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NEIGHBORHOOD REGENERATION IN BEIJING: AN OVERVIEW OF PROJECTS IMPLEMENTED IN THE INNER CITY SINCE 1990

Anne-Marie Broudehoux

School of Architecture McGill University Montreal July 1994

A Thesis Submitted to the Faculty of Graduate Studies and Research in Partial Fulfilment of the Requirement of the Degree of Master of Architecture

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Neighborhood regeneration in Beijing

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ABSTRACT

Over the last forty years, China has been facing major problems resulting from rapid urban growth. In the last decades, great efforts were made to solve the dramatic housing shortage and to improve the appalling living conditions in overcrowded areas. In 1990, the Beijing municipal government launched a program for the renewal of the old city center. A series of residential projects has been implemented in traditional neighborhoods since then which have affected the character of the old city and the lives of its residents. So far, very few studies have been conducted to assess the implementation of the renewal program. This thesis provides an overview of the regeneration projects implemented in the inner-city of Beijing since 1990. It identifies the diverse approaches currently used, along with their impacts on the traditional environment and its population. The main weaknesses of the renewal program are discussed and suggestions are made for its future transformation.

RÉSUMÉ

Durant les quarante dernières années, la China a dû faire face à de nombreux problèmes liés à l'expansion de ses villes. Des efforts soutenus ont été fournis en vue d'enrayer pénurie de logement dans les grands centres urbains. En 1990, la Ville de Pékin entreprenait la mise en marche d'un programme de rénovation de son centre historique en vue d'en moderniser les iafrastructures et d'y améliorer les conditions de vie. Au cours des années suivantes, une série de nouveaux projets résidentiels firent leur apparition dans divers quartiers historiques de la ville, avec divers impacts sur l'environnement traditionnel de la vieille ville et sur le mode de vie de sa population. Jusqu'à présent, aucune étude n'a été effectuée pour tenter d'évaluer les premier résultats de ce plan de rénovation. Cette étude présente donc un survol des divers projets résidentiels implantés dans le centre historique de Pékin depuis 1990, afin d'identifier les diverse approches utilisées ainsi que leurs divers impacts sur la population et son milieu. Les points faible du plan de rénovation actuel sont identifiés et des suggestions quant à sa transformation future sont proposées.

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INTRODUCTION

0.1. THE PROBLEM

China, one of the oldest civilizations in the world, has undergone major changes in the last forty years. Since the founding of the People's Republic in 1949, the Chinese government has been struggling to catch up with the rest of the industrialized world by modernizing and rapidly developing the country. In recent years, a series of reforms has triggered a technological and economic boom and unprecedented transformation at all levels. The Middle Kingdom now finds itself at the limit between the First and the Third Worlds and many agree that it may soon become one of the world's most powerful nations.

Over 1.2 billion people, one quarter of the world's total population, live in China today. The country's major cities are becoming unbearably overcrowded and the availability of housing is getting more urgent everyday. Over the years, a series of programs to solve the pressing housing shortage has been implemented throughout China. Millions of square meters of new housing have been built, but it has not been sufficient to cope with the urban housing deficit.

In the inner city of Beijing, the problems have reached serious proportions. Since 1949, the population within the old city walls has increased fivefold (Yu Yi, 1989). Overcrowding, deteriorating housing and lack of basic services have resulted in substandard living conditions for most residents. Mass housing projects have gradually been built on the city 's outskirts to relieve some of the pressures on the inner city, but the scarcity of agricultural land has forced the government to limit urban expansion and to renew the old city core.

In 1990, the Beijing municipal government initiated a program for the renewal of the old city area. Since then, a series of neighborhood regeneration projects has been implemented in residential districts of the inner city and new housing projects have replaced clusters of old housing. This process has resulted in the relocation of many of the original residents of inner-city neighborhoods and in the destruction of the traditional domestic architecture. The absence of post-occupancy evaluation of implemented projects and of follow-up studies of the displaced population has prevented the identification of the possible shortcomings of the renewal program.

