,000	
	High-grade decoration of public facilities	9960	800	7,970,000	
	Underground garage	23,087	3200	73,880,000	
Subtotal of costs of construction and installation		262,200	3410	894,170,000	44.9
Costs for community utilities	Central green space	12,764	400	5,110,000	
	Infrastructure	262,000	300	78,660,000	
Subtotal of costs for community utilities		262,200	319	83,770,000	4.2
Other fees	Administration fee	262,200	103	27,050,000	
	Marketing expenses	262,200	320	83,860,000	
	Finance expenses	262,200	81	21,200,000	
Subtotal of the other fees		262,200	504	132,110,000	6.6
Contingencies		262,000	206	54,100,000	2.7
Total costs		262,200	7588	1,989,510,000	100

(continued)

Table 5.20 (continued)

Item		Floor space or land area (m^2)	Unit price (Yuan/m^2)	Total price (Yuan)	In proportion to total costs (%)
Total sales	Houses	157,753	12,000	1,893,040,000	
	Commercial buildings	15,445	15,000	231,680,000	
	Garage (with proprietary right)	35,261	150,000 Yuan/Parking Space	82,500,000	
	Garage (without proprietary right)		100,000 Yuan/Parking Space	35,000,000	
	Apartments	42,539	13,000	553,010,000	
Total sales		262,200	586	2,795,230,000	
Sales tax				153,750,000	
Income tax				215,150,000	
Profits				436,820,000	
Profit margin					22

Source Made by author based on investigation

In 2006, the Apartments were put on Beijing's housing market. Their unit price had increased from 15,000 Yuan/m^2 in June to 15,800 Yuan/m^2, in September. The profit margin therefore should actually be somewhat higher than 18 %. In my interviews with several developers, they admitted privately that the average profit margin of Beijing's housing market was typically above 20 %, higher than in other Chinese cities. This is why Beijing's real estate industry has showed such rapid development during these past tow decades. However, due to high land costs, limitations on the scale of projects and FAR, the profit margin of redevelopment projects within the old city proper has normally been lower than this average level. Moreover, since these redevelopment projects have usually lasted much longer (normally several years, or sometimes more than a decade) than projects in the suburbs, most of the developers, in order to make as much profit as they did in the suburbs, try to break those limitations as much as possible.

In addition to the Guanyuan redevelopment project, I visited the Planning Division of Beijing Xinsong Real Estate Company and investigated the Xi Diaoyutai project outside the old city proper. The Xi Diaoyutai district is located in the west of the city, between the Second Ring Road and the Third Ring Road (see Fig. 5.18). The data presented here refers to a feasibility analysis done by the developer himself. Here, I shall not attempt to explain every item in detail but will simply present the costs and profits of the project in Table 5.20. It can be seen that the land costs of the Xi Diaoyutai project are a lower proportion of the TC when compared with those of the Guanyuan redevelopment project, and that the profit margin in the Xi Diaoyutai project is higher than that in the Guanyuan project.

At the end of this section, I shall examine the degree to which the former residents of the old neighbourhoods of Beijing's old city proper are able to afford this new housing. As mentioned above, most of the residents in Beijing's traditional neighbourhoods consisted of disadvantaged groups or low-income families. Although they receive compensation for relocation, it is still difficult for them to return to their old neighbourhoods because of the high house prices after redevelopments. In the case of Guanyuan, the average living space per household is about 15–20 m^2, and the average compensation that households can receive is about 150,000 and 200,000 Yuan. However, after redevelopment, the total price of a house (not an apartment) with living space of 100 m^2 is at least 750,000 Yuan. Therefore, in addition to the compensation that they receive, the former residents will actually have to pay extra 550,000 Yuan in order to return to their old neighbourhoods. This is about 8–9 times as much as their annual household incomes, and much higher than 5, the marginal housing affordability ratio for Beijing's families.

5.5.4 Conclusion

In contrast to the real estate projects in Beijing's suburban areas, land costs account for the largest proportion of the TC of redevelopment projects in Beijing's old city proper. In the case of the Guanyuan redevelopment project, the land costs alone account for up to 70.1 % of the TC of the project (see Table 5.1). So after redevelopment, the high selling prices of the new houses have meant that most former residents of the old city proper cannot now afford to return in order to live once more in their old neighbourhoods.

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Part III
From Homogeneous Residence to Segregated Residence

In Part II, I analyzed the reasons for the decline of the courtyard house and the destructive effects of the redevelopment projects on Beijing's Old City. Based on the economic analysis of costs and benefits of the redevelopment projects in the old city proper, I concluded that the fundamental solution that would protect Beijing's Old City was to change Beijing's mono-centric urban structure into a polycentric one. In Part III, which consists of Chaps. 6–8, I shall focus on the transformation of Beijing's residential structure from a homogeneous type, which was under the planned economy, to a segregated type, which is now becoming under the market economy. While the discussion of Part II was mainly concerned with Beijing's urban spatial structure, that of Part III will shift to its urban social structure.

In addition to the traditional courtyard houses in the old city proper, a new type of residence, the "work-unit" compound, appeared in Beijing for the first time after the People's Republic of China was founded in 1949. "Work-unit" compounds were built up in the suburbs or squeezed into the old city proper and gradually became a new and important component of the city in the era of the planned economy. However, after 1979, when China gradually changed from a planned economy to a market economy, the urban housing reform began to encourage the development of the real estate industry, which gave rise not only to the large-scale redevelopment inside Beijing's old city proper, but also to the rapid housing development in the suburbs. The most significant result of this trend is that the residential structure of the city has gradually transformed from a homogeneous one to a segregated one.

In Part III, I shall, first of all, examine the origin of the "work-unit" compound and its homogeneous feature during the era of the planned economy (Chap. 6). Then, I shall discuss the development of new housing under the market economy and the associated trend toward residential segregation (Chap. 7). Finally, I shall analyze the problems with the "low-rent housing" and "affordable housing" schemes and suggest some solutions for improving the schemes and reducing the trend toward residential segregation (Chap. 8). The main thesis of Part III is that

the "work-unit" compound that developed under the planned economy no longer satisfies the demands placed on housing in the market economy. At the present time, household income is becoming the main cause of the residential segregation in Beijing. Beijing's "low-rent housing" and "affordable housing" schemes have failed to help low-income households with their housing problems. It is thus necessary for Beijing's municipal government to improve the housing security system in order to diminish the increasingly serious trend toward residential segregation.

Chapter 6
The Homogeneous Residence Under the Planned Economy

Abstract This chapter describes the features of the "work-unit" compound, the typical residence prevalent in Beijing during the era of the planned economy, and to analyze its problems after China changed to a market economy. It is argued that with the transformation to a market economy, the homogeneous lifestyle that characterized the "work-unit" compound has gradually disappeared, and the "work-unit" compound was no longer suit to the new housing demands of the urban residents.

Keywords Homogeneous residence · "work-unit" compound · "welfare-oriented housing system"

The main task of Chap. 6 is to describe the features of the "work-unit" compound, the typical residence prevalent in Beijing during the era of the planned economy, and to analyze its problems after China changed to a market economy. I shall first explain the origin of the "work-unit" compound, and then discuss the unique features of this homogeneous residence. Finally, I shall show the changes which have taken place in "work-unit" compound after China's housing reform in the 1990s. It will be argued that with the transformation to a market economy, the "work-unit" compound, the product of the "Welfare-oriented Housing System" (WHS), can no longer meet the emerging multifarious demands for housing today.

During the period of the planned economy, the "work-unit" system was the common mode of social organization in urban China, acting not only as the basic institution of employment for urban residents but also as the basic social structure for their lives. In the first section of this chapter I shall, therefore, begin with a brief introduction of this unique system under the planned economy in order to provide the reader a background for understanding of "work-unit" compound.

The "work-unit" compound was the concrete embodiment of the "work-unit" system in urban space. During the period of planned economy, besides the courtyard house, the "work-unit" compound was the main housing for urban residents in Beijing. In contrast to the courtyard house, which symbolized the traditional Chinese hierarchical society, the "work-unit" compound was characterized by its

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homogeneity. In the second section of this chapter, I shall analyze this homogeneous feature of the "work-unit" compound.

After China transformed from a planned economy to a market economy, especially with the urban housing reform in the 1990s, the homogeneous lifestyle that characterized the "work-unit" compound has gradually disappeared, and the "work-unit" compound was no longer suit to the new housing demands of the urban residents. In the final section of this chapter, I shall discuss China's housing reform and demonstrate the effect it had on Beijing's "work-unit" compound.

6.1 "Work-Unit" and the "Welfare-Oriented Housing System"

6.1.1 The Origin of the "Work-Unit" System

The "work-unit" (*Danwei* in Chinese) was the peculiar phenomenon that emerged in China's urban society during the period of the planned economy. Its peculiarity lay in the fact that the "work-unit" embraced a wide variety of social and administrative functions, quite apart from its basic function of providing employment (as its name implies). It contrasted quite sharply with employment institutions in the West, which are concerned with labour alone.

"Work-units" were usually classified into two types: enterprises, such as factories, and institutions, such as governmental organs and schools. Based on their affiliations, "work-units" were further divided into those belonging to the central government, those belonging to provincial and municipal governments, and those belonging to the community. According to their type of ownership, they fell into two categories: some were owned by the state and others by socialist collectives. The scale of "work-units" could vary from small to large, employing anywhere from ten to tens of thousands of people, and occupying an area from hundreds of square metres to dozens of square kilometres. In a big city, the number of "work-units" could reach thousands, or even tens of thousands (Cai 1996).

During the period of the planned economy, most of the employed residents in China's cities belonged to specific "work-units". Each employee was considered a "member of the work-unit" (Zhou 2000). When people met each other for the first time, the first bit of information they would exchange about each other would be the name of their "work-units", because in an urban society under the planned economy, one's "work-unit" was thought to be the most essential part of one's identity, even more important than one's occupation (Cai 1996).

The earliest "work-units" evolved from the various political, economic, social and cultural organizations, and institutions which were established by the Communist Party of China, and were gradually moulded and shaped by the long-term revolutionary practices undertaken during the years before the

establishment of People's Republic of China. Due to the difficulties experienced by the people during the revolution, such organizations and institutions had frequently to engage in self-sufficient agricultural production, apart from having their own specialized functions. Therefore, they were multi-functional from the very beginning. When the Communist Party took over the state government in 1949, these organizations and institutions formed the foundation for China's new "work-units".

After 1949, many new large-scale "work-units" tended to be built in accordance with the key construction projects of the country. For example, in the 1950s, the Capital Iron and Steel Company was established in the western suburbs of Beijing, and several textile mills were set up in the northern suburbs of the city (Fig. 6.1). The land they occupied came mostly from confiscated agricultural land, and the newcomers to the "work-units" comprised employees transferred from other units, students assigned there after graduation, and also peasants recruited from the nearby rural areas.

6.1.2 The "Welfare-Oriented Housing System"

"Work-units", whether they were factories, universities or research institutes, had, first of all, to perform specialized functions based on division of labour in society. These "work-units", however, were not purely specialized workplaces but social organizations with multiple functions. Although "work-units" could differ in their specialized functions, they were all entitled by the government to certain admin-

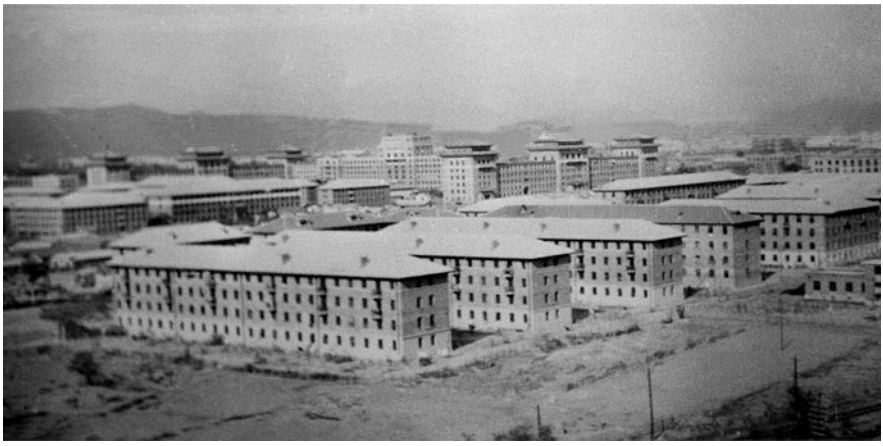

Fig. 6.1 "Work-Unit" compound appeared in the 1950s in Beijing's suburbs. *Soure* by courtesy of the Reference Room of the School of Architecture, Tsinghua University

istrative powers and could exercise administrative functions on its behalf. Thus, the "work-unit" was also a political organization, and served as part of the overall state political system. They, to some extent, "played the role of the government" (Ren 2002). Being the government's deputy, and therefore responsible for all kinds of social welfare and social services, the "work-unit" was normally equipped with welfare facilities. Thus, the "work-unit" also performed social functions and seemed like a minified society. As essential elements of urban society, these "work-unit" made the whole city rather like one big "work-unit".

As for the "members of a work-unit", any salaries and welfare provisions that employees received, such as housing, medical care expenses, pension and so on, came to them via their "work-units" (Yang 2003). The "work-unit" determined their occupation, consuming capacity, values and social status, and also made them dependent upon their "work-unit" completely. Meanwhile, since every "work-unit" was a fully functional and independent body, a well-integrated social cell, it was often closed to the outside world: the "member of the work-unit" depended little on external society. Given this peculiar social structure in China, which became known as the "work-unit system", it was said that "work-units run the society" (Hu 1995). In other words, the normal functions of society were grounded in these "work-units", and the social space outside their boundaries was fairly limited.

The income that an employee earned in the "work-unit" could be divided into two parts: one was the cash income paid in the form of salary, and the other was the allowances, also called the "welfare income", paid in the form of welfare provisions. Normally, once a person joined a "work-unit", he or she obtained an "iron rice bowl", from which he or she could obtain a guaranteed salary for living and a full-scale welfare package—housing, medical care, schooling for children and so forth—all at the expense of the state. Among the various social welfare provisions, the most important one was housing, which was distributed with a very low rent. This was done under the "Welfare-oriented Housing System" (WHS), an important feature of China's planned economy (Xu 1996). This system was characterized by two points that housing investment was completely controlled by the state and houses were available to employees as a kind of welfare, on payment of low rents.

The WHS was rooted on the idea of the "balance of the income distribution system" (Zhou 2000). During their working years, employee's "welfare income", was separate from their cash income. The "welfare income" was collected and retained by the state, and then allotted to the worker in the form of housing, medical care and so on, after long-term accumulation. Housing was the principal item in the "balance of the income distribution system"; in other words, housing was the biggest form of compensation that workers obtained in return for their contributions, perhaps over several decades or perhaps a lifetime, to the "work-unit". However, it should be pointed out that, under the WHS, what employees obtained was only the right to use their living guaranteed house: in other words, their house was not their property and could not be inherited or circulated in the market.

6.2 The Homogeneous Feature of the "Work-Unit" Compound

6.2.1 The Structure of the "Work-Unit" Compound

During the period of the planned economy, the "work-unit" was for most urban residents the only means by which they could obtain employment. Apart from those who lived in the courtyard houses, most of the residents lived in houses allotted by their "work-units", i.e. the "work-unit" compound.[1] Taking a retrospective view of its development, the "work-unit" compound came into being along with the development of "work-units" in Beijing after the founding of the People's Republic of China in 1949. At that time, a large number of "work-units", such as state administrative departments, scientific research institutes, colleges and universities, as well as military units, were established in Beijing or moved from other cities to it, the state transferred land to them for construction according to their sizes and levels. The "work-units" normally enclosed the land they obtained within boundary walls, and built the facilities inside.

A typical "work-unit" compound was composed of two parts: a working area and a living area. The former could also be divided into a production sector and an office sector, while the latter might be divided into a residential sector and a public service sector. The public service sector was often equipped with welfare facilities, such as staff canteen, public bathhouse, grocery store, and so on. A large-sized "work-unit" compound, furthermore, might provide the inhabitants with more welfare facilities, such as kindergarten, school, cinema and even playground and hospital. In such "work-unit" compounds, inhabitants were able to find almost all the resources they needed for their sustenance. As someone once joked, this kind of "work-unit" compound possessed everything except a crematorium (Qiao 2004) (Fig. 6.2).

Different "work-unit" compounds were of different scale and layout, but most of them were composed of similar elements, and as such showed common characteristics of spatial structure (see Fig. 6.3). In appearance, the typical feature of a "work-unit" compound was its entrance space. The entrance to a "work-unit" compound usually consisted of a gate, behind which lay the main building with an open or green space in front of it. All of these features attached a special and symbolic significance to the entrance space, which made people feel a sense of solemnity, the feeling that it could only be gazed upon from afar, especially by those who did not belong to the "work-unit". Comparing to the entrance, its walls could more inform of the most fundamental feature of the "work-unit" compounds.

[1]From 1958 on, especially during the "Great Culture Revolution" (1966–1976), many private courtyard houses were confiscated by the government (see Chapter 4). Some of them became "work-unit" compounds as well. The "work-unit" compound discussed here, however, are those newly built after 1949.

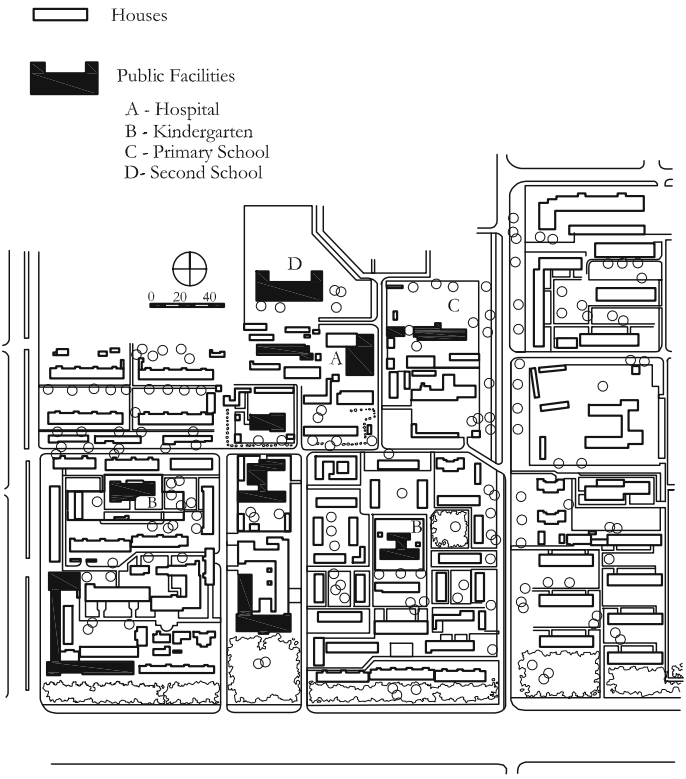

Fig. 6.2 Plan of Sanlitun residential district in the 1960s. *Source* (CDG 2000)

As analgised in Chap. 4, walled enclosures were among the most basic features of the traditional Beijing's cityscape. Walls were so central to the Chinese idea of a city, that they not only physically bounded various kinds of space—cities, palaces, temples, houses, and gardens—but also symbolized the manner of classification in an ordered Chinese urban structure. It's rather ironical, during the 1950s and particularly in the 1960s, while the city walls were being torn down, new walls were being constructed and bounded "work-units" compounds all over Beijing.

Almost all the "work-unit" compounds had their own boundary walls. Indeed, when a new "work-unit" compound was established, the boundary walls were often the first structure to be built up. Inside the "work-unit" compounds, there were many facilities with different functions, each of which could be enclosed by walls, and all of which shaped the "work-unit" compounds the multi-walled compounds. Similar to city walls, the boundary walls of "work-unit" compounds symbolized authority, order and security as well. As being enclosed by walls which were their "outer shield" and gave them a strong enclosed nature, "work-unit" compounds seemed like a city within a city.

Fig. 6.3 The entrance of "work-unit" compound of Beijing Cotton Textile Combine in the 1950s. *Source* (BMCUP 1958)

In addition, since "work-units" had the right to manage and control the land in the compound, they were often much more concerned about themselves than about the city as a whole. Thus the "work-unit" compounds had a strongly independent nature; it normally became a "blind spot" to outsides, and was frequently beyond the control of the master plan of the city. As the "work-unit" compound walls gradually became the norm, the boundary walls were once again an essential feature of Beijing's urban structure.

6.2.2 The Feature of the "Work-Unit" Compound

6.2.2.1 The Lifestyle of the "Work-Unit" Compound

Any residential type is associated with a certain lifestyle, and the same is true of the "work-unit" compound. Under the planned economy, the lifestyle of the "work-unit" compound was characterized by its homogeneity, reflected in the family-like or collectivized living habits of its residents, and in the relatively poor but standardized living conditions.

To some extent, the "work-unit" played the role of a family. It represented an authority to its members, which was like that of a parent, and individual obligations to the group were emphasized more than individual right. In the "work-unit" compound there were regular collective activities, such as sports, films and balls, all of which comprised a unified lifestyle that permeated everything and lent to the

lifestyle in "work-unit" compound the family-like or collectivized uniqueness. Meanwhile, because residents felt divorced from the city itself, this kind of life blurred their sense of citizenship. It made the dwellers of the "work-unit" compound feel that they lived in the "work-unit", rather than in the city. Consequently, they were less conscious of their links with the greater urban society than with their "work-unit".

During the period of the planned economy, the Chinese government issued unified criteria for urban housing construction, and dwellings in the "work-unit" compound had to be constructed according to these state criteria. Although the standards could be changed slightly, from one grade to another, according to the situation, these differences did not amount too much. For the most part, living conditions in the "work-unit" compound was standardized. Furthermore, they were standardized to a relatively low quality. Some of dwellings were equipped with only communal kitchens and shared toilets, used by several families together. Although in some dwellings private kitchens and toilets were set up, they were normally quite small, and some of them were allotted only about two square metres of floor space (see Fig. 6.4). The sitting room was also very small, and normally had poor lighting and ventilation. By today's standards, this "room" would be better described as an entrance hall or aisle rather than a sitting room.

Compared with the courtyard house, discussed in Chap. 4, the "work-unit" compound embodies a different meaning in its social structure. The traditional courtyard house embodies the traditional social order, which emphasize hierarchical relationships, whereas the "work-unit" compound embodies a homogenous order, which emphasize egalitarianism and collectivism. However, the "work-unit" compound, to a certain extent, still retained some similarity to the traditional residence. Living in the same environment with each other, having almost the same economic background, and enjoying a similar capacity for social communication, the members of the "work-unit" compound usually formed close relationships among themselves. Although these relationships were not based on blood ties,

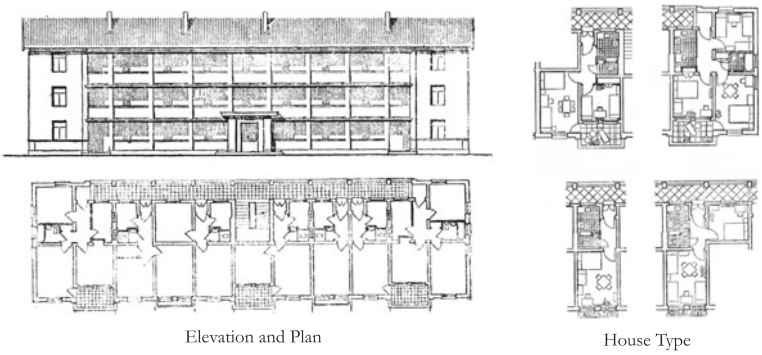

Fig. 6.4 Small-zised flat with open corridor in Xinfucun residential district in Beijing, 1957. *Source* (Hua 1957)

members still had the sensation of being in a traditional household after staying in a "work-unit" compound for a long time. In fact the "work-unit" compound had been called a "work-unit tribe" by some scholars (Wang 1997). That is to say, although these "work-unit" compounds took a different form in its appearance from the traditional courtyard house, they created in the individual a strong feeling of affiliation with the "work-unit" and its members.

As for the social structure of the entire city during the period of planned economy, along with the construction of new industrial districts around the city, as discussed above, most of the "work-unit" compounds were almost the same, and this gave the entire city with homogeneous characteristics as well.

6.2.2.2 The Influence of "Work-Unit" Compounds on the City

As the basic type of residence during the planned economy, the "work-unit" compounds inevitably exerted an influence not only on the social structure of the city but also on its spatial structure.

As mentioned in the previous section, in the early period when the "work-unit" compounds were coming into being, the city planning department of Beijing at that time—the Municipal Committee of Urban Planning—was too "busy transferring the land" to think about the design and layout of each "work-unit" compound (Qiao 2004). Over the several subsequent decades, the construction of estates was carried out in a haphazard fashion, taking the internal demands of the individual "work-unit" compound into consideration much more serious than the requirements by the master plan of the city. Consequently, although the function of every parcel of land in each "work-unit" compound was clearly defined, these enclosed and independent estates were unlikely to constitute a complete and orderly urban structure from the viewpoint of the entire city.

The most essential reason for this phenomenon is that the land did not enter the market at all in China during the time of the planned economy. In the name of state-ownership of land, all "work-units" were able to use land free of charge over the long term. This was equivalent to "work-unit ownership of land". Moreover, it often caused "work-units" to occupy as much land as they could. The urban land market theory reviewed in Chap. 3 did not work any more under this circumstance. When a "work-unit" carried out new construction within its own compound, the floor area ratio (FAR) and the height of buildings was planned to satisfy the demands of the "work-unit", rather than with its relationship to the rest of the city. Accordingly, while one "work-unit" compound might have high-rise buildings, the one next to it might have only low-rise buildings. This resulted in the city having a disorderly townscape.

6.3 Housing Reform and the Changes Taking Place in "Work-Unit" Compounds

6.3.1 Reforms in the "Welfare-Oriented Housing System"

The "work-unit" system was attendant on the planned economic system. It was in certain respects quite suitable to the planned economy (Guo 1998; Zhou 2000). However, when China converted to a market economy, the disadvantages of the "work-unit" system were gradually exposed and mainly manifested in two ways.

Within the "work-unit", the "work-unit" system was not efficient because of the multiple functions it performed. As the provider, not only of work opportunity but also all welfare to its members, the "work-unit" actually took on too many functions—housing, education and healthy security—some of which should have been provided by society as a whole. Correspondingly, the "work-unit" set up many unwieldy departments to undertake responsibility for those multiple functions, and their roles often conflicted with each other (Yang 2003; Hu 1995). As a result, the "work-unit" was unable to do everything satisfactorily, and often ran inefficiently. In addition, outside the "work-unit", the "work-unit" system failed to bring about the social resources to the best effect. Under the planned economy, all the resources needed by the "work-unit" came from the government, which distributed those resources according to its own pre-arranged plans. That is to say, each "work-unit" made unilateral contact merely with the government department in charge, which caused different "work-units" to be closed off from one another. This system prevented resources from being transferred or exchanged among "work-units" and thus failed to put them to good use. Moreover, the "work-unit" system also restrained employees from changing jobs and moving to other "work-units", a circumstance that also caused a waste of human resources.

As part of its transformation to a market economy, the Chinese government has taken various measures to reduce the multiplicity of functions carried out by the "work-unit". Many welfare functions formerly performed by the "work-unit" began to be transferred to society as a whole and a new social insurance system is coming into being. The appearance of medical insurance, retirement insurance, unemployment insurance and other relevant welfare instruments have been easing the "work-units" welfare load. An official from the Labour and Social Insurance Department summarized this policy as follows: "Our aim, in this reform, is to turn the 'member of work-unit' into a 'member of society' within a social insurance system, step by step" (Hu 1995). The "work-unit" is no longer the only provider or controller of social resources. Its members now have more chance to obtain resources from outside and thus gradually reduce their dependence on the "work-unit".

At the same time, the "Welfare-oriented Housing System" (WHS), which, during the period of the planned economy, seemed fair initially, later started to give rise to many problems. One problem was that, under the WHS, urban housing was constantly in short supply and living conditions in general were not good. Another

problem was that the social conflicts that had been provoked by unfair housing distribution became much more obtrusive after China shifted to a market economy.

Under the WHS, housing was distributed to employees as "welfare in kind". All housing investment depended on funds appropriated by the government. However, during the period of the planned economy, the national government carried out the policy of "production first, living second" (Dong 2010), which meant the highest priority of governments has been given to the construction of industry, the housing investment, therefore, was always short of requirement. This resulted in a shortage of urban housing. As mentioned in Chap. 2, under the WHS, the per capita amount of living space in Beijing diminished over many years and, in 1960, dropped to 3.24 m^2, the lowest point for the city since the founding of the People's Republic of China in 1949 (Tan 2002). In 1980 after China changed to a market economy and embarked a reform in urban housing, living space per capita of the city reached 4.79 m^2. This was the first time this indicator exceeded that of the 1950s. Furthermore, the WHS also resulted in financial difficulties that hindered housing maintenance. Although the government had formulated a policy of "using rents to maintain housing", rents under the WHS were too low to meet the demands for maintenance. Maintenance, therefore, put in a heavy financial burden on the government. Due to financial shortages, the government was always in difficulty with regard to housing maintenance and living conditions within the "work-unit" compounds were not good.

In addition, the WHS brought about conflict over housing distribution, due to the general shortage of public housing. When distributing housing, "work-units" often devised means involving a series of indexes, such as the employee's position, length of service, age and educational background, and even, sometimes, marital status and number of children, to decide who should live where. With so many indexes, it was hard to reach decisions and achieve fairness. Therefore, conflicts over unfair housing distribution became a common phenomenon under the "work-unit" system.

With China's transformation to a market economy, the WHS could no longer provide social welfare and meet the new demands for housing. Urban housing reform became one of the most important reforms that China carried out during the past decade. In July 1998, the State Council of China issued the *Circular Concerning the Further Deepening of the Reform of the Urban Housing System and the Acceleration of Housing Construction*, which brought the WHS to an end (Wu 1996).

The urban housing reform in China was actually initiated in the early 1990s. However, because housing is so central to the livelihood of every family and to the stability of society, it had to wait until the social, economic and other relevant reforms had taken place before its own reform could be completed. The reform of China's urban housing system has thus taken the path of "gradualism" rather than experiencing the "big bang" effect as in socialist Eastern European cities (Lee 2000). For this reason housing reform in China has lagged somewhat behind the other reforms that were taking place at the same time (Rosen and Ross 2000). For quite a long time, both old and new housing systems coexisted; the WHS was not abolished completely until 1998. The circular of 1998 stated that reform of the housing system should be continually pushed forward.

The policy for reforming the housing system in China focused on two main goals: the capitalization of housing distribution, and the commercialisation of housing supply (Yuan 2009). The capitalization of housing distribution means that housing allowances, rather than housing in kind, will be distributed, as in earlier times. The "work-unit" added a housing allowance to employees' salaries to enable them to purchase or lease housing on the market (Xu 2000; Yu et al. 1998). Only if the capitalization of housing distribution had already been achieved, the commercialisation of the housing supply could be carried out. As opposed to the former WHS, in which housing distribution was conducted by "work-units", families can now obtain housing in the market. This housing reform has reduced employees' dependence on their "work-units" and has benefited the housing market by boosting the demand for housing.

6.3.2 Changes Taking Place in "Work-Unit" Compounds

China's transformation from a planned economy to a market economy has caused dramatic changes in all aspects of the society and economy. Compared to that in other fields, housing reform in Beijing progressed much more slowly than other cities. Before 1990 Beijing's urban social structure hardly changed at all, and the homogeneity that had characterized the period of the planned economy remained largely unaltered. In the 1990s, Beijing manifested appearance of major increases in consumption, increased mobility of labour and rapid growth of population. While all of these had brought new forms of employment, economic activity and lifestyle, they also brought the new modes of housing production and consumption, and new forms of social and spatial inequality as well (Broudehoux 2004:242). In the urban space, while most "work-unit" compounds in Beijing are still in place, their physical looking and their resident profiles are somewhat gradually beginning to change. The changes are reflected in many ways. Three types of adaptations have been particularly made.

First of all, the "work-unit" boundary walls have a much more open appearance than before. For years, the "work unit" compounds that were formerly characterized by a largely self-contained entity with high, thick and imposing walls, whose domain was closed to outside influences, have been altered into ones bounded with commercial buildings (Fig. 6.5). This reflects an increased awareness of commercial values under the market economy. Under the planned economy, "work-units" developed welfare facilities within their walled boundary, giving no access to outsiders, for the exclusive use of their members only. As emerging market forces made more opportunities for citizens, the pattern of collective and standardized consumption supplied by welfare-oriented facilities became less viable.

With the rapid commercialization, the government considered some features of the cityscape under the planned economy to be barriers to the new economic and social life, the walled "work-unit" compound is one of them. In July 2001, Beijing's municipal government issued an official circular to encourage once exclusive

Fig. 6.5 A store broke walls of "work-unit" compound in the 1980s. *Source* by courtesy of the Reference Room of the School of Architecture, Tsinghua University

"work-units" to open their welfare facilities, as social facilities, to public use. This has resulted in a wave of making use of "work-unit" compounds to expand private sectors for realizing profit of walled space. Many of boundary walls were breached by canteens and restaurants run by outside businessman sat side by side with numerous advertising billboards.

Second, the differentiation in tenure is taking place within "work-unit" compounds. As emerging market forces opened up new opportunities for employment, the mobility of labour, capital and information across the borders of the "work-unit" greatly increased. Yet the mobility created different consequences for different residents.

After 1990, some urban residents began to take their own initiative in choosing residences according to what they could afford. Apart from the "work-unit" compound, which had been their only choice under the WHS, there were more choices available to them in the real estate market. Some these residents drew on diverse offerings outside the "work-unit" and applaud new choices opened up by commercial interests while others complained that market processes caused inequality. They were not able to afford to purchase their residents in the real estate market and still centred their lives on the "work-unit" compounds.

With better-off households are moving out of "work-unit" compounds into private housing estates, their residences were filtered down to people who may not be associated with the "work-unit" for rent, or to market for resell if the properties are allowed by the "work-units" to be shifted into the private domain. The coming of these new residents created new identities and lifestyles to the "work-unit" compounds. While the physical features such as walled enclosures and unified residences continue to shape the urban structure and would not disappear completely, the original concept of "work-unit" compounds and associated connotation of homogeneity are disappearing.

Third, in many "work-unit" compounds, the management of the estate, which had been run by "work-unit" before, is now run by the community. Because the gradual collapse of the "work-unit" system has been accompanied by transference of social functions that were previously borne by "work-units" to society in general, many of "work-unit" compounds have adopted new management systems, some of which were run by private property companies.

6.4 Conclusion

The "work-unit" system, as the main basis for urban social configuration, played an important role in the formation of Chinese urban society during the period of the planned economy. At the same time, the "work-unit" compound, as the typical residence of the "work-unit" system, became an important and new component in Beijing's urban structure.

As it was shown in this chapter, the "work-unit" compound manifested a homogeneous type of residence under the planned economy. Such homogeneity in the society within the "work-unit" compounds found expression in family-like and collectivized lifestyle and in relatively low but standardized residential conditions, and moreover, these homogeneous "work-unit" compounds resulted in a homogeneous residential structure for the city as a whole.

With the transformation towards a market economy, the "work-unit" compound is seen as a residential type lagging far behind the quality demands of residences today. This chapter has shown that the "Welfare-oriented Housing System" (WHS), which initially seemed to be a reasonable system, gave rise to many problems, and eventually resulted in two consequences. First, urban housing was constantly in short supply and second social conflict arouse because of unfairness in the housing distribution. As the planned economy system has gradually been replaced by the market system, the social functions formerly performed by the "work-unit" have been taken over by the relevant organizations and institutions of society as a whole. Housing and living conditions of urban residents are no longer dependent on their "work-units". The housing system reform is gradually causing the disintegration of the "work-unit" compounds. For the most part, the homogeneous lifestyle of the "work-unit" compounds has gone. Although the "work-unit" compounds will continue to exist in form in Beijing for quite a while, as a homogeneous type of residence, "work-unit" compounds, are gradually disappearing or become no more than historical features of the city.

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Chapter 7
The Segregated Residence Under the Market Economy

Abstract This chapter shows that Beijing's housing has been characterized since the mid 1990s by a new phenomenon: residential segregation. It begins with an overview of the housing development that has taken place in Beijing after China transferred to a market economy, and then shows the impacts of gentrification within the traditional neighbourhoods of the old city proper on their original residents, and finally, assesses the main factor causing the residential segregation. It is argued that household income has become the main cause of residential segregation in today's Beijing.