In recent years, there has been worldwide concern about the possible social, cultural, and environmental impacts of modernization upon great historical cities. In China, there is a growing recognition of the importance of researching this problem and an increasing number of people are getting actively involved. Foreign institutions, such as the

- Introduction -

Royal Architectural Institute of Canada, and research groups at the University of British Columbia, McGill University and the Massachusetts Institute of Technology already collaborate with Chinese design institutes and local researchers on the development of renewal projects in Beijing. Most experts agree that new strategies, more sensitive though realistic, must be developed by studying previous interventions and evaluating the current renewal program. For professor Wu Liang Yong (1991; 51) of Tsinghua University in Beijing, "... no complete strategies have worked out for rehabilitation of the Old City area. The appropriate method is to sum up the past experiences and explore new solutions beyond the existing models."

A tremendous amount of publications on urban problems in China is readily available in major documentation centers. However, there exists no record of the current housing process in China. Moreover, no comprehensive review of completed projects, nor any evaluations of the recent phenomenon of neighborhood regeneration, has ever been published, although this would constitute an essential starting point for the implementation of future projects.

0.2. GOALS AND OBJECTIVES OF THE STUDY

The main goal of this thesis is to document the recent phenomenon of neighborhood regeneration in Beijing in order to contribute to a better understanding of the issues involved in the process. The research has three main objectives: first, to understand the process of neighborhood regeneration in a global perspective and then in the specific context of Beijing; second, to identify the current approaches to neighborhood regeneration in the inner city of Beijing through the study of projects implemented as part of the renewal program; and finally, to assess the performance of different approaches and suggest possible changes in the renewal program.

The present study is meant to serve as a resource for the formulation of recommendations for future regeneration projects. It is intended for the increasing number of concerned researchers and professionals involved in the implementation of regeneration projects in Beijing, in other parts of China, and throughout the world.

0.3. SCOPE AND LIMITATIONS OF THE STUDY

The study concentrates on the renewal of strictly residential areas and their replacement by new housing projects. Its scope is limited to the review of projects implemented as part of the official renewal program introduced in 1990 and which are

located within the ancient city walls or along its external periphery and have been inhabited for at least one year. The study is mainly concerned with the physical and social aspects of regeneration projects and with their impact on the traditional patrimony and its community. Economic, political and cultural issues are discussed but are not central to the study.

Undertaking such a study was not an easy task. Condition for a Westerner, as well as the novelty of the topic, limited the range of actions and hence the scope of the research. The thesis necessarily presents a Western point of view, and the level of understanding of the problems is thus affected. Nevertheless, this limitation also turned out to be an asset when evaluating projects, by contributing to the observation of certain problems with a broader perspective.

0.4. METHODOLOGY AND ORGANIZATION

The research rests upon a qualitative analysis based on observation and interpretation, rather than a quantitative one with a scientific approach. It is based on both primary and secondary sources. The methodology used in the research is divided into two parts: literature review and field study. The theoretical part of the thesis regarding urban renewal and housing in China is based on a literature review. The gathering of information regarding regeneration projects in Beijing required a field trip to China, from May to August 1993. The complete methodology used for the conduct of the field study is presented in detail in chapter four. The information about the case studies was compiled and analyzed. The current approaches to neighborhood regeneration in old Beijing as well as the main problems involved in the current process were identified. Emerging issues guided the formulation of recommendations regarding appropriate approaches to regeneration for future project implementation.

The thesis is organized into six chapters. The first chapter introduces urban renewal and neighborhood regeneration from an international perspective. The second chapter gives an overview of the housing process in China and provides background information necessary to understand the issues involved in the process of regeneration. The third chapter presents the Old City of Beijing as the specific context of the study and introduces the phenomenon of neighborhood regeneration in the Chinese capital. Chapter four describes the methodology used to conduct the field survey and provides a systematic description of the case studies. In the fifth chapter, the case studies are analyzed and the main approaches to regeneration, as well as the problems involved in the regeneration process, are identified. Chapter six identifies the main issues emerging from the analysis of the case studies and reflects upon possible directions to be taken in the future.

CHAPTER ONE : URBAN RENEWAL

In China, urban renewal is a rather recent phenomenon which has been scarcely documented. It is therefore necessary to look at the experience of other countries to evaluate and understand the current process, while keeping in mind that China is culturally, socially, economically and politically unique. Since the current situation in China makes it difficult to classify it as either a "developing" or "developed" country, urban renewal in both First and Third World nations is studied. The literature review concentrates on *neighborhood regeneration*, or urban renewal at the neighborhood level, focusing on the social and physical aspects of this process. Concerns for economic, political, cultural and racial issues are left out of the discussion, since they cannot easily be related to the Chinese context.

1.1. URBAN RENEWAL

a) Definition

It is not easy to find a satisfactory definition of urban renewal which embodies the complexity of issues involved in the process. Some of the existing theoretical and ideological disagreements about urban change are thought to come, in part, from the fact that the terms used by different scholars reflect different perceptions of the phenomenon and its significance (Palen and London, 1984). Urban literature uses, often without definition, terms such as *urban regeneration, urban revitalization, gentrification, neighborhood renewal, rehabilitation,* and *renovation.* In this discussion, the term *urban renewal* is used to refer to the general process of transforming the urban environment.

Urban renewal is often presented as a natural process through which the urban environment, viewed as a living entity¹, undergoes transformation. "As the years pass, transformations take place, allowing the city to constantly rejuvenate itself in a natural and organic way" (Treister, 1987: 57). According to Ahmet Gülgönen and François Laisnet (1977: 10), from the Institut d'études et de recherche architecturales et urbaines in Paris:

"La ville est un phénomène ouvert, c'est-à-dire qu'elle est dans un processus de transformation continu. La forme urbaine à une époque donnée peut apparaître comme un état transitoire entre un passé et un futur. La ville est le lieu de transformations perpétuelles qui, à l'examen, apparaissent comme un processus continu. De là proviennent les nombreuses interprétations de la ville, "organisme" possédant ses lois de

¹ The notion that a city may be thought of as an organism developed after the rise of biology in the 18th and 19th centuries and is still the most prevalent normative model among planning professionals today (Lynch, 1981).

développement."

Experts present at the first International Seminar on Urban Renewal, held in Den Haag in August 1958, agreed that the main purpose of urban renewal is to deliberately change the urban environment and to inject new vitality through planned adjustment of existing areas to respond to present and future requirements for urban living and working (Miller, 1959). For them, the fundamental objective of urban renewal is the application of several principles resulting in the revitalization of any or all portions of the urban structure which are not fulfilling the functions for which they were designed (Miller, 1959). Urban renewal generally applies to inner-city areas, centrally located in historical districts including non-residential as well as residential land uses (Grebler, 1964).

b) Brief History of Renewal

Urban renewal has been operative since humans first built permanent settlements. "Following the progress of history and the passage of time, old cities are in a constant process of metamorphosis and unavoidably have to face the necessity of continuous regeneration" (Hou, in Conzen, 1986: 223). However, not until the late nineteenth and early twentieth centuries did relatively coordinated efforts on the part of local governments, reform groups and business interests arise whose intent was to eliminate the physical manifestations of urban decline (Holcomb and Beauregard, 1981).

The renewal of Paris by Haussmann is thought to be the first large scale urban renewal project implemented. However, the United States was among the first countries to develop specific national programs of urban renewal (Grebler, 1964). The problem of deteriorating urban neighborhoods has been recognized in the United States since the midnineteenth century and over the years, major efforts have been made to counteract decay and to rejuvenate cities throughout the country (Nelson, 1988).