Keywords Segregated residence · Gentrification · "Urban village" · "Hukou system"

In the previous chapter, I pointed out that the "work-unit" compound, a homogeneous type of residence under the planned economy, no longer suits the housing demands after China's transformation to the market economy. In this chapter I shall show that in contrast to these homogeneous residences, Beijing's housing has been characterized since the mid 1990s by a new phenomenon: residential segregation. I shall begin this chapter with an overview of the housing development that has taken place in Beijing after China transferred to a market economy. Then I shall show the impacts of gentrification within the traditional neighbourhoods of the old city proper on their original residents. Finally, I shall assess the main factor causing the residential segregation in Beijing since the mid of 1990s. It will be argued that under the influence of the global economy, social polarization has increased, and differences in household income between rich and poor have thus become the main impetus behind the residential segregation.

The housing reform that has taken place since the early 1990s has boosted Beijing's real estate market, and given rise not only to a large-scale redevelopment of the traditional residential districts in the old city proper (discussed in Part II), but also to rapid housing development outside of the old city proper. In the first section of this chapter I shall begin with a description of new houses in Beijing's suburbs with the purpose of providing the reader a profile of the new housing development in Beijing after China's transformation to a market economy.

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Since the mid 1990s the trend towards residential segregation, whether it takes the form of gentrification in the traditional residential districts of the old city proper or the polarization of living conditions between the high-grade villas and the poor "urban villages" in the suburbs, has become increasingly evident in Beijing. In the second section of this chapter I shall analyze the gentrification of the traditional residential districts and its impact on their original residents. In contrast to the previous discussion of Beijing's Old City in Part II, which focused on the changes that have occurred to courtyard houses, this chapter is concerned with the impact of the redevelopment projects upon the residents, i.e. changes in urban social structure. I shall show that although the living conditions for most of the relocated residents have improved after they moved to the suburbs, the gentrification of the traditional residential districts has a great impact on the lives of the original residents, especially on the low-income families.

Under the influence of the global economy, increasing numbers of high-salaried employees of international enterprises have settled down in Beijing. At the same time, more and more migrant workers from the countryside have come to the city seeking job opportunities. These two groups have widened the gap between rich and poor, and the social polarization has become increasingly serious in recent years. In the final section of this chapter I shall examine the phenomenon of social polarization in Beijing and the residential difficulties experienced by the disadvantaged groups in the "urban villages". I will show that household income has become the main cause of residential segregation in today's Beijing.

7.1 New Housing Development Under the Market Economy

7.1.1 Diversification of the New Residential Housing

After experiencing 30 years under a planned economy, China inaugurated its "reform and opening up" policy in 1979, and has gradually moved since then towards a market economy. Many reforms have taken place in the arena of urban housing. The most important one is the closing down of the "Welfare-oriented Housing System" (WHS) and the transformation of housing into a kind of commodity in the market place. Whereas in the past, the "work-unit" compound had been their only choice, in this commodity housing market, residents take their own initiative in choosing their residence according to what they can afford. As a result this new commodity housing has become diversified in both the housing grade as well as the housing type.

As mentioned in the previous chapter, during the period of the planned economy, the fact that housing was distributed by "work unit" as a kind of social welfare provision meant that there was not much difference in quality between one residence and another. The market economy, however, has brought about large differences in housing grade. In 1991, Beijing witnessed the debut of residential

Fig. 7.1 Purple Jade Villas in the northern suburbs of Beijing. *Source* By courtesy of the Reference Room of the School of Architecture, Tsinghua University

districts consisting entirely of villas, such as Yuanmingyuan Garden, with a land area of 750,000 m^2 and Purple Jade Villas (see Fig. 7.1), with a land area of 600,000 m^2 (Tan 2002). This is the first time this type of high-grade housing has emerged on a large-scale in Beijing's real estate market since the establishment of the People's Republic of China. According to relevant information (Shen 2003), before the end of 2002, 40 thousand such villas had been built in Beijing, with a total floor space over 10 million square metres. These were distributed in 160 residential districts, of which, 98.3 % were located in the suburbs of the city.

As for differentiation in housing type, under the planned economy the government created a uniform housing construction standard that was followed all over the country and people were unable to make individual, personal demands. When urban housing became commercialized in China, different types of houses started to appear, because residents had different requirements due to their divergent social and cultural backgrounds, occupations, interests, lifestyles and household structures. This diversity in housing type was not only reflected in a divergence in housing grades, but also in the different demands by residents for housing within the same grades.

Although due to one child per family policy the family has become much smaller than before in today's Beijing, this has not necessarily simplified the demands placed on housing. Accompanying the trend towards an ageing society, and the increase in the number of single parent or single-person families, there are now demands for housing that can be adapted to suit elderly families, single parent families and single-person families. In addition, some families purchase houses, not for their own residences, but for other purposes—such as having a holiday villa, or an investment property that can be rented for income. During the planned economy era, this type of demand on housing was practically unheard of and probably would have been banned.

Along with the trend towards diversification, the new types of commodity houses have significantly improved in function. In the past, the "work-unit" compound, as a form of government welfare provision, could only provide the most basic function of housing—providing shelter. Apart from bedroom, sitting room,

Fig. 7.2 Palm Springs Apartment, a high-grade set of flats near western section of the Third Ring Road in Beijing, 2004. *Source* By courtesy of the Reference Room of the School of Architecture, Tsinghua University

kitchen and washroom, there were no rooms provided for other purposes. Some houses even lacked their own separate sitting room, not to mention a dinning room or study. After housing became a commodity on the market place, this situation changed. For one thing, residences gradually acquired new functions. For example, dining rooms and studies became basic components of an apartment, and some luxurious houses even had a studio, servants' rooms and a private gymnasium (Fig. 7.2). Furthermore, existing functions were subdivided and improved. A storage room might be added, and the space allocated to washrooms as well as the number of washrooms could be increased. There might even be a dressing room and a laundry.

In addition, as cars have increasingly become the possessions of many families, parking has become an important function for residential districts to perform. According to the requirements of the *Quota for the Construction of the Public Service Facilities in the New or Redeveloped Residential Districts in Beijing*, issued by the municipal government of Beijing in 1994 (revised in 2002), all newly built residential districts are required to build their own parking places or garages. In addition, with the rapid development of technology in recent years, most of residential districts in Beijing are equipped with a computer network for the use of property management and public services.

7.1.2 The Development of Residential Suburbanization

Apart from diversification in the residential housing, another feature of Beijing's new housing under the market economy is the development of residential suburbanization. As mentioned in Chap. 2, since 1979, especially since 1992, Beijing has witnessed a process of rapid urban extension. In 1979, the built-up area of the city was 339 km^2. This area has grown to 490 km^2 in 1999 and 604 km^2 in 2004 (BMBS 2001, 2002–2006).

Beijing's residential suburbanization has been influenced by three main changes: the rapid development of the city's road system and the increased popularity of the

private car, the improvements in living conditions in the suburbs, and the influences from the adjustments that have taken place in the city's industrial structure.

The rapid development of the road system around Beijing has promoted the process of residential suburbanization. Since the mid 1990s, the ring road and radial road systems of the city have taken shape rapidly and the metro and light-rail transit systems have also been extended to the suburbs. According to one report (Sun and Yu 2005), the length of metro and light-rail in Beijing reached 114 km by 2003, which was an increase of 115 % over 1999. By 2004, the length of the roads within the city proper and inner suburbs reached 4064 km, an increase of 23 % over 1999. By 2005, the number of buses reached 19,000, an increase of 89 % over 1999. All these developments have brought great improvements in the urban road system and public transport facilities and have in turn helped to promote residential suburbanization. As a result, suburban housing has spread outwards along the main transport lines of the city.

The increased popularity of the private car has also played an important role in residential suburbanization. The ownership of private cars was not common among Chinese families until 1990. However, it has grown exponentially since then. As of July 2002, 12 % of families in Beijing own their own car, totalling almost 1.1 million cars (Jiang 2004). In 2005, the number of cars in Beijing increased dramatically by nearly 1000 additional cars per day. As of July 2005, the number of private cars has surpassed 1.65 million (Zhou 2005). Moreover, the proportion of people travelling by private cars has also been increasing rapidly. In 1990, the automobile supplied only 6 % of the total number of passenger trips in the city. Public transport accounted for 35 % and bicycles for 58 %. In 2002, however, the proportion of passengers travelling by car reached 18 %, three times that in 1990, while public transport accounted for 44 % and bicycles for only 38 % (see Fig. 7.3). This development has changed the life-style of wealthier families and made it possible for them to move to the suburbs.

In addition, improved living conditions in the suburbs has made moving to the suburbs more attractive than before. Case studies in Sect. 7.5 presents an investigation I conducted in 2004 on the living conditions of the traditional residential

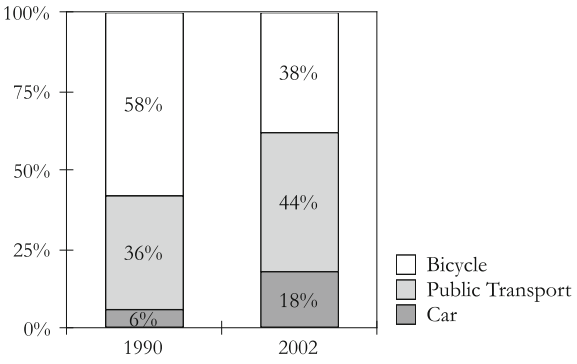

Fig. 7.3 A comparison of the traffic flow in Beijing between 1990 and 2002. *Source* Drawn by author based on data from Jiang (2004)

districts within Beijing's old city proper. My studies show that during the last two decades, although the real estate industry has been developing very fast in Beijing, the living conditions within the traditional residential districts have not significantly improved. Moreover, with the substantial increase in the population of Beijing, the old city proper became increasingly crowded. As mentioned in Chap. 1, the population density of the old city proper is much higher than in the suburbs—normally it is more than eight times higher. In some of the most crowded districts of the old city proper, the population density is nearly 20 times that of the suburbs. By contrast, living conditions in the suburbs have improved significantly since the 1990s. In addition to dwelling houses, services and facilities in the suburbs have also been upgraded to a certain degree. Many supermarkets have been built in the suburbs in recent years. Compared with the old city proper, the suburbs are characterized by more spacious living areas and superior environmental conditions.

Finally, the adjustment in Beijing's industrial structure has promoted residential suburbanization of the city. Since China has changed to the market economy, particularly since 1992, when the urban land market came into being, economic competition has brought competition for urban land resources. New transport facilities have shortened travel times and, as transport costs are much cheaper than land costs, some enterprises have been pressured to move out of the old city proper or to set themselves up in the suburbs. The expensive central areas of the city are now reserved for business and the service industry. According to statistics (Yu 1999), during the 12 years from 1985 to 1997, a total of 91 of Beijing's industrial enterprises were displaced, and 78 of these moved out of the old city proper, vacating 41.78 ha of land. The vacated land was mostly transformed for commercial land use. When the factories moved out into suburban areas, their employees needed to find new residences there. Also when the industries serving the commercial and financial sectors became concentrated in the central areas and replaced land for residential use by land for tertiary industrial use, there was an immediate impulse to residential space to expand into the suburbs.

7.2 The Trend Towards Gentrification

7.2.1 Gentrification of the Old Residential Districts

Along with the trend towards residential suburbanization, came a trend towards gentrification in Beijing's old city proper. These two trends are mutually related. A considerable proportion of the residents in the suburbs were formerly residents of the old city proper who were compelled to leave their original neighbourhoods because of the redevelopment projects within the old city proper.

In Chap. 3 the basic characteristics of gentrification in Western cities were defined. Generally speaking, gentrification often occurs when an old residential

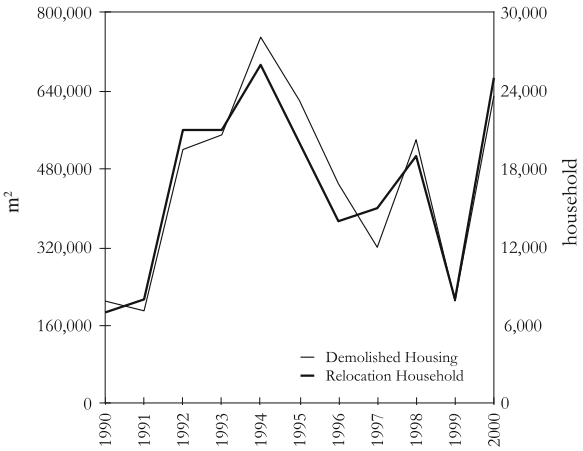

Fig. 7.4 Relocation households and demolished housing in the ODHRP during 1990–2000. *Source* Drawn by author based on data from BMBS (2001)

district is redeveloped. In the process of gentrification, lower rent housing is upgraded to higher rent housing, which results in the displacement of lower-income residents by higher-income residents. Since the 1990s, Beijing's old city proper has been witnessing a process of gentrification similar to that in Western cities. Due to the "Old and Dilapidated Housing Redevelopment Project" (ODHPR), a large number of the original residents were forced out of the old city proper. As Fig. 7.4 shows, from 1990 to 2000 altogether 4.99 million square metres of the "Old and Dilapidated Houses" (ODH) were pulled down, and 184,000 families had to move out of their original communities. The figures for the relocation of households show that the largest scale residential relocation owing to the redevelopment of the old city proper took place after 1992 when the urban land market was open in China. The rate fell to a low point in 1999, but rose again dramatically in 2000, approaching the earlier peak reached in 1994.

Among the households that were relocated, only a small proportion was able to be rehoused in their former residential districts after redevelopment. A large proportion was forced to move to the suburbs, because of the persistent rise in housing prices in the old city proper. Taking Dongcheng District, one of the districts in the old city proper, as an example, from 1991 onwards, nearly 4000 households (about 12,000 persons) had to be relocated every year. Among those, at least two-thirds had to move out of the old city proper (Wei 1998). Although the municipal government of Beijing has set a return rate for residential districts after redevelopment at around 20 %, in cases like that of Beiheyan in Dongcheng District, the rate has not even reached 10 % after redevelopment (Wei 1997). In some cases, formerly residential blocks were developed into office buildings or commercial entertainment centres. This resulted in a return rate of zero.

7.2.2 The Impact of Residential Relocation on the Original Residents

The question of the impact of residential relocation on the original residents of the old city proper has been controversial for many years in Beijing. The opinions of government officials and scholars frequently contradicted each other. While officials took pride in the positive impact of residential relocation on the original residents, many of the scholars emphasized the negative results (see Ye and Go 2003). There were also different views among the residents.

In 2004, I investigated the opinions of the residents on the residential relocation caused by redevelopment projects (see Sect. 7.5 Case Studies). It can be seen that, at first, residents of the old city proper hoped that the ODHRP would improve their living conditions. However, after their houses were demolished and new houses were built, they realized that they could not afford the high prices of the new houses and could therefore not return to their original communities. Under such circumstances, the opinions of the residents clearly differed. The families who can afford the houses prices after the redevelopment or who prefer new houses in the suburbs normally support the redevelopment projects. The families who cannot afford the suburban houses with the support of relocation compensation, or who make a living which is greatly reliant upon the old city proper, generally oppose the projects. However, one thing is clear. In comparison with the situation before the 1990s, more residents at present wish that they could have returned to their old neighbourhoods after these had been redeveloped (see Sect. 7.5 Case Studies).

Although residents' living conditions were relatively improved after they moved out into the suburbs, I would like to point out here that the residential relocation still had a negative impact on former residents, especially to disadvantaged groups and low-income families. The negative impact mainly manifested in that their opportunities for livelihood have disappeared as well as their original social network has collapsed.

Many residents of the old city proper are the disadvantaged groups of the city, who are trying to survive on a low income and whose livelihood depends on the environment of the old blocks to a great extent (see Sect. 7.5 Case Studies). Taking Guozijian, an old neighbourhood in the old city proper, as an example, there was a balance between the employed residents of the block and the work opportunities offered by the retail and service trades within the block. About 70 % of the employed people who lived in this block were engaged in the retail and service trades. Moreover, about 80 % of the employees who worked in the retail and service trades in this block lived in the same block (Huang and Wang 2004). The socioeconomic network that had gradually formed over the years in the old city proper was the foundation on which the low-income residents were able to make a living. The small stores and workshops scattered along the hutongs (alleys) or on the corners probably provided the main source of livelihood for some families in the

community. When the old blocks became gentrified and were upgraded to high-grade ones and these small stores were upgraded to supermarkets, the environment on which those low-income dwellers had formerly depended for existence disappeared.

As for those who have already moved to the suburbs, the greatest difficulty they face is transport. The long distance away from their main area of activity or work causes them to spend much more time and energy on commuting between their homes and offices or schools than before. According to an investigation under taken on Yongtaiyuan (Tan 1998) (Table 7.1), a new residential district in the northern suburbs of Beijing, where most of the residents have moved out of the old city proper due to the ODHRP, each of the 200 employees and students living there spend an average of one additional hour on transport every day. Moreover, the increase in transport fares also increases the economic burden on their families to varying degrees. Some former residents of the old city proper perceive this displacement as nothing more than a change from one difficulty to another.

This residential relocation has not only resulted in the disappearance of residents' opportunities for livelihood, but also in the collapse of their original social network. My investigation in 2004 (see Sect. 7.5 Case Studies) shows that many of the dwellers of the old city proper had lived there for quite a long time and had built-up a social network there. When they fell on hard times they could get help from relatives and friends lived nearby. In other words, they had a social support network within their neighbourhoods. This network of localized social relations gave them a strong sense of belonging and connected them firmly to their neighbourhoods. Residential relocation, however, will marginalise the relocated residents and has a profoundly negative effect on the social network of them. Furthermore, it will increase the costs necessary to enable these relocated residents to use public facilities and services in the city centre (see Sect. 7.5 Case Studies).

Therefore, it is can be seen from the above discussion, the residential relocation has caused serious difficulties for some original residents of the old city proper, especially those disadvantaged groups and low-income families. They have suffered unfortunate consequences from the involuntary relocation and the effect on them has been much more negative than what the government believed. Since the new century, this brutal relocation has been triggering much more social unrest, as witnessed frequently on media reports by the persistent existence of "nail houses" on demolition sites where original residents are resisting relocation (Wang 2008).

Table 7.1 The increase in housing expenditures and transport fares due to displacement in Yongtaiyuan

Increase in living expenditures due to displacement/household income (%)	1–10	11–20	21–30	>30
Household (%)	29	44	18	9

Source Made by author based on data from Tan (1998)

7.3 Social Polarization and the Trend Towards Residential Segregation

7.3.1 "Hukou" System and the Migrant Population

Before discussing the newly emerging phenomenon of residential segregation after China shifted to market economy, I would like firstly to examine the "hukou" system, which, to a certain extent, play an important role to promote the social polarization and cause the social inequity.

The "hukou" system, also known as the household registration system, has been around in one form or another for more than 2000 years in China. In addition to the basic functions it executed in the population registration and its management, it has also been a means for social control, in that the system facilitated tax collection and military recruitment by the rulers (Wang 2015).

After the People's Republic of China was founded, the urban–rural dual "hukou" systems came into being in 1958, during the planned economy. Under this system, the "hukou" is basically divided into rural and urban "hukou" and every citizen inherits their parents' "hukou" status at birth. The "hukou" system was further categorized into rural and urban areas on the basis of the original division by regions, with the purpose of curbing the inflow of rural people into cities. The rural people were confined to the land and commune, in order to assure the rural grain harvests at the same time as achieving industrial development and the creation of city jobs (Wang 2015). Furthermore, by means of this strict system, the cities avoided the adverse outcomes of rapid urbanization and massive migrant population—namely sharp economic divisions, dramatic housing shortages and a high level of informal settlements and businesses (Broudehoux 2004: 179).

Under the planned economy, the systems worked well for controlling the inflow of rural people, since in cities necessities such as grains were available only to people with urban "hukous". Such tight restrictions on rural migration by the "hukou" system lasted until the mid-1980s. It has resulted in an arbitrary separation between urban and rural societies in China.

China's "reform and opening up" policy since 1979 has greatly increased the efficiency of agriculture production and created a large amount of surplus labours in rural areas. At the same time, with China's transition to a market economy, booming joint enterprises, private businesses and service industries, especially in the big cities, created constant demand for labours and had to offer the job opportunities to people with no urban "hukous" status. These people have become the city's migrant population or migrant workers—they do not have urban "hukou" status in places of destination, normally do not own permanent residences and move around frequently while looking for jobs. Since the early 1980s, there has been a major increase in migrant population. Data from censuses and survey show that the migrant population (cross-county) has increased from about 22 million in 1990 and by 1995 it has more than doubled (Liang et al. 2008: 212).

According to "hukou" status, labourers in China are differentiated into three types: urban "hukou" holders as native residents, migrants relocated through formal channels to possess the urban "hukou" as elite residents and migrants normally from rural areas with no urban "hukou" as "outsiders" (White et al. 2008). Normally the first two of them are considered as the permanent residents of the cities. Although the rural migrant labours (the third type) no longer need to obtain urban "hukou" status to live and work in cities, it doesn't mean they got the same entitlements to welfare benefits enjoyed by permanent residents (Zhang 2001). Due to the obstacle of limited urban capacity, they have to suffer the social inequality in public services, employment opportunities and salary levels.

7.3.2 The Phenomenon of Social Polarization

Since China's transformation to a market economy, both the private economy and the foreign-funded economy have developed rapidly. These two, along with the state-owned economy, make up the three main types of ownership in China's economic system today: private ownership, foreign ownership, and state ownership. Meanwhile, a large number of new social classes, such as private entrepreneurs and high-salaried employees of foreign-owned enterprises, have gradually come into being. Their appearance is shaping a new social structure for the city. The social structure based on the "work-unit" system under the planned economy has gradually become polarized. Socioeconomic status based on income has become a determining feature of the new social structure and strongly influenced families' choice of their residential locations.

The rural migrant population is another element that is intensifying the social polarization of Beijing. From 1982 to 2000, many big Chinese cities, such as Beijing, are experiencing a great population influx from rural areas. The size of the migrant population in Beijing has increased from 160 thousand to 2.5 million, an annual increase of about 16 % (see Fig. 7.5). The ceaseless influx of such a large migrant population has aggravated the degree of social polarization in the city.

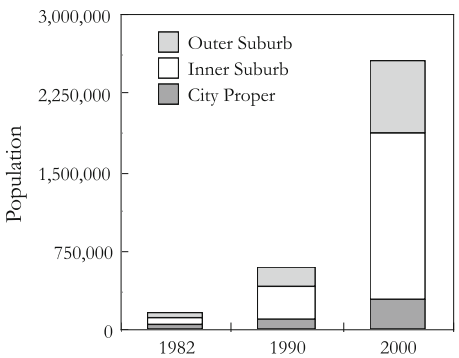

Fig. 7.5 The migrant population in Beijing in 1982, 1990, and 2000. *Source* Drawn by author based on data from Feng and Zhou (2003)

Table 7.2 Annual household incomes of Beijing's families, 1996–2004 (unit: Yuan)

Item	Low income 20 %	Medium–low income 20 %	Medium income 20 %	Medium–high income 20 %	High income 20 %
1996	4682	6170	7392	9125	12,915
1998	5450	7498	9490	11,970	17,726
2000	7884	9040	11,699	13,964	22,622
2002	6821	9667	12,030	15,028	24,295
2003	8102	11,291	13,911	17,262	26,224
2004	8241	12,140	15,614	20,022	32,258

Source Made by author based on data from BMBS (2001) and BMBS (2002–2006)

The municipal government's statistical yearbooks (BMBS 2001, 2002–2006) provide solid evidence of the widening income gap of the different social groups in the last one or two decade. Table 7.2 shows that since the mid 1990s the income of the urban residents in Beijing has increased dramatically, but the income gap between rich and poor has also enlarged. Taking 2003 as an example, the household income per capita of the top 20 % of the urban families was near 26,224 Yuan/year, while that of the bottom 20 % was about 8102 Yuan/year. The former is about 3.2 times the latter. Comparing the household income per capita for the top 5 % of the families with that of the bottom 5 %, the former was nearly 34,000 Yuan/year and the latter was only 5211 Yuan/year, with former being 6.5 times the latter.

Because it is quite common in China for high-income families to have "grey incomes"—that is, incomes that are not precisely stated in the statistical yearbook—and also because the municipal government's statistical yearbook normally does not take the data on migrant population into consideration, the gap between the household incomes of rich and poor families is probably larger than that shown by government data.

In summary, the phenomenon of social polarization has become the most prominent characteristic of Beijing's social structure at present. The poor, migrant population from the rural areas, on the one hand, and the magnates, tycoons and high-salaried employees of foreign-owned enterprises and joint ventures on the other hand, have formed the two extremes. In Chap. 3 we discussed the influence of the global economy on labour distribution. In fact, the emergence of these two contrasting groups in Beijing corresponds to a new tendency in global labour distribution in recent years: there has been both an increase in skilled and high-salary working positions, and an increase in informal and low-salary working positions.

This dramatic increase in social polarization in recent years has occurred all over the country. We can see this from the changes in China's Gini coefficient[1] over the past thirty years. In 1982, the early stages of China's market economy, its Gini

[1]Gini coefficient: invented by the Italian statistician Corado Gini, is often used to measure income inequality. Here, 0 corresponds to perfect income equality (i.e. everyone has the same income) and

coefficient was 0.30. However, according to the 2004 Human Development Report by United Nations (UN), this value for China increased to 0.447 in 2001. Among the 131 countries in the updated survey by the United Nations Development Program (UNDP), only 31 countries have the coefficients which are larger than that of China (UN 2004). A considerable accumulation of studies have shown that urban size and growth is associate with higher levels of intra-urban inequality, such as what found in the US's cities: the Gini coefficient of total income inequality rises with city size and growth during the 1970s (White et al. 2008). Measuring against the internationally accepted standards (Weston 2005), when the Gini coefficient for any country exceeds 0.40, the gap between rich and poor is excessively wide and this country might become unstable. However, in China not only has the figure of 0.40 been surpassed, but it is continuing to grow.

7.3.3 Residential Difficulties Experienced by Disadvantaged Groups

The widening of the income gap between rich and poor has made residential segregation in Beijing a reality. In this section, I shall not discuss improvements in living conditions for rich groups, but shall focus on the residential difficulties that the disadvantaged groups have experienced against the background of social polarization. In present-day Beijing, the disadvantaged groups consist mainly of unemployed persons, workers in enterprises receiving poor economic benefits, retired people on low pensions, low-income or no-income people with disability or chronic illness, elderly people without relatives or social insurance, and the migrant population (Wang 2003). These groups live in difficult circumstances: their per capita living space is much less than the city's average and they are unable to afford, either by purchasing or renting, housing with basic modern facilities. The houses they rent are normally in poor conditions: without private kitchens or private bathrooms, and sometimes even without heating or drainage system. Of these disadvantaged groups, those living in "urban villages" deserve special attention. Their living conditions aggravate the problem of residential segregation in the city.

The "urban villages" of Beijing are usually remnants of the rural communities of the past. While the surrounding farmland which was formerly used to grow grain or vegetables has been gradually swallowed up by the rapidly expanding urban sprawl and replaced by the increasingly high-density buildings in the past few decades, the communities have been left untouched and receive no improvements in living conditions or community facilities. The previous farmers who have lost their farmland made use of vacant lots in their communities to build unlicensed housing

(Footnote 1 continued)

1 corresponds to perfect income inequality (i.e. one person has all the income, while everyone else has zero income).

compounds to accommodate incoming migrants. Constructed of bricks with cement tile roofs, these compounds were normally made up of many bunkhouses built in a row one by one to maximize the use of spaces between original buildings. As migrants' demand for housing was normally for simple dormitories only, or rooms with simple functions, and living space for as many persons as possible, each of the rooms in these bunkhouses typically accommodated a group of tenants, from four to six, or even up to eight. Cooking, eating and sleeping, all took place within the crowded space. After a large number of migrant workers swarmed into Beijing, these "urban villages" have become the main residential districts for them. Moreover, these "urban villages", with community facilities of very poor quality and mostly in serious danger of fire, are often districts with the high numbers of criminal offences as well. They are described as the "forgotten corners" of the city by their residents and form a sharp contrast to the surrounding cityscape. These "urban villages", by their invisible locations and their poor conditions, were concrete examples of the marginal and liminal status of the migrant workers in the city.

The migrant workers in Beijing were mostly young single men and women, though there were also some families. Longed for security and local protection, members of the migrant population who came from the same regions of the country were inclined to live together. For example, "Zhejiang village", the largest migrant settlement in Beijing, located in the southern part of the city, has a concentration of people from Zhejiang province; similarly, "Xinjiang village", located in the west of the city, has many people from Xinjiang autonomous region living there. These so-called "villages" are actually not the administratively defined villages, but the large migrant congregating zones embedded in a number of pre-existing communities. In these newly formed communities, the migrant population accounted for a considerable proportion or even the majority of the residents. Therefore, the communities had a certain regional quality. In terms of "Zhejiang village", as the majority of migrants came from rural Wenzhou, Zhejiang Province, this migrant settlement was named by Beijing local residents after these migrants' provincial origin to demarcate a perceived "alien" social body from the established Beijing local communities (Zhang 2001).

The arrival of massive migrant population in Beijing posed new challenges to urban order and drained already scarce urban resources. The mobility of the migrants and their substandard living condition created both real and imagined threats to the local residents (Lu 2006: 154). In particular, the "urban villages" were viewed as problematic places that need to be eliminated or tightly controlled by government officials due to migrants' relatively autonomous or frequently illegal socioeconomic practices in these newly formed communities. A report by government officials delineated "Zhejiang Village" as a place that was dirty, chaotic, and miserable: "Although the migrants have some positive influences on enlivening markets and making local residents' lives more convenient, they have created a series of problems, including overpopulation, traffic jams, poor hygiene, disorder, crime and other law breaking activities. All of these problems have seriously damaged the orderly regulation of the local government" (BMG 1995). In November 1995, an order was issued by Beijing's municipal government to "clean

Table 7.3 Annual household incomes in a block of "Zhejiang Village" in 2003

Household income (Yuan/year)	<6000	6000–12,000	12,000–24,000	>24,000
Household (%)	25	21	33	21

Source Made by author based on investigation

up and bring order back to" "Zhejiang Village", and about forty-eight housing compounds created by the migrants were demolished (Zhang 2001).

In reality, "Zhejiang Village" did not disappear. Many migrants eventually trickled back to the village only three months after the demolition. A number of compounds had reappeared, and so did the status of dirty, chaotic, and miserable. In 2004, I made an inquiry in a block of "Zhejiang village". In the block I investigated, there were 210 one-storey bunkhouses, placed in rows, with a total living space of about 7200 m^2. There were more than 600 residents in this block, of which nearly 500 were migrant workers. The average per capita living space was about 12 m^2, 40 % of which was less than 10 m^2, and 23 % of which was even less than 5 m^2. The facilities in these houses were also in poor condition: 27 % of them had no kitchen, 44 % had no toilet and 65 % had no bathroom. Although the conditions were poor, these "urban villages" were the only option that migrant population had, because of their very low income. In the previous section, it was mentioned that in 2003 the household per capita income for the bottom 5 % of Beijing's families was 5211 Yuan/year. Given an average family size of about 3.1, the household income translated into nearly 16,200 Yuan/year. In the "urban village" I investigated, at least 46 % of the families had incomes of less than 12,000 Yuan/year in 2003 (see Table 7.3). This ratio was much more than that of the entire city. As to why these pockets of land were left behind during the urban development, I inquired of the Planning Division of Xinsong Real Estate Company in Beijing, which argued that because of the poor infrastructure and high density of construction and population, developers had to pay high costs for improving public utilities and relocating original residents. Normally it would be difficult for developers to make profits from the development projects within this kind of site.

In present-day Beijing, these "urban villages" are distributed all over the sub-urban fringe areas of the city (Fig. 7.6 left). It was reported (Yang 2005) that until 2005 there were 343 such "urban villages" in Beijing, of which, 231 were located within the built-up area of the city with land areas of 11 km^2 and floor areas of 2.7 million square metres. The other 112 were located outside the built-up area of the city but within the programmed scope of city planning (see Table 1.1 in Chap. 1), with land areas of 180 km^2 and floor areas of 72 million square metres (see Fig. 7.7).

The "urban villages" phenomenon has presented a social and planning challenge to the authorities in the control of the population, which has been primarily based on the "hukou" system. "Urban villages" have frequently become the terrain for a vast confrontation, whenever any of them was considered by the government a place that was "dirty, chaotic, and miserable", and need to be relocated to make way for new developments. The confrontations however mainly come from the conflict

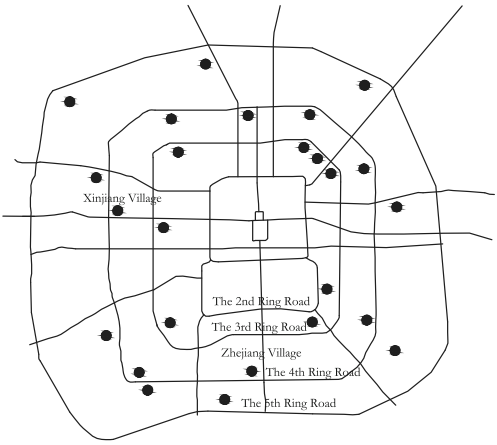

Fig. 7.6 Distribution of some "urban villages" in Beijing, 2004. *Source* Drawn by author based on investigation

Fig. 7.7 "Zhejiang Village" in the south of the city, 2004. *Source* Taken by author

between the drive to remove migrant bunkhouses and gentrify old districts and the need to accommodate migrant workers that inhabit the city without "hukou" status and are not therefore eligible for social welfare benefits and public housing.

7.3.4 The Main Cause of Residential Segregation in Beijing

As discussed in Chap. 3, the phenomenon of residential segregation has long been found in Western cities, particularly in most of the big cities in America. Although the classic Western literature on urban inequality focused on three major sources of neighbourhood differentiation: social status, family status and ethnic status (White et al. 2008) this highly visible phenomenon in Western cities, has largely arisen because of racial segregation, which is both an essential feature and a leading cause.

There it mainly manifested itself in the segregation of residential areas into white area and those of black or people of colour. The situation in Beijing since the late 1990s, however, is different from that in the Western cities. For the underlying cause of residential segregation here we have to look elsewhere.

Residential segregation is not a new phenomenon in Beijing. In fact it can be traced back to 1564, during the Ming dynasty (1368–1644), when an outer city was built-up on the southern side of the Old City. This was when Beijing took on the nature of a dual city, with an inner city and an outer city. At this time the residents of the two cities differed mainly in social class and wealth, rather than race. When the Manchus conquered the Ming regime and established the Qing dynasty (1644–1911), keeping Beijing as their capital, they began to implement a residential segregation policy that completely separated the Manchus from the Han people. At this time they urged the former Han residents of the inner city to move to the outer city. As a result, the inner city became a centralized residential district for the Manchus, called the Inner or Tartar City, and the outer city became a residential district for Han people, called the Outer or Chinese City. This situation did not change until the end of the Qing period (Liu 2001; Dray-Novey 1993).

After the establishment of the Republic of China in 1911, this residential segregation according to racial factors broke down. Especially during the period of the planned economy under the People's Republic of China after 1949, because of the "Welfare-oriented Housing System" (WHS), most differentiation between residences was lost, and homogeneity replaced segregation as the dominant characteristic of the city. Since the mid 1990s after China transformed into a market economy, the phenomenon of residential segregation has reappeared in Beijing. Although it is new to most urban residents of today, yet it is increasingly visible through such manifestations as the exclusive luxury estates and the very poor state of "urban villages". However, if one compares the reasons for residential segregation in this decade with those either in the Beijing's past or in Western cities, it is clear that they are different.

The segregation of the rich and poor is becoming one of the "hottest" issues in China at the moment (White et al. 2008). In today's Beijing, differences in household income have become the leading cause of residential segregation. There is no evidence that this residential segregation is caused by ethnic attributes. Beijing's minority population, including the Manchus, tend to be scattered throughout the city. Only the Muslims have their own residential district, Niujie, located in the southern part of the Old City. However, this so-called Muslim-centred residential district is actually inhabited by many other nationalities as well. Most of the Muslim people in Beijing in fact live elsewhere. According to the statistics for 1990, the Muslim population accounts for 23 % of the total number of residents of Niujie, but Niujie accounts for only 6 % of the total Muslim population in Beijing [BEW]. It is clear that due to the increasingly serious social polarization under the market economy, slowly but surely a new urban residential structure based on economic affordability is emerging in Beijing. In other words, polarization in income has become the main cause of residential segregation of the city.

In addition to economic affordability, migrant discrimination, more precisely, the discrimination against migrant workers is some evolving evidence of the other cause of residential segregation. This cause, with inherited Chinese characteristics, different from, or even seldom documented in, the experimental studies in Western cities, has been the unique feature of the urban inequality in Chinese big cities as well as in Beijing since 1990s.