Urban Renewal in the United States

The first major urban renewal efforts in the United States were the American Park movement and the City Beautiful movement, both in the late nineteenth century, which emerged as responses to the environmental degradation brought about by the conjunction of urbanization and industrialization (Holcomb and Beauregard, 1981). Both movements placed emphasis on the transformation of urban centers through the creation of urban parks and the construction of monumental public buildings. In the 1930s, the Public Works and Public Housing programs shifted attention to the clearance of slums and blighted areas and the construction of low-income housing, in the form of multistoried apartment complexes (Nelson, 1988).

The first comprehensive move of the federal government towards urban renewal came with the Housing Act of 1949 (Colborn, 1963). Urban renewal was designed to remove slums and blighted conditions by demolishing old buildings and constructing new ones in their stead (Nelson, 1988). According to Colborn (1963: 7), the 1949 Renewal Program defined urban renewal as:

"the diversified efforts by localities, with the assistance of the Federal Government, for the elimination and prevention of slums and blight, whether residential or non-residential, and the removal of the factors that create slums and blighting conditions."

The Renewal Program had three main elements: slum prevention through neighborhood conservation and housing code enforcement; rehabilitation of structures and neighborhoods; and clearance and redevelopment of structures and neighborhoods (Colborn, 1963). However, private investors were reluctant to participate because of the restrictions which oriented projects towards housing, not the most lucrative investment in the long run, and because projects took many years to complete, tying up capital for long periods. As a result, urban renewal still consisted mainly of slum clearance and redevelopment.

The criticisms of the Urban Renewal Program were many. Its application lead to the destruction of the homes and neighborhoods of the poor and minorities, and to the displacement of small businesses and the demolition of inhabitable housing. Also, it directed too much investment to central business districts and not enough to positive actions in the neighborhoods and gave too little attention to social concerns (Holcomb and Beauregard, 1981). Urban renewal soon earned the reputation of being a "bulldozer approach", demolishing blighted areas to make room for luxury housing (Santiago, 1975). According to Martin Anderson, author of the highly controversial <u>The Federal Bulldozer</u> (1964), the final result of the implementation of the 1949 Act was that more homes were *m* destroyed than were actually built, and that predominantly low-rent dwelling units were demolished to be replaced by high-rent ones. In short, housing conditions were made worse for those whose housing conditions were already bad, while they were improved for those whose housing conditions were best (Anderson, 1964).

The program was revised in 1954 to make profits, not the improvement of slums, the primary goal. Slums and blighted areas adjacent to existing central business districts were cleared and replaced with new land uses for a new class of people, making urban renewal more attractive to private investors (Holcomb and Beauregard, 1981). As the human, social, and economic costs of clearance were slowly recognized, program funds gradually shifted to support rehabilitation more than demolition and reconstruction (Nelson, 1988).

The 1960s brought a gradual acknowledgment that spreading suburbanization might exacerbate city problems and that improving urban conditions required more than physical renewal (Nelson, 1988). Small-scale programs were encouraged to plan more comprehensively for redevelopment (Holcomb and Beauregard, 1981). The *Model Cities* program, initiated in 1966, aimed at the provision of housing through physical rebuilding and paid greater attention to social renewal. Low-income residents were to be organized in order to plan for the physical, economic, and social rehabilitation of their own neighborhoods (Holcomb and Beauregard, 1981).

Urban Revitalization emerged in the 1970s as the dominant approach to urban renewal. By emphasizing neighborhood preservation and housing rehabilitation, it limited displacement and disruption of communities (Holcomb and Beauregard, 1981). Today, housing rehabilitation has become the dominant activity in urban renewal in the United States (Varady, 1986).

Urban Renewal in Europe

In Europe, the evolution of renewal policies followed a similar pattern. According to Leo Grebler, professor at the University of California at Los Angeles, the need for the modernization of old city centers initiated during the industrial revolution came later to Europe than to the United States. As a result, European countries have often looked at the American experience as a model for urban renewal (Grebler, 1964). However, unlike in the United States, urban renewal in European countries sometimes proceeded without the benefit of national programs specifically designed to assist in this process (Grebler, 1964).