As mentioned in the previous sections, China's transformation from planned economy to market economy has instigated the mass rural migrant population to cities seeking work and higher wages. In big cities, swelling migrant workers form an itinerant urban population and economy all of their own. As the human force behind the urbanization process they are its powerhouse, as well as its essential side effect (Liauw 2008).

Due to the scarcity of urban resources, the institutional legacies left from the former planned economy system continued to limit the capacity of migrant workers without gaining hukou status in the cities that they live in. In terms of Beijing, the municipal government put restrictions on the jobs that migrants can hold, barring them from about two hundred occupations (Broudehoux 2004: 179). The migrant workers are largely employed in the manufacturing and construction industries, but seldom in government offices and state companies. Furthermore, without hukou, they were denied the access to perquisites such as free compulsory education for their children.

While migrant workers felt that they were the victims of unfair treatment by the government policies, the city dwellers, however, generally perceived migrant workers and their "urban villages" as the source of urban disorder. Many of the local urban residents were astute in identifying the differences between themselves and migrant workers, not by their jobs only, even by their accent, gestures, clothes and above all, their dispositions. The social inequality, or the lack of social opportunity thrust most rural migrants to the bottom of a ladder with little hope of climbing up. The controversial Hukou system reduced the chances of urban integration for migrant workers, thereby increasing their marginalization, perpetuating their condition as second-class citizens and enlarging the residential segregation of the city in the urban structure.

7.4 Conclusion

China's transformation from a planned economy to a market economy has produced tremendous changes in Beijing's housing development. With regard to the urban residential structure of the city, the most important change that has occurred is that the homogeneous residential type, which lasted for decades during the planned economy period, has been replaced by a residential type characterized by segregation.

In present-day Beijing, the residential segregation is manifested in the trend towards gentrification in the traditional residential districts in the old city proper and the polarization of living conditions between the high-grad houses and the poor

"urban villages" in the suburbs. Although the government believed that the living conditions were improved after the original residents of the Old City moved out into the suburbs, my analysis has shown that the residential relocation still had a large negative impact on the disadvantaged groups. The old city proper consisted of a large number of families trying to survive on a low income. After being compelled to leave their original neighbourhood due to urban redevelopment, they lost their opportunities to earn their livelihood because the environment on which they relied upon disappeared. In addition to the impact on their household incomes, my analysis has also shown that the relocation resulted in the collapse of their original social network.

In the suburbs of the city, the numerous "urban villages" manifested the residential difficulty that the disadvantaged groups experienced. Under the influence of the global economy, a polarization between rich and poor has become one of the most prominent characteristics of Beijing's social structure. Within this structure, private entrepreneurs or high-salaried employees of international enterprises and migrant workers from the countryside have formed two opposite extremes. Accordingly, the high-grade villas and the poor "urban villages" represent these two opposites in urban residential structure, and at the same time exacerbate the problem of residential segregation in the city. As for the cause for the residential segregation of Beijing, my analysis has shown that, different from racial segregation, which was an essential feature and a leading cause in Western cities as well as in the historical Beijing, household income has become the main factor that caused Beijing's residential segregation today. A residential structure based on economic affordability is coming into being.

7.5 Case Studies: An Investigation of the Living Conditions Within the Traditional Residential Districts in Beijing's Old City Proper

The case studies summary the two surveys which I conducted in 1987 and 2004 in order to investigate living conditions within the traditional residential areas in Beijing's old city proper. Two typical traditional residential districts, Jingshan Xijie and Jinguo Hutong, were selected as the subjects for this inquiry (Fig. 7.8). The Jingshan Xijie district is located at the centre of Beijing's old city proper and has been listed as one of the "Historic and Cultural Conservation Districts" (HCCD) by the municipal government. In contrast, Jinguo Hutong, which is located in the western part of the old city proper, has not been listed as a HCCD. The problems experienced by the Jingshan Xijie and Jinguo Hutong districts are common ones that many traditional residential districts in Beijing's Old City currently have to face: namely, due to the increasingly keen competition for land in the old city proper, both these neighbourhoods are under great stress to be redeveloped. As an undergraduate student, I participated in a questionnaire-based survey in Jinshan

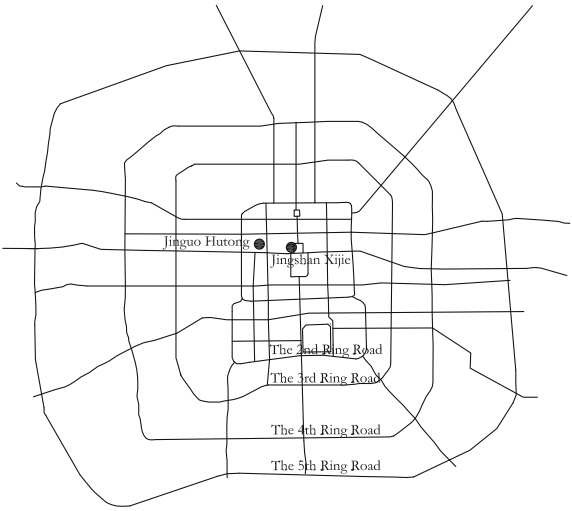

Fig. 7.8 Locations of Jingshan Xijie district and Jinguo Hutong district. *Source* Drawn by author based on investigation

Xijie district 1987. I shall compare this latter investigation with the more recent survey which I conducted in 2004.

From March to July 2004, with the help of the local residents' committees, I made an on-site survey of these two districts. I distributed 500 questionnaires to the residents (250 for each district) and retrieved 222 of them (85 from Jingshan Xijie and 137 from Jinguo Hutong). The questions were concerned mainly with the status of the local residents, the living conditions within the courtyard houses and the opinions of the residents on their potential residential relocation. In addition, I interviewed 40 families (20 for each district) in person. As most of the courtyard houses are shared by many families and the living conditions of each family could be somewhat different, I carefully selected those families which would best represent the average living conditions of the courtyard houses.

7.5.1 Status of the Residents

The Jingshan Xijie district is a well-known traditional residential district in Beijing. Located in the centre of the old city proper, it borders the three most important historic sites of the city: Forbidden City, Baihai Park and Jingshan Park. Because this area once housed a large number of high officials and aristocrats from the Yuan Dynasty, many large-sized courtyard houses and magnificent temples can still be found there. Since the founding of the People's Republic of China, it has gradually become a neighbourhood for the common people.

The Jingshan Xijie district has a land area of 12.6 ha. The largest proportion of this land (48 %) is devoted to residential housing; the second largest proportion (26 %) is occupied by historic sites; and the rest is used for roads, green space and

service facilities. With the exception of several multi-storey buildings, which were embedded in the old neighbourhood during the Great Cultural Revolution (1966–1976), Jingshan Xijie still maintains the characteristics of a traditional residential district.

The Jinguo Hutong district is located in the western part of Beijing's old city proper. The area to be investigated in this study is about 7.8 ha, its boundaries being Zhaodenyu Road to the east, Yuyou Hutong to the west, Dajue Hutong to the north and Pinganli West Street to the south. The present-day Jinguo Hutong district is a traditional residential district. In former times, this area also encompassed several historic sites, such as the Temple of Puan and the Temple of Yijiao, but these were destroyed before the twentieth century began. With the reconstruction of Pinganli West Street during the end of the 1990s, the traffic conditions of this district have greatly improved, and the neighbourhood has therefore attracted the special interest of real estate developers during recent years.

There are 2977 permanent residents in the Jingshan Xijie district, which make up 1210 families. (Taking into consideration the fact that 8 % of the houses in this district are let to the migrant population, the residents who actually live here should number about 3200.) In the 1987 survey, the population of this district was 4300 and the number of families was 1240. Thus, during the 17 years between 1987 and 2004, the number of families in this area has remained almost the same: the population decrease is due, rather, to a reduction in household size from 4.9 persons in 1987 to 2.5 persons in 2004. In 2004, the total number of families within the Jinguo Hutong district was 1075. Permanent residents accounted for 2950 persons, and the migrant population numbered nearly 500. The average number per family was therefore about 2.75.

These two districts share a similar population composition. In comparison with the figure for the city as a whole, they house more elderly people (see Fig. 7.9). Although the city has a tendency towards a smaller household size, there are still considerable numbers of families comprising several generations in the traditional residential districts (Fig. 7.10).

Residents in both these districts are disadvantaged in obtaining education (Fig. 7.11) and employment. Before 1995, when Beijing embarked on an adjustment of its urban industrial structure, most of the residents were employed by state-owned enterprises. After 1995, along with the difficulties which many

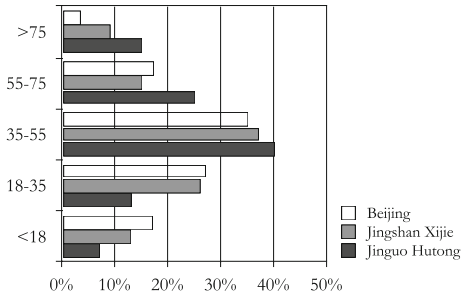

Fig. 7.9 Age composition of the residents of Jingshan Xijie, Jinguo Hutong districts and the city of Beijing. *Source* Drawn by author based on investigation

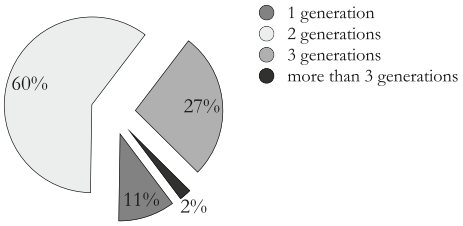

Fig. 7.10 Generation of the families of Jingshan Xijie district. *Source* Drawn by author based on investigation

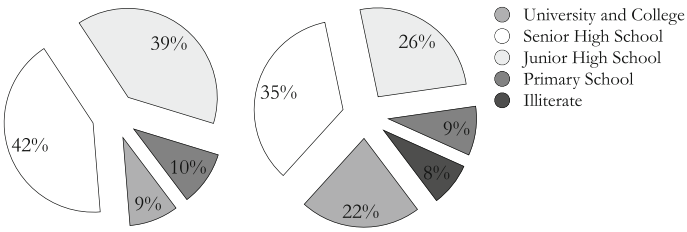

Fig. 7.11 Education of the residents of Jingshan Xijie district (*left*) and Jinguo Hutong district (*right*). *Source* Drawn by author based on investigation

state-owned enterprises underwent in their operations, many residents lost their jobs due to their more advanced age, lower education and poor techniques and consequently lived on the minimum living allowance issued by the municipal government. Even though some of them found jobs again, those jobs were normally temporary or of low salary. Taking the case of Jinguo Hutong: in 2004, families whose annual household income was below 2000 Yuan accounted for more than half of all the families who lived there, and those whose income was above 5000 Yuan accounted for only 5 % (Fig. 7.12). According to the definition put forward by the municipal government of Beijing in its statistical yearbook for 2004 (BMBS 2005), families with an annual household income below 8241 Yuan were classified as low-income families. Thus, most of the families in these two districts can be referred to as the low-income families of the city.

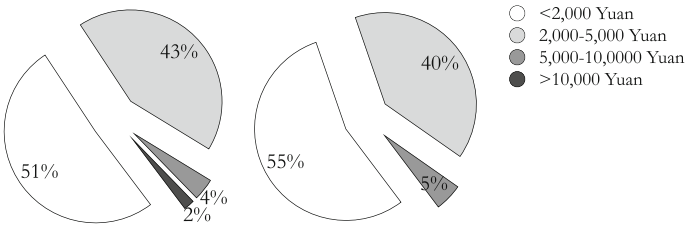

Fig. 7.12 Annual household incomes of families of Jingshan Xijie (*left*) and Jinguo Hutong (*right*) districts. *Source* Drawn by author based on investigation

7.5.2 *Living Conditions Within the Traditional Residential Districts*

The living conditions which exist within the Jinghshan Xijie and Jinguo Hutong districts share common characteristics. Due to their good accessibility to the city centre, parks(Beihai Park andJingshan Park) or activity centres (China National Children's Activity Centre), these two districts are both advantaged as regards public facilities, especially in respect of their public transport and playgrounds. However, due to the shortage of living space and the ageing and disrepair of the courtyard houses, both districts are also filled with shanties, which were built by the residents themselves and deteriorated the living conditions of the neighbourhoods.

Convenient public transport is one of the most important advantages of the traditional residential districts in Beijing's old city proper. Taking Jingshan Xijie as an example, this district's residents commute to work mainly by bicycle or bus, which means that travel time for most of the residents is below 33 min, and sometimes even less than 15 min (Fig. 7.13). This forms a sharp contrast with the situation in the city as a whole, where traffic jams have become increasingly serious and most people have to spend 1 or 2 h on their trips to work.

My investigation of the Jingshan Xijie district in 2004 suggests that 70 % of the residents were satisfied with the transport facilities of their neighbourhood. Moreover, 95 % of the residents were also satisfied with the playground and sports facilities within that neighbourhood or nearby. In comparison with the 1987 survey, the proportion of residents who were satisfied with the public facilities had increased from 19 % in 1987 to 47 % in 2004 (Fig. 7.14).

However, while being satisfied with the public facilities, many residents were disappointed with the living conditions of their courtyard houses. In the survey of Jingshan Xijie district in 2004, when I enquired about the improvement of the living conditions during the past three years, 65 % of the residents answered that the living conditions of their courtyard houses were the same as before, 30 % of them thought the living conditions were better than before, 2 % thought them much better and 3 % thought them much worse. This concern was also manifested with regard to the facilities of the courtyard houses in the Jingshan Xijie district in 1987 and 2004 (Table 7.4).

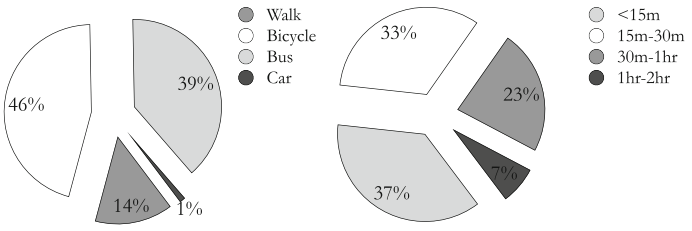

Fig. 7.13 The transport mode to work (*left*) and the time spend on the commute (*right*), Jingshan Xijie district. *Source* Drawn by author based on investigation

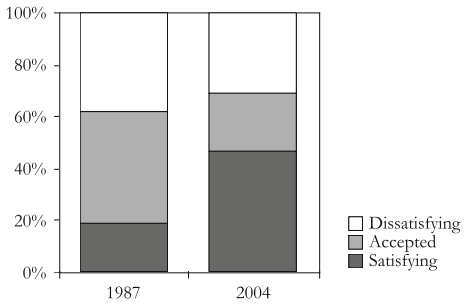

Fig. 7.14 Opinions of the residents of Jingshan Xijie district on the state of public facilities within their neighbourhood in 1987 and 2004. *Source* Drawn by author based on investigation

Table 7.4 The facilities of courtyard houses in the Jingshan Xijie district in 1987 and 2004

		1987 (%)	2004 (%)
Kitchen	Private	86	86
	Mutual	14	10
	None		4
Toilet	Private	10	29
	Mutual	90	67
	None		4
Bath room	Yes	10	36
	No	90	64
Tap water	Yes	86	98
	No	14	2
Sewer	Yes	67	93
	No	33	7
Central heating	Yes	10	61
	No	90	39
Gas-jar (1987)	Yes	62	7
Natural gas pipe (2004)	No	38	93

Source Made by author based on investigation

In addition to their poor facilities, the shortage of living space is another reason which has resulted in the deterioration of these traditional residential districts. The Jingshan Xijie district consists of 103 courtyard houses of various sizes. More than 1210 families lived in these 103 courtyards houses, that is, 12 families per courtyard house on average. In the largest courtyard house (once an accommodation of an aristocrat family of Qing) in the neighbourhood, the families who lived there include about ninety families in total. The average living space per family for the district was about 33 m^2, that is, about 13 m^2 per capita. The situation in Jinguo Hutong district was even worse, the average living space per capita being less than 10 m^2. This figure for both of the two districts was much lower than the average living space per capita for the city as a whole, which amounted to 19.1 m^2 in 2004.

Out of the families I surveyed in Jingshan Xijie, 18 had been living there for more than 20 years. Their opinions can best represent the changes in the living

conditions which have taken place in that neighbourhood during that time. The problem about which these residents complained most strongly was that of the toilets: those used by most of the families who lived there were still very sub-standard, and this was particularly noticeable when compared with the rapid development of real estate industry during the past decades. Modern facilities have now become the basic installations of newly built houses in Beijing: in comparison, the facilities of these old courtyard houses are indeed very old-fashioned.

7.5.3 Opinions of the Residents on Residential Relocation

From the end of the 1980s, and especially since 1992, the redevelopment of traditional residential districts has resulted in many residents of the old city proper being relocated to the suburbs. This can be seen if one compares the results of the two investigations made, respectively, in 1987 and 2004. In 1987, when the redevelopment projects were not yet fully operational, most residents wished to be relocated into multi-storey houses equipped with modern facilities. However, in 2004, after the redevelopment projects had been operated on a large-scale and many former residents had been pushed out of the old city proper, many residents changed their minds and preferred to remain in their original neighbourhoods (Fig. 7.15).

Underlying this analysis, one may discern a distinct contrast of attitudes between low-income and higher-income families. Generally, the higher-income families support the redevelopment projects more strongly than the lower-income families. Although some realize that they will be unable to return to their original neighbourhoods, they will be able to purchase new houses near the old city proper with the help of the financial support resulting from the compensation for relocation. Nevertheless, not all higher-income families share this attitude. Those whose courtyard houses are currently in good condition mostly object to the redevelopment projects, which will destroy the old houses and replace them with multi-storey blocks or even high-rise buildings. (On the whole, developers do not wish to maintain these courtyard houses, since they want to make profits by building more

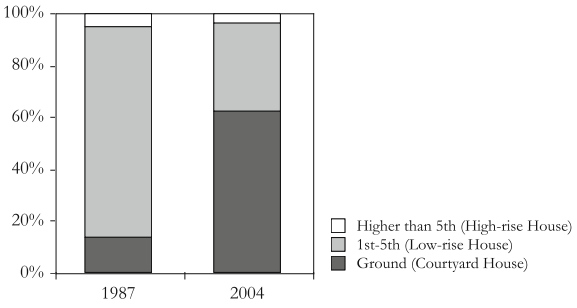

Fig. 7.15 The housing preferences of the residents in Jingshan Xijie in 1987 and 2004. *Source* Drawn by author based on investigation

living space for sale.) The lower-income families also wish that their living conditions could be improved by the redevelopment projects. But when they find that they cannot return to their neighbourhoods because of the high house prices which have resulted from this redevelopment, their opinions will be diversified. The families who can afford to buy suburban houses with the support of compensation for relocation may still accept the redevelopment projects. However, the families who cannot afford the suburban houses even with the financial support for relocation—especially those lower-income families, who have to make a living on the environment of the old city proper—will oppose the redevelopment projects.