The first example of state involvement in urban renewal was in Britain in the midnineteenth century to fight the unsanitary conditions in working-class neighborhoods through slum clearance (Couch, 1990). The renewal of war-damaged cities and towns all over Europe in the 1920s is considered the most extensive process of urban renewal in history, compressed into one single generation (Grebler, 1964). Until the 1950s, flats and tenements were considered as a suitable form for replacement of working class housing.

After World War II, the losses sustained during the war triggered an increased consciousness of the historic continuum embodied in the urban scene of previous eras, and growing attention was given to conservation and rehabilitation of historical towns and city sections (Grebler, 1964). As early as 1954, conservation and rehabilitation became fully accepted parts of urban renewal programs in Europe, long before it was in the United

States (Grebler, 1964). By the end of the 1960s, most renewal policies began to totally discard large-scale slum clearance, and programs were reoriented towards rehabilitation and area improvement (Couch, 1990). Today, in the western world, most urban renewal actions are based on residential rehabilitation and upgrading.

Urban Renewal in Asia

Hong Kong and Singapore also developed elaborate renewal programs which evolved from large slum clearance schemes to inner-city renewal and redevelopment of public housing estates, under the management of public-private partnerships.

Initially, urban renewal in Hong Kong was dominated by the private sector. The first public intervention into urban renewal in Hong Kong was in 1954, with the large-scale slum clearance scheme which followed the disastrous fire in Shek Kip Mei, one of the largest and most congested squatter areas in North Kowloon, leaving some 53,000 people homeless (Castells et al. 1990). Through this first scheme, squatters were evicted from dangerous slums or sites slated for development and were resettled to public housing estates or to temporary housing². Those who conducted private businesses from their home and had to vacate their shops were compensated (HKHA, 1988).

By 1972, a vast program of redevelopment of the resettlement estates built in the 1950s to rehouse squatters was introduced (Williams, 1979). These emergency housing blocks were either demolished to make way for the construction of new blocks or were converted into self-contained units. Modern schools and community and recreation facilities were introduced to the redeveloped estates. In 1974, a new approach, that of *in situ* redevelopment of dilapidated properties in old inner-city districts, was introduced. New apartments produced through the scheme were sold to families who had previously lived on the sites at discounted prices, which helped to limit social disruption (Yeh, 1990).

The private sector, motivated by the rapidly increasing land prices and building regulations which allow the replacement of low-rise buildings by high-rise developments, has been actively involved in the redevelopment of existing private sector estates (Yeh, 1990). The problem of multiple ownership of properties in Hong Kong, together with the necessity to acquire all the units in a multi-story building before it can be redeveloped, have

² The eligibility for squatters to be relocated as permanent tenants in public estates was based upon surveys of designated squatter areas. Squatters whose dwelling did not appear on the surveys were relocated to temporary housing until they were eligible for public housing. Initially, temporary housing was in the form of a sites and services scheme. Lots were equipped with water and electricity, and with communal toilets dispersed in the area. The sites were also provided with community services and daily facilities. More recently, the temporary housing has consisted of long and narrow two-story structures with fully built units with kitchen/shower rooms (HKHA, 1988).

resulted in small-scale *in situ* redevelopment, less profitable for private developers. Such redevelopment approach has led to the displacement of original residents to new towns, at a distance from the city center (Yeh, 1990).

In 1987, a new approach was introduced which promoted public-private partnership in carrying out comprehensive redevelopment in Hong Kong. The Land Development Corporation, an independent public body, was made responsible for carrying out redevelopment projects using resources from the private sector. The purpose was to speed up private sector redevelopment in selected areas, to encourage the participation of landowners, to improve the quality and economic benefit of development by assembling larger sites, to ensure equitable treatment of the tenants, and to minimize government subsidies (HKHA, 1988). Tenants are now rehoused in units acquired by the Corporation near the redevelopment site, and mortgages at a low interest rate are offered to the affected people to buy a new home.

In Singapore, urban renewal programs were initiated in the early 1960s, which consisted of systematic large-scale