Residential relocation will also marginalise the relocated residents. In particular, it will reduce the employment opportunities for these people, and will increase the costs necessary to enable these relocated residents to use public facilities and services in the city centre. As mentioned above, many residents of the traditional neighbourhoods are already disadvantaged and fall within the lower-income groups. Relocation to the suburbs will reduce opportunities for them to make a living in the city centre. Some of the concerns voiced during my 2004 survey are listed here.

"After my husband was out of work, he made money, about 400 Yuan/month, for the family by riding pedicab for tourists. If we moved to the suburbs, we would lose even this opportunity" (Mrs. Zhang of Jinguo Hutong district).

"My Mom moved to a new district outside of the Fifth Ring Road. There is no opportunity to make money over there because there are not many residents around. My Mom warned me not to move there" (Ms. Lin of Jingshan Xijie district).

"It is not a bad idea to improve the conditions of the old neighbourhoods. However, it is bad that many residents will be pushed out into the area outside the Fifth Ring Road. It is too far away for children to go to school, and the fare is expensive" (Mr. Yuan of Jinguo Hutong district).

"We have a disabled member of the family; we need government help to enable us to care for him. If we were relocated to the outer suburbs, it would be difficult for us to visit doctors. The quality of the hospitals in the suburbs is not good yet. We still need to return to the city centre for treatment" (Mrs. Niu of Jinguo Hutong district).

7.5.4 Conclusion

During the last two decades, although the real estate industry has been developing very fast in Beijing, the living conditions of the traditional residential districts have not improved accordingly. Many residents of these traditional neighbourhoods are the disadvantaged groups of the city. Relocation to the suburbs will marginalize the relocated residents and will impact negatively upon their lives. The opinions of the residents on the matter of residential relocation, as expressed in my surveys, clearly differ. The families who can afford the houses prices after the redevelopment or who prefer new houses in the suburbs normally prefer the redevelopment projects. The families which cannot afford the suburban houses with the support of relocation

compensation, or who make a living which is greatly reliant upon the old city proper, generally oppose the projects. However, one thing is clear that, in comparison with the situation before the 1990s, more residents at present wish that they could have returned to their old neighbourhoods after these had been redeveloped.

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Chapter 8
Diminishing Beijing's Residential Segregation by Improving Its Housing Security System

Abstract This chapter searches for solutions for improving the housing security schemes and reducing the residential segregation. It first evaluates the affordability of housing in Beijing, and then analyzes the problems faced by families on low incomes in respect of Beijing's "low-rent housing" and "affordable housing" schemes, and finally, makes some suggestions about how the housing security system of the city might be improved. It argues that Beijing's "low-rent housing" and "affordable housing" schemes cannot solve the housing difficulties of low-income families, and that it is therefore necessary for the municipal government to improve the housing security system in order to slow down the tendency towards residential segregation.

Keywords Residential segregation · Housing market · "Low-rent housing" · "Affordable housing" · Housing security system

The previous chapter discussed Beijing's increasingly evident tendency towards residential segregation after the mid 1990s, and claimed that household income became its main driving force after China started to transform into a market economy. In this chapter, I shall first evaluate the affordability of housing in Beijing for families with different household incomes, and I shall then analyze the problems faced by families on low incomes in respect of Beijing's "low-rent housing" and "affordable housing" schemes. Finally, I shall make some suggestions about how the housing security system of the city might be improved. I shall argue that Beijing's "low-rent housing" and "affordable housing" schemes cannot solve the housing difficulties of low-income families, and that it is therefore necessary for the municipal government to improve the housing security system in order to slow down the tendency towards residential segregation in the city.

As mentioned in Chap. 3, during the era of the planned economy, urban housing in Chinese cities was characterized by homogeneity, and residential segregation was a phenomenon unfamiliar to China. Consequently, there have been very few studies on residential segregation in Chinese cities before the 1990s, when urban residents began to purchase their own houses in the real estate market. In contrast

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with previous studies done by other scholars, which focus mainly on the driving forces of residential segregation in general, I shall, in the first section of this chapter, conduct a specific analysis of housing affordability, which will in turn focus on the way in which household income has directly influenced the development of residential segregation in Beijing.

Although Beijing has set up "low-rent housing" and " affordable housing" schemes with the purpose of helping low- and medium–low-income families, residential segregation has become increasingly visible in recent years. In the second section of this chapter, I shall therefore investigate the reasons why Beijing's "affordable housing" and "low-rent housing" schemes failed to solve the residential difficulties of the low- and medium–low-income families.

In today's China, there is underlying confidence in the functions which the market performs, and people believe that market forces will automatically solve all their housing problems. However, the residential difficulties of low-income families cannot be solved in this way. In the final section of this chapter, I shall propose that Beijing's municipal government must take action by improving the housing security system of the city, with the specific purpose of extricating low-income families from their housing difficulties and thereby reducing the residential segregation of the city.

8.1 Analysis of Housing Affordability in Beijing

8.1.1 Housing Affordability Ratings

Housing affordability is related to housing prices and household income. Normally, the ratio of price per house to annual household income is used to indicate housing affordability. This ratio indicates not only the ability of a family to spend on its housing, but also the ability of the housing market within a particular city to supply housing to its residents. "Housing Affordability Ratings" (HAR) have been used to measure the affordability of housing in many Western cities, in the USA, in the UK, Australia, New Zealand and Ireland (Cox and Pavletich 2006). Here, I shall apply a similar method to measure the HAR in Beijing.

It is assumed that families purchase their houses through bank loans. The formula by which Chinese banks calculate loan repayment schedules on a monthly basis is as follows:

$$R = L \cdot \alpha \cdot \left(1 + \frac{1}{(1+\alpha)^t - 1}\right)$$

where R is the monthly payment, L is the amount of the loan, α is the monthly interest rate and t is the mortgage period in months. If the entire payment for a house comes from a bank loan, then $L = P_H$, where P_H is the total house price.

The HAR, i.e. the ratio of house price-to-household income, can therefore be described as follows:

$$\mathrm{HAR} = \frac{P_{\mathrm{H}}}{I_{\mathrm{H}}}$$

where P_{H} is the price per house, and I_{H} is the household income per year. In addition, the monthly payment for housing, when seen as a proportion of the total annual household income, can be described as follows:

$$\beta = \frac{12R}{I_{\mathrm{H}}}$$

Therefore, if we insert the latter two formulae into the first one, we can calculate the HAR as follows:

$$\mathrm{HAR} = \frac{\beta \cdot [(1+\alpha) \cdot t - 1]}{12\alpha \cdot (1+\alpha)^t}$$

From this formula, it can be seen that HAR depends on the ratio of monthly payment to household income, and on the interest rate for the loan as well as on the mortgage period. Before 2005, the interest rate for housing loans granted by Chinese banks was 5.04 % per annum, and after 2005 this rate was increased to 5.31 %. I took the rates before 2005 into account when making this estimate. Hence the rate per month was originally α = 5.04 %/12, or 0.42 %. If we assume that a family can afford to pay 25–33 % of its household income to the bank for loan repayment, i.e. if β is 25 or 33 %, then the time necessary for the family to repay the bank loan can be estimated in situations where HAR is equal to 1.5, 2, 3, 4, 5 and 6 respectively. The results are shown in Table 8.1.

Table 8.1 shows the number of years required to pay-off a loan for a house if dedicating 25–33 % of the income to a 5.04 % mortgage. The cells that are left blank in the bottom two categories signify that the house loan can never be paid-off. Such loans are ranked "unaffordable", since most lending institutions in China are reluctant to give mortgages to people who would have to spend more than 30 years and 30 %

Table 8.1 "Housing affordability ratings" in Beijing before 2005 (α = 5.04 %)

HAR	Mortgage ears		Affordability
	β = 25 %	β = 33 %	
1.5	7.2	5.1	Extremely Affordable
2	10.3	7.2	Very affordable
3	18.5	12.2	Affordable
4	32.7	18.8	Affordable
5	–	28.7	Marginally affordable
6	–	–	Unaffordable

Source Made by author

of their annual income on the mortgage. Therefore, 5 was the marginal value of HAR for Beijing's families before 2005. In other words, that was the threshold which Beijing's residents had to cross before they could enter the housing market.

8.1.2 *Housing Affordability of Beijing's Families*

From the 1990s onwards, Beijing's real estate market has experienced a rapid rise in housing prices, from 1417 Yuan/m^2 in 1991 to 5648 Yuan/m^2 in 1997, with an annual growth of about 10 %. After that period of growth, prices declined slightly but have still remained at a high level, above 4400 Yuan/m^2. Also since the 1990s, the annual income per capita of Beijing's residents has grown steadily, from 1418 Yuan in 1991 to 4747 Yuan in 2004, and with this has also grown the living space per capita of the city, which has increased from 11.6 m^2 in 1991 to 21.5 m^2 in 2004 (see Fig. 8.1). These increases in statistical figures show that the average living conditions of Beijing's residents have greatly improved during the past fifteen years. However, this does not mean that living conditions and housing affordability have improved equally for all Beijing's resident families, especially for those on low-incomes.

Here, I shall use the marginal HAR which we calculated in the previous section to scale the housing affordability of Beijing's families since the 1990s, and thereby to learn how household incomes have influenced the residential structure of the city. Since the 1990s, Beijing's average urban household has contained 3.1 members. In 2000, the living space per capita was 16.8 m^2, and the average household living space was 52 m^2. The average housing unit price in that year was 4557 Yuan/m^2, and the total average price for a house was about 237 thousand Yuan. In that year, the annual income per capita was 12.5 thousand Yuan, and the average household

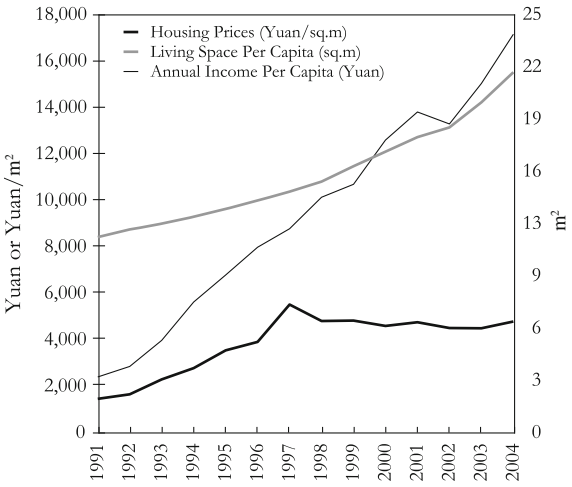

Fig. 8.1 Housing prices, annual income per capita and living space per capita for urban residents of Beijing, 1991–2004. *Source* Drawn by author based on data from BMBS (2001) and BMBS (2002–2006)

income was 39 thousand Yuan. We can therefore calculate that the HAR for the year of 2000 was 6.1. Using a similar procedure, we can also calculate the ratio for other years. The results of these estimates are shown in Fig. 8.2.

From Fig. 8.2, it can be seen that, from 1991 to 2004, the housing price-to-household income ratio is much higher than 5, the marginal value of HAR for Beijing's families. In other words, given the high housing prices in Beijing, most families of that city have insufficient means to buy houses.

In the same way we can make another estimate on the affordability of housing for those families in Beijing who have different household incomes. As shown in Table 7.2, household incomes in Beijing can be divided into five categories: low, medium–low, medium, medium–high and high, each accounting for 20 % of the total. The marginally affordable value of HAR for Beijing's families is 5: we can therefore calculate the maximum housing affordability of families with different household incomes (see Fig. 8.3). It can be seen from this graph that only high-income families had the financial means to be able to enter the housing market in Beijing except the year 1997, and that other families would have been unable to afford the housing prices.

In addition, we can estimate the affordability of the families for houses in different districts of Beijing. As indicated before, Beijing is a city with a mono-centric urban structure. Land prices within the old city proper are much higher than in the surrounding areas, and the distribution of Beijing's house prices reflects that pattern. In other words, housing prices in the old city proper are the highest and decline with an increase in distance from the old city proper. A statistical report (BMCC 2003) on Beijing's housing market shows that, in 2003, the four districts (Xicheng, Dongcheng, Chongwen and Xuanwu) within the old city proper displayed the highest housing prices—between 6500 and 11,000 Yuan/m^2. Housing prices within the four districts (Haidian, Chaoyang, Fengtai and Shijingshan) in the inner suburbs were in the medium range, between 3800 and 6500 Yuan/m^2, and the five districts

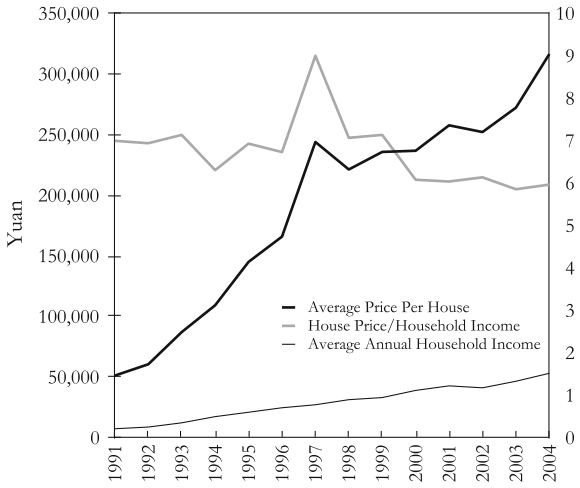

Fig. 8.2 Estimate of the housing affordability of Beijing's families, 1991–2004. *Source* Drawn by author based on data from BMBS (2001) and BMBS (2002–2006)

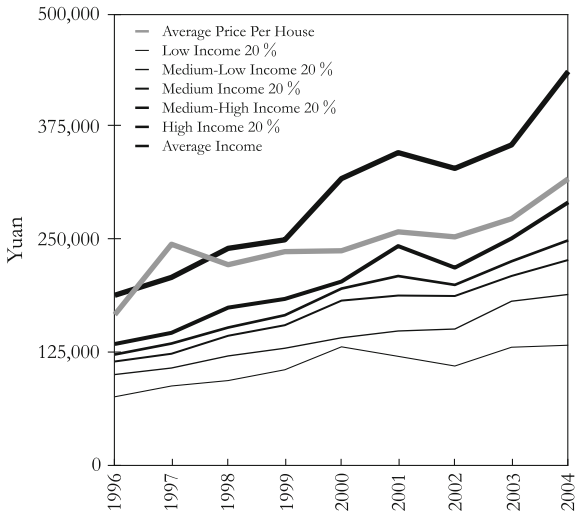

Fig. 8.3 Estimate of the maximum housing affordability of different household incomes. *Source* Drawn by author based on data from BMBS (2001) and BMBS (2002–2006)

(Huairou, Tongzhou, Daxing, Changping and Mentouguo) in the outer suburbs were the lowest, i.e. below 3500 Yuan/m^2. The only exception was that housing prices in Shunyi, a district in the outer suburbs, were much higher (6000 Yuan/m^2) than the prices in other districts of the outer suburbs, because many of the new high-grade real estate properties, such as the villa houses, were located in that district. We know from Fig. 8.1 that the average living space per capita in 2003 was 19.7 m^2. If we still take the number 5 as the marginally affordable HAR, and use the data from governmental statistics for household incomes in 2003, we obtain the results shown in Fig. 8.4.

It can be seen from Fig. 8.4 that families whose incomes are equal to or lower than the medium–low income (which constitute 40 % of the total families) would find it very difficult to afford buying a house in Beijing. The medium and medium–high-income households (which constitute another 40 % of the total) are able to afford houses in some districts in the outer suburbs, the 10 % high-income families are able to afford houses in some districts in the inner suburbs, and only the 10 % highest income families can afford to buy houses in the old city proper. Yet even these still find it difficult to afford houses in two districts within the old city proper, Xicheng and Dongcheng, which have the highest housing prices in the city.

It should be pointed out that, due to the prevalence of grey income in today's China, high-income families are advantaged by grey income, a circumstance that further increases their housing affordability. Furthermore, when actually buying a house in Beijing, the purchaser must normally make a minimum down payment of 20–30 % of the total house price. This would cause little hardship to high-income families, but would cause serious difficulties to those who had to exist on lower incomes. Therefore, housing affordability for low-income families should be even weaker than that shown in the estimate.

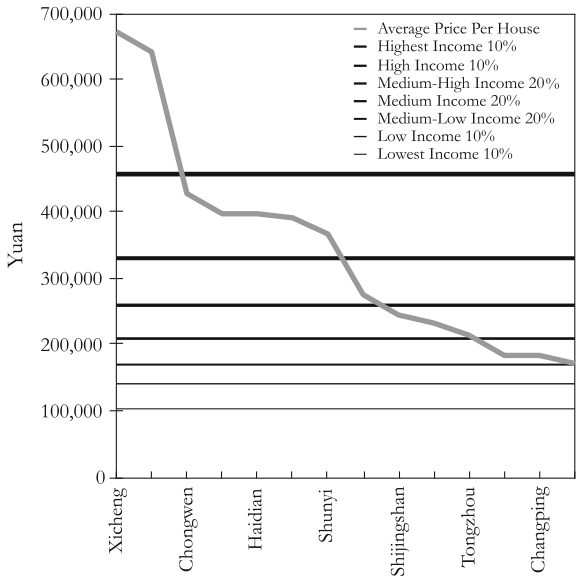

Fig. 8.4 Estimate of the maximum housing affordability by household incomes for different districts in 2003. *Source* Drawn by author based on data from BMCC (2001) and BMBS (2002–2006)

8.1.3 A New Residential Structure Emerging in Beijing

Due to the difference in household incomes, Beijing's residential structure has also started to experience some changes since the late 1990s. The residential structure characterized by the dominance of homogeneous "work-unit" compound in the suburbs and old housing districts in the old city proper are undergoing profound transformation. A new segregated residential structure, which is characterized by families' housing affordability, is gradually coming into being.

In the old city proper, some courtyard houses have been dismantled and turned into high-grade houses which only the richest families can afford to purchase. For example, the Wangfujing-Dongdan area, situated in the centre of the old city proper, has attracted many international institutions and companies and top-quality hotels owing to its advantageous location. This is also the area with the highest concentration of high-grade flats in the city. In the area around Shichahai (three lakes within the old city proper), some traditional courtyard houses have been renovated and turned into the most expensive accommodation of the city. They are occupied by the richest population of the city. Some of these people have come to Beijing from other cities or other countries.

In the other areas of the old city proper, however, many poor families still live in the blighted neighbourhoods that have not yet been dismantled. Due to their poor urban infrastructure and high population density, these areas did not attract investment, and the courtyard houses there have not experienced any improvements in their conditions (see 7.5 Case Studies). These houses are normally still shared by a number of families, many of whom have been living there for several generations.

For example, the Dazhalan-Tianqiao area, situated in the southern part of the old city proper, has both the highest concentration of courtyard houses and the highest population density of the city, but also the poorest living conditions.

In the suburbs, most of the families who once were members of "work-unit" still live in the "work-unit" compounds, while the better-off families have moved into private housing estates: which we discussed in Chap. 6. Next to or around the compounds, a large number of new residential districts with better living conditions have been built, which form contrast to the "work-unit" compounds. In addition to the high-grade accommodation within the old city proper, the north-eastern suburbs of the city have sprouted many villas for the wealthy who wish to congregate in the suburbs. It is the richest district in the suburbs of the city, and particularly favoured by the high-income employees or businessmen from international companies. Moreover, thanks to the rapid development of hi-tech industry during the past decades, the north-western suburbs, where many hi-tech companies, scientific research institutes and universities are concentrated, are the districts with the fastest housing development of the city. Apart from the staff of these scientific research institutes and universities, more and more young professionals who work in hi-tech companies have also settled down there.

The other suburbs, especially the inner suburbs to the south and the outer suburbs to the north, have become the dwelling districts for families with low incomes. Some of these families were pushed out from the old city proper because of the "Old and Dilapidated Housing Redevelopment Project" (ODHRP) which we discussed in Chap. 4. In addition, in the suburbs of the city, especially in the hinterland with its disadvantageous location, many "urban villages" are scattered around: we discussed this in Chap. 7. Most of the migrant workers, who are unskilled, and the low-income population from the rural areas, are concentrated there.

8.2 Problems of the Housing Supply to Low-Income Families

In 1998, the State Council of China issued the *Circular Concerning the Further Deepening of the Reform of the Urban Housing System and the Acceleration of Housing Construction*, which brought the "Welfare-oriented Housing System" (WHS) to an end. By this circular, local municipal governments were required to establish a new housing supply system for households with different incomes, i.e. to provide commodity housing for high-income households at a market price, to provide "affordable housing" for low- and medium-low-income households at a preferential price, and to provide "low-rent housing" for the lowest-income households at a low rent. "Affordable housing" and "low-rent housing" aim to provide social security. The distinction is that "affordable houses" are sold at a preferential price, but "low-rent houses" are only let out and at a low rent (Liu 2010).

In this and the subsequent sections, I shall discuss the implementation of this housing security system in the case of Beijing, and will examine whether this system solves the housing difficulties of those low-income families who have not enough housing affordability in the housing market.

8.2.1 The "Affordable Housing" Scheme

In 1999, "affordable housing" appeared in Beijing for the first time. According to the definition by the government, this "affordable housing" made a feature of its "economy" and "applicability". "Economy" means being given preferential treatment by the government in respect of the commission of land remise and other chargeable expenses: the housing price would be affordable for low- and medium-low-income households in comparison with the market price. "Applicability" means that the housing facilities would be designed to satisfy only the basic requirements, in accordance with national building standard specifications, rather than to pursue a high-grade standard.

After the implementation of this scheme for several years, it became clear that the problems with the "affordable housing" scheme lay mainly in the following three aspects. First, the market was seriously short of a supply of "affordable housing"; second, the low-income families could still not afford the "affordable housing"; and third, most of the "affordable housing" districts subsequently turned into "dormitory towns".

From 1999 to 2004, the floor space of the "affordable housing" completed per year in Beijing has slightly increased, but there has been a steady fall in the rate of the floor space of "affordable housing" to commodity housing (see Fig. 8.5). As shown in Table 7.2, household incomes in Beijing are reported in five grades, from low, medium–low and medium incomes to medium–high and high income, each accounting for 20 % of the total. Although "affordable housing" was earmarked for families on low- and medium–low-incomes, it is actually demanded by the medium–high-income families as well in view of a conflicting condition laid down by Beijing's municipal government. According to government policy, families whose household incomes are lower than 60,000 Yuan/year may apply to purchase "affordable housing". However, according to the statistical yearbook, families with a 60,000-Yuan household income actually fall into the category of medium–high income (see Table 7.2). Furthermore, because the price of commodity housing is far above what most families in Beijing can afford, some medium–high income families who, according to the circular issued by the State Council of China, should buy commodity housing, have taken to buying the "affordable housing". As a result, "affordable housing" is demanded by nearly 80 % of the families of the city. However, from Fig. 8.5 it can be seen that commodity housing accounted for only 17 % of "affordable housing" in 2000, and for only 12 %—the lowest percentage—in 2002. This is why, in contrast to Beijing's rapid housing development in recent years, "affordable housing" has, conversely, been in increasingly short supply.

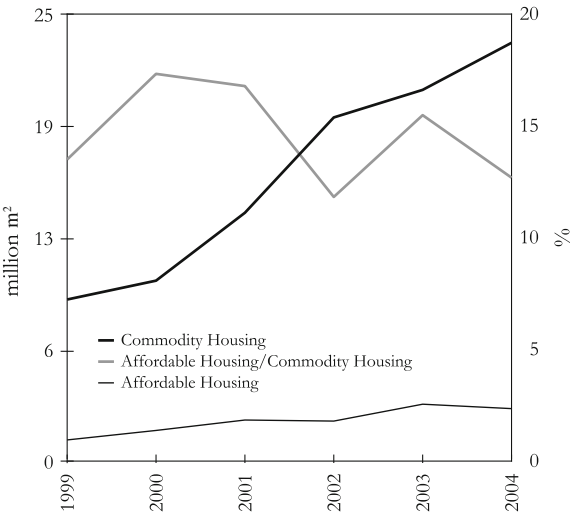

Fig. 8.5 Floor space of the "affordable housing" and the commodity housing completed in Beijing, 1999–2004. *Source* Drawn by author based on data from BMBS (2001), BMBS (2002–2006) and BMCC (2003)

As for the ability of Beijing's families to afford the "affordable housing", such housing is still unaffordable for the low-income families. Although "affordable housing" is a government-subsidized housing project, and the government has therefore given it preferential treatment in respect of the commission of land remise and other chargeable expenses, so that its prices are normally 10–20 % lower than the normal commodity houses on the market, that price still remains too high. Table 8.2 shows a rough appraisal on how much families can afford to pay for "affordable housing". The prices of such housing in Beijing have been roughly divided into two groups: 2400 Yuan/m^2 for houses in the outer suburbs and 3500 Yuan/m^2 for those in the inner suburbs. I take the lower figure of 2400 Yuan/m^2 into the estimate. Furthermore, I reckon that the average floor space of the "affordable housing" is 60 m^2. The results of these calculations are given in Table 8.2. From the previous section we got that the marginally affordable HAR for Beijing's families is 5, it can be seen that "affordable housing" in Beijing is actually still unaffordable to low-income families.

In the estimate, I calculated that the average floor space of the "affordable houses" was 60 m^2. In fact, many such houses do not reflect the feature of "applicability" as the scheme stated, and actually possess a floor space nearly 100 m^2:

Table 8.2 Estimate of the "affordability" of Beijing's families on the "affordable housing"

Year	HAR		
	Low income	Medium–low income	Medium income
2000	6	5	4
2002	7	5	4
2004	6	4	3

Source Made by author

indeed, the highest one measures about 200 m^2. Because of the large floor space, the total price of a house is much higher, and beyond the "affordability" of not only the low-income families but even that of the medium-income families. Meanwhile, because of the rapid rise in housing prices in recent years, which provided opportunities for large profits from housing investments, some high-income families have purchased houses not only for dwelling but also for letting or reselling. According to the Xinghua News (Song et al. 2005), in Huilongguan and Tiantongyuan, the two biggest "affordable housing" communities of Beijing, nearly 80 % of the "affordable houses" were actually sold for letting. That is to say, a considerable number of the "affordable houses" have fallen into the hands of purchasers who buy "affordable houses" not as places to live but as an investment.

As for the third problem that many "affordable housing" communities have turned into "dormitory towns", according to my investigation in 2004, 70 % of these communities were located in the outer suburbs of the city, far away from the city centre (see Fig. 8.6). For instance, Tongzhou District is now the area where most of the "affordable housing" communities are located: and this district is situated in the outer suburbs to the east of the city, and is over 30 km away from the city centre.

In addition to their long distance from the city centre, almost all the "affordable housing" communities in Beijing were designed and constructed as separate districts, not mixed in with other types of residences. Some of them are huge in size with a floor area of several million square metres or more, and with over one hundred thousand residents. For example, Huilongguan and Tiantongyuan (Table 8.3), located to the north of the city and nearly 30 km away from the city centre, occupy land areas more than 770 ha and have residents more than 110 thousand. Each looks more like a "town" (Fig. 8.7).

Because they provide few job opportunities, the residents of these "affordable housing" communities sleep there at night but have to return to the city centre for work during the daytime. Taking Tongzhou as an example again, in 2003 the newly built residential housing in this district had reached 2.5 million square metres in

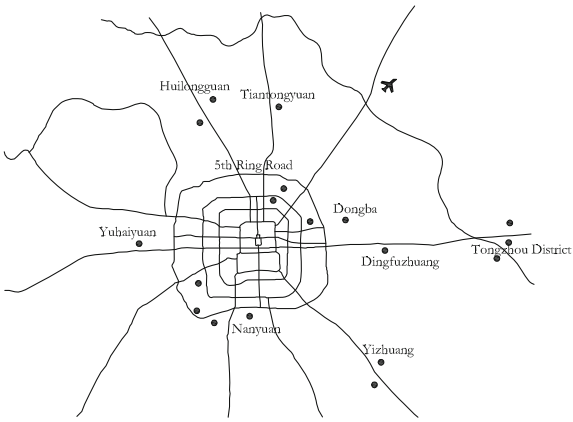

Fig. 8.6 The locations of the "affordable housing" communities in Beijing. *Source* Drawn by author based on investigation

Table 8.3 Statistical data of the two biggest "affordable housing" communities in Beijing

	Total land area (ha)	Land area for construction (ha)	Total floor space (million square metre)	Residential floor space (million square metre)	Planned inhabitants (1000 person)	Inhabitants in 2004 (1000 person)	Year started
Huilongguan	920	455	4.9	3.88	110	60	1999–
Tiantongyuan	770	423	8	5.72	156	70	1999–

Source Made by author based on data from Zhao (2004)

Fig. 8.7 Tiantong Yuan, an "affordable housing" community to the north of Beijing. *Source* By courtesy of the Reference Room of the School of Architecture, Tsinghua University

floor space, but the floor area allowed for commercial space was only 181 thousand square metres, and that for office space was zero (Chen 2004). In addition, apart from being able to avail themselves of some commercial facilities for daily life, the residents still have to go back to the city centre for other activities, such as seeing a doctor, attending a performance, watching a sports game or making a high-grade purchase (Bai 2004). Huge in scale but thin in function, these super-sized "affordable housing" communities met the demands only for a place to sleep, and have therefore turned into "dormitory towns".

8.2.2 The "Low-Rent Housing" Scheme

In addition to the "affordable housing" scheme, in 1999 the central government of China issued the *Administration Measures on Urban Low-rent Housing* with the purpose of providing "low-rent housing" for families with the lowest income. In 2004, the central government revised these measures and issued the *Administration Measures on Low-rent Housing for Urban Lowest-Income Households*, which has worked out definitive regulations concerning the principles, the application and the standards of the "low-rent housing" scheme (Lu 2004). Under these measures, low-income families who meet local government requirements may apply for "low-rent houses". In principle, the "low-rent houses" would be available to those urban families who were living on the local "minimum living allowance"[1] and whose per capita living space, meanwhile, was less than 60 % of the local average. Because the economic development of different regions is very uneven in China, the central government has given local governments the authority to set their own guaranteed levels of "low-rent housing" for urban lowest-income families in accordance with their own particular local situations.

[1]Local minimum living allowance: In 1999, the Chinese government promulgated the "Regulations on Guaranteeing Urban Residents' Minimum Standard of Living", which stipulates that urban residents whose family's per capita income is lower than the local urban residents' minimum standard of living can receive basic subsistence assistance from the local government.

In the case of Beijing, the municipal government issued its own "low-rent housing" scheme in 2001, and implemented the scheme in the eight main urban districts[2] of the city. Under this scheme, the municipal government stipulated that families whose per capita income was below 290 Yuan/month (which was Beijing's "minimum living allowance" in 2001) and whose per-capita living space was, at the same time, less than 7.5 m^2, could apply for low-rent houses. Poor and disabled veterans, and the families of those who had died for their country or at their posts, were also covered by this scheme. According to an investigation in 2004 (XN 2004), there were about 60,000 families in Beijing who were then living on the government's "minimum living allowance", and about 18,000 of them whose per capita living space was less than 7.5 m^2. This meant that only 18,000 families were eligible to apply for "low-rent housing", which accounted for less than 2 % of the total number of families living in Beijing. It is clear that the number of families who were covered by this scheme was really limited.

At the end of 2005, the municipal government revised the above requirements and extended the coverage to families whose per capita income was less than 580 Yuan/month, which was Beijing's "minimum wage rate"[3] in 2005 (Liu 2006). Thus families whose per capita incomes was more than the "minimum living allowance" but less than the "minimum wage rate", and whose per capita living space was, moreover, less than 7.5 m^2 (as in the former requirement), were also included in the scheme. Even so, the coverage of the scheme still remained very limited, since according to the government's yearbook, the Beijing families whose per capita income was less than 580 Yuan/month accounted for only about 5 % of the total (BMBS 2002–2006). So if the "per capita living space" requirement is taken into consideration, the percentage of families entitled to apply for "low-rent housing" in Beijing is still less than 5 %.

In addition to its very limited coverage, another problem with the "low-rent housing" scheme is that such "low-rent houses" are in very short supply. The situation is even worse than with that of the "affordable housing" scheme. The families who meet the very stringent requirements are quite few in the city, and most of them, indeed, are still unable to get "low-rent houses" because the number of these "low-rent houses" is too small. In 2004, the first "low-rent housing" community was completed in Beijing: but only 400 houses were available, with a total living space of 32,000 m^2 and with a per house living space of 30–60 m^2 (XN 2004). A batch of 400 lowest-income families luckily got the nod to move into the community.

After seeing the difficulty of building "low-rent houses", since early 2005 the municipal government has been looking at alternatives. Instead of providing houses

[2]The eight main urban districts in Beijing are Dongchen District, Xuanwu District, Chongwen District, Chaoyang District, Haidian District, Fengtai District and Shijingshan District.

[3]Minimum wage rate: China's Labour Law provides a minimum wage requirement, which is determined at a provincial level. In 1993, the Regulations on Minimum Wages in Enterprises (amended in October 1994) required all local governments to set minimum wage standards for the cities.

directly, the government has provided "low-rent housing" mainly through paying rent subsidies to those families who qualified for these. According to Beijing's Construction Commission (Liu 2006), by the end of 2005 about 15,000 families had benefited from the "low-rent housing" scheme. This accounted for only 0.7 % of the total number of families in the eight main urban districts in Beijing (BMBS 2002–2006). Among the others, 99 % of these got assistance in the form of rent subsidies.

8.3 Improving the Housing Security System

Security of housing is an important part of the social security system. "Affordable housing" and "low-rent housing", together with medical insurance, pension insurance and a minimum living allowance, are all part of the newly evolving social security system with which the Chinese government has been engaged ever since China shifted to become a market economy. On the whole, the housing security system is still in its initial stage. Even in Beijing, a city with a better urban development than the other Chinese cities, its housing security system is far from being perfect and many aspects need to be improved. In this section, I shall make suggestions of how to improve four aspects of this system: firstly, by emphasizing the responsibility of local government in establishing a housing security system; secondly, by diversifying the financial channels for the "low-rent housing" scheme; thirdly, by extending the coverage of the housing security system; and fourthly, by mixing "affordable housing" projects with different land uses and different housing projects.

First of all, the local government should take responsibility for establishing a housing security system. Although as early as 1999, the State Council of China required 291 designated Chinese cities to establish a "low-rent housing" scheme, many of those cities failed to implement this policy. China's Ministry of Construction disclosed that, up to April 2006, 70 of the 291 designated cities had not yet set up the "low-rent housing" scheme as required by the central government. In the case of Beijing, of the 18 districts and counties of the city, five had not yet established the "low-rent housing" scheme and another five had given assistance to only 67 families during the past five years (XN 2006).

Housing is a basic necessity that provides shelter for families. Housing is an object of attachment and a source of identity and also has a significant relationship to psychological well-being. The World Health Organization's *Health Principles of Housing* points out that housing protects against communicable diseases, protects against injuries and reduces psychological and social stresses (Anderson et al. 2003). "Low-rent housing" is a kind of public resource for needy families, which actually draws on similar arrangements in many countries and regions throughout the world, such as the council housing in the UK, the social housing in the European Union and the public housing in the USA. In the European Union, the distinctive purpose of social housing is to provide affordable housing to families

which experience difficulties in finding housing under market condition (Czischke 2005). For example, in France, the social housing is estimated to represent 17 % of principal dwellings, and its standard has improved significantly with modern facilities since the mid-1980s (Ball et al. 2005). In the UK, as early as 1919, the enactment of the *Housing and Town Planning Act* led to the creation of large-scale council housing (Khatun 2006). By the early 1980s, the UK had almost a third of its housing stock in the social sector, which was one of the highest shares in Europe. Although council housing's tenure share had declined since then, because of sharply reduced new building rates and sales of existing dwellings, the council housing still accounted for 14 % by 2001 (Ball et al. 2005). In Asia, we have similar cases. Between 1988 and 1992, the South Korean government built 900,000 "low-rent houses" for low-income families. Also, in Hong Kong, at its peak, the number of people living in the public housing sector accounted for nearly half the population of the city (Zhang 2005). The situation described above, in China, has been caused mainly by the dysfunction of the local government. In other words, the local government did not take seriously the establishment of the "low-rent housing" scheme.

After China's transformation into a market economy, both central and local government have been inclined to prioritize economic development. Many local governments are inclined to take the real estate industry as a pillar industry of the city, or as the main driving force for urban economic development (Yin 2005; Zhang 2005). In the case of Beijing, according to the statistics from Beijing's Reform and Development Commission (Yin 2004), the direct effect produced by the real estate industry on Beijing's gross domestic product (GDP) accounted for approximately 5–10 %, and it has therefore taken fifth place among the tertiary industries of the city. It is clear that the real estate industry has played an important role in the economic development of the city. Earnings from urban land have become an important source of the municipal government's revenue. The more land transfers there are, the higher land prices are, and the more profits are made.

It has been demonstrated that the supply of "low-rent housing" and "affordable housing" has accordingly affected the housing prices of the city, and has thus reduced the government's revenue from urban land. Without punishments and incentives, local governments have been reluctant to replace commodity housing by providing "low-rent housing" and "affordable housing". While the "Welfare-orientated Housing System" (WHS) was gradually ending in China, the movement to reform urban housing emphasized, in consequence, the commercialisation of urban housing: but this movement often neglected the need to establish a new housing security system. One of the government's functions is to provide public goods. A guarantee of basic living conditions for urban low-income families should be included in the scope of the governments' functions. Nevertheless, an official from Beijing's Reform and Development Commission once expressed the view that the government was responsible for ensuring that housing prices "do not fluctuate too much" in order to avoid having a negative effect on the GDP (Yin 2004). It would seem that, as a principal interested party seeking revenue from urban land, local government is reluctant to reduce housing prices.

According to international experience, even under a market economy it is impossible to solve the housing difficulties of low-income families within the housing market. The government should take into account the interests of different social strata. In particular, in the current situation in which social polarization is becoming increasingly serious in Beijing, it is more important than ever for the government to take into account the interests of disadvantaged groups and low-income families. It is crucial that local governments must recognize the importance of establishing "low-rent housing" schemes, and that the central government should consider the establishment of a housing security system as one of the criteria against which to appraise local government performance.

Second, it is necessary to diversify the channels through which the "low-rent housing" scheme is financed. While the commodity housing market was booming, few developers wanted to invest in "low-rent housing", and the local governments provided little financial assistance for the "low-rent housing" scheme. Take Beijing as an example. Here, investment in commodity housing increased from 52 billion Yuan in 2000 to 147 billion Yuan in 2004 (BMBS 2002–2006). Meanwhile, the accumulated funds for the "low-rent housing" scheme amounted to only 80 million Yuan by 2002 (Yang 2002) and 3.4 billion by 2006 (Zheng 2006), which, in sharp contrast to the generous investment in commodity housing, constituted even less than the investment in a general high-grade housing project in Beijing.

According to government policy, the funds for "low-rent housing" must be brought under a housing guarantee fund, entrusted to the bank as a special deposit, managed by a special account, and used for constructing "low-rent houses" or distributing rent subsidies, and for relevant administrative expenses. Currently, these "low-rent housing" funds are mainly raised through the following channels: special funds from the local government's financial budget, and urban low-rent subsidies funds, extracted as required from the housing accumulation fund's value-added benefits.

Judging from the experience of Western cities, investments for the "low-rent housing" come from diverse sources. For example, French government involvements in housing through subsidies, tax breaks, land-use policies, rent controls and financial regulation (Ball et al. 2005). Generally, the governments in the European Union support social housing, first, by wide public aid for operators (subsidies for investment or for operating costs, low-interest loans, public guarantees, sale of land at lower than market price, tax exemptions, reduced VAT rate, community structural funds, capital interests, private funds for social housing aid required by law); second, by joint financing of operations, from EU to State, to Regions, to Counties/Provinces, and to Local authorities; and third, by price equalization between housing within an organization's housing stock (Czischke 2005).

With the development of the economy and the increase in local government revenue, the central government should enact certain policies to ensure that local governments invest adequate money in a "low-rent housing" scheme. According to a newly issued policy by the central government (Chen 2006), from September 2006 onwards, local governments are required to set aside 5 % of their net proceeds from urban land for the "low-income housing" scheme. Even so, in the case of

Beijing, only 500 million Yuan could be added to the funds in 2006 (Wang 2006). This is far from enough. These governments should expand the financing channels for the "low-rent housing" scheme, for instance by accepting donations from society and by issuing housing construction bonds for this purpose.

Third, Beijing's housing security system should be extended to cover more of the needy population of the city. To date, the "affordable housing" scheme and the "low-rent housing" scheme are the main sources of housing supply for the low-income families in Beijing. However, there is a gap between these two schemes. Although the "affordable housing" is earmarked as housing for low- and medium-low-income families, as mentioned in the previous section, because of the high prices, even medium-income families actually are difficult to afford these houses. As for "low-rent housing", according to Beijing's current policy, only 5 % of families—those with the lowest-income—are eligible to apply for this. It is clear that there are large numbers of families who can neither afford to purchase the "affordable house" nor are entitled to rent the "low-rent house".

In addition, both the "low-rent housing" scheme and the "affordable housing" scheme are open only to residents with urban "hukou" status. Nearly all Chinese cities totally bar the huge migrant population from access to the housing security system. Beijing is no exception. As a matter of fact, the majority of the migrant workers live in the "urban villages" with poor living conditions, because by their low-wage jobs they cannot afford to purchase newly built housing in real estate market. These poor people represent those who most truly need the housing security system.

Any taxpayer has the right to live in "low-rent housing", which is a kind of public resource. Excluding migrant population from the housing security system is a kind of institutionalized discrimination. In many countries of the European Union, the social housing is to be provided to households experiencing difficulties in finding housing, no matter which are disabled or elderly people, immigrants, students or large families (Czischke 2005). As the number of migrant workers in Beijing keeps growing, social security for these populations has become an increasingly important issue. To address this issue, the provision of public housing must be independent from the "hukou" system. Beijing's municipal government should adapt its policy to the actual situation and stipulates that migrant workers in the city have the right to apply for "low-rent housing", and so includes them within the system.

Fourth, "affordable housing" communities should be mixed with different urban land uses and diverse types of housing projects. As mentioned in the previous section, most of the "affordable housing" communities in Beijing are built in the outer suburbs and many of them have turned into "dormitory towns". It is necessary to combine land for residential use with land for industrial or commercial use, thereby providing job opportunities and public facilities, such as medical care, commercial services and schools. This would be an effective solution to prevent "affordable housing" communities from turning into "dormitory towns". Actually, during the era of the planned economy, "work-unit" compounds were examples of just such combination of land for industrial use with land for residential use.

Although these no longer suit today's housing demands, some lessons can be learned from them.

It is also necessary to mix houses of different levels and different types within communities. Currently, residential districts of different grades are not at all combined, which means that "affordable housing" communities are completely separated from other residential districts. This has, to some extent, adapted itself to the present phenomenon of social polarisation, but it also impels the further trend towards residential segregation. Therefore, it is necessary to mix together, to a certain degree, housing of different levels and types in the same residential districts and thereby to diminish residential segregation.

As mentioned above, in the European Union, governments attached great importance to social housing in preserving a social and urban mix and promoting social integration (Czischke 2005; Qu 2004). For example, in France, a rather extreme way to achieve "social integration" is a law, the *Urban Solidarity and Renewal Act*, passed in 2000, which prescribes a standard of 20 % of social housing for every commune. Communes not meeting this threshold will now be obliged to provide this by a certain deadline or face penalties. I suggest Beijing's municipal government should formulate a policy to encouraged mixed-income housing developments. Within a mixed-income housing development project, the deliberate mixing of income groups is a fundamental part of the development's operating and financial plans. A portion of a development's units must be reserved for, and made affordable to, households whose incomes are at low- or medium-low-levels. These developments may be created either through new construction or conversion of existing developments, but they must exist over the city but not only in the outer suburbs.

To sum up, residential segregation breeds social and mental isolation (Feagin 2001: 132), and the situation has became increasingly serious in Beijing in recent years. The government, therefore, should take the responsibility for improving the housing security system in order to diminish such residential segregation. In May 2006, the State Council of China, in the light of the existing housing problems experienced by Chinese cities, promulgated "six measures" in the *Suggestions on Adjusting the Housing Supply System and Stabilizing Housing Prices*. This is the third time that the central government has issued a policy such as this, in order to urge local governments to establish a "low-rent housing" scheme: it did the same in 1999 and 2004. Whether this policy takes effect this time depends on how the local governments carry out this policy in the future.

8.4 Conclusion

The increasing gap between different household incomes has had a massive impact on Beijing's families in respect of their choice of residential location, and has gradually separated the poor families from the rich. This has resulted in residential segregation in the city. As has been shown in this chapter, from the 1990s onwards, the ratio of house price-to-household income was much greater than 5 (the marginal

volume of housing affordability of the families living in Beijing), and this meant that the low- and medium-low-income families found it very difficult to buy houses in the real estate market. As a result, a new, segregated residential structure which is characterized by families' housing affordability is now gradually coming into being in Beijing.

Beijing's current "low-rent housing" and "affordable housing" schemes failed to solve the residential difficulties of low-income families. On the one hand, the "low-rent housing" scheme, which aimed to supply housing for the lowest-income families, has far from satisfied their demands because of the neglect of the municipal government. Up to the end of 2005, nearly 15 thousand families have been assisted by this scheme, but this accounts for only 0.7 % of the families who live in the urban districts of Beijing. On the other hand, a considerable number of the "affordable houses", which aimed to supply housing for the low- and the medium-low-income families, have actually fallen into the hands of high-income families who buy houses not in order to live in them but as investments.

Beijing's municipal government must urgently improve the housing security system for its low-income families. According to international experience, the housing difficulties of low-income families such as these cannot be solved by having access to a real estate market. It is crucial that the municipal government should recognize the importance of establishing a housing security system, and should come up with a feasible way to administer it. As my analysis shows, one practical solution might be to diversify the financing channels for the "low-rent housing" scheme, and to arrange that a greater proportion of the government's revenue from urban land should be spent on it. It should also extend the coverage of both the "low-rent housing" and the "affordable housing" schemes in order to give more protection to the needy population, and should mix different land use and different types of housing in order to diminish the residential segregation of the city.

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Part IV
Conclusion

Chapter 9
Conclusion

Abstract This chapter draws conclusions from the evidence which has been put forward in the previous chapters, and also offers some suggestions for future research in this area.

Keywords Monocentric structure · Polycentric structure · Residential segregation · Housing security system

During the twentieth century, China has undergone great social and economic changes—from a traditional society to a modern society, and from a planned economy to a market economy. The shift from a planned economy to a market economy over the past two decades has undoubtedly been the most significant of these changes. Its influence on Beijing's urban structure has been so large in scope, so deep in degree, and so rapid in speed that the past two decades have witnessed the greatest transformation to have taken place in China over the past 100 years. In this section, I shall draw conclusions from the evidence which has been put forward in the previous chapters, and will also offer some suggestions for future research in this area.

First, each stage of Beijing's urban development in the twentieth century had a different stimulus. Economic growth was the most crucial factor to affect the rapid development of the city after China changed from a planned economy to a market economy. During the period of the planned economy, China established the state-ownership of land. In the absence of any land market, the state was the sole authority which could assign the right to use land. Meanwhile, the "Welfare-oriented Housing System" (WHS) provided urban residents with accommodation as welfare in kind: there was as yet no housing market in China. When the country transformed itself into a market economy, a series of reforms were put into effect in the field of urban development. Among those, the most influential was the liberalization of the urban land and housing market. As soon as these markets opened, land prices began to play an important role in reshaping Beijing's urban structure, and profits became the critical impetus for the redevelopment projects within the old city proper. Urban planners have the power to

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influence the transformation of existing urban structures for the better—but only if they understand how cities have been built as they are. In the case of present-day Beijing, planners should not focus on the history and culture of the city alone: they should also draw on the discipline of economics.

Second, Beijing's monocentric urban structure, a fundamental feature of the city, has aggravated the difficulties of protecting the Old City. This structure, formally established in the Master Plan of Beijing (1958) during the early stages of the People's Republic of China, has been a continuous threat to the Old City, particularly after China opened its urban land market in the 1990s. This is because the monocentric urban structure concentrates the main urban functions within the old city proper, thus causing intense competition for land in this area. As shown in the economic analysis in Chap. 5, due to the high cost of land in this area, many developers have broken the relevant restrictions of scale and floor area ratio (FAR) in their redevelopment projects in order to maximize their economic profits. Furthermore, when Beijing is increasingly becoming a global investment destination in recent years, its monocentric urban structure has reinforced the competition for land within the old city proper. In other words, this monocentric urban structure has intensified the conflict between the protection of Beijing's Old City and the intent to make profits from its redevelopment.

Third, for many years, the planners of Beijing have been continuously shackled by the historic urban structure of the city. When they are designing a new master plan for the city, they always emphasize the importance of the symmetry and hierarchy that is reflected in the original layout of the Old City. Thus, in all previous master plans, the various "sub-centres" were designed to enhancethe historic central axis, as well as to retain the central position of the Old City itself. Take the Master Plan of Beijing (2004–2020) as an example. Although it aims to establish a "polycentric" structure for the city, the various "sub-centres" have been arranged either on the historic central axis or symmetrically around the suburbs of the city, with the Old City still at the centre. My analysis shows that the crux of the problem is the high cost of land within the old city proper, and the fundamental solution, therefore, would be to replace the current monocentric urban structure with a polycentric one. This would reduce the demand for land within the old city proper, which would in turn lead to a stabilization of land prices there. From this point of view, because it still takes the old city proper as the centre of the city, the "polycentric" scheme proposed in the *Master Plan of Beijing (2004–2020)* will therefore be less effective in reducing land prices in this area.

Fourth, in addition to the competition for land within the old city proper, a series of institutional shortcomings has also contributed to the destruction of Beijing's courtyard houses and its Old City. While the institutional culture of the government departments was still rooted in the planned economy, profit-seeking real estate developers could adjust to market principles more quickly. One example which illustrates the government's lack of experience when dealing with profit-maximizing developers is the way in which they have given into the developers' demands for larger scale and thus more profitable redevelopment projects within the old city proper, even if these violated the master plan of the city. These

shortcomings have been amplified by institutional barriers, including a lack of communication between government departments which has, in turn, diminished their power to enforce the preservation of the "Historic and Cultural Conservation Districts" (HCCD).

Fifth, socioeconomic status—household income, be more exact—has became the main cause of the residential segregation in present-day Beijing. Residential segregation has a long history in Beijing, and such residential segregation was racially motivated in the Qing Dynasty (1644–1911): the Manchus lived in the Inner City and the Han People lived in the Outer City. After China adopted a planned economy in 1949, Beijing's urban housing was characterized by a homogenous type of residence; but since China gradually changed to a market economy after 1979, residential segregation has gradually reappeared. This time, however, the segregation is a result of changes in socioeconomic status. Over the past two decades, particularly in recent years, the global economy has exacerbated social polarization, and the income gap between rich and poor families has widened. Housingaffordability by different families has had a strong impact on the inhabitants' choice of residence, and upon residential location, and has thereby separated the poor families from the rich. As a result, unlike the situation in historical Beijing and in many Western cities, where ethnic attributes were an important factor in the development of social segregation, it is, rather, the difference in socioeconomic status (household incomes) between rich and poor which has become the main cause of the residential segregation which exists in Beijing today.

Sixth, the housing difficulties faced by low-income families cannot be resolved by the housing market alone. My book has shown that the "Welfare-oriented Housing System" (WHS) under the planned economy resulted in urban housing being undersupplied. As progress continued towards a market economy, the Chinese government addressed this problem with a series of reforms, but these reforms have generally moved urban housing towards greater reliance on market forces. In today's China, many cities, including Beijing, have come to view the real estate industry as one of the pillars of the urban economy. There is also an underlying confidence that the housing market will solve all housing problems automatically. However, according to international experience, even under a market economy, the residential difficulties which are experienced by low-income families need dedicated solutions. From a societal perspective, China should avoid shifting from one extreme—a "Welfare-oriented Housing System" (WHS)—to another one—a completely liberalized housing market. Although Beijing's municipal governments have set up "low-rent housing" and "affordable housing" schemes, they are far from satisfying the housing demands of the low and medium–low income families. It will thus be necessary for the municipal government to improve its housing security system in order to diminish the increasingly serious trend towards residential segregation.

Seventh, the economics-based theories need to be revised when applied to Beijing. After China opened its urban land market, Beijing's urban structure has been transforming into a pattern similar to the general models, such as the urban land use model by Alonso. However, it is still difficult to apply these general

models *directly* to Beijing's Old City, where some particular factors must to be taken into account, including the low FAR, which is a crucial prerequisite for the protection of Beijing's traditional townscape and, at the same time, constrains the economic profits made by developers from the redevelopment projects. The economic analysis in this book, rather than developing a general model, gave a more realistic explanation of how such determinants have come to exert extensive influence over Beijing's Old City. The general models may be applied to Beijing only when taking these special circumstances into account. In addition, theories describing the urban social structure attribute residential segregation in American cities mainly to ethnic differences. The analysis in this book, however, turns its focus on the socioeconomic status, because, as it was shown in the discussion, different from the situations in the American cities, household income has been the main reason behind the residential segregation in Beijing since the 1990s.

Finally, I shall discuss possible directions for further research. Cities have many functions, and these functions manifest themselves in different types of urban land use. The residential function is one of the very basic functions of a city, and residential use normally occupies the largest proportion of the land in a city. However, the residential function is not the only one. Other functions, such as industrial and commercial, are manifested in urban space as well. As Heikikla said, "location, location, location"—every developer knows that location is the most important determinant of real estate values, "but location is clearly relative" (Heikkila 2000: 81), i.e. different types of land uses in a city mutually influence each other. In this book I have chosen to examine the residential space as the main focus of this dissertation on the evolution of the urban structure of Beijing, a plausible next step, however, would be an analysis which includes the industrial and commercial space. As for urban residential structure, in the past two decades, great changes have taken place not only in Beijing but also in some Eastern European cities. Beijing could benefit from the experience of these cities. I shall leave an analysis of this question from a comparison between Chinese cities with Eastern European cities to the future as another possible next step of my research.

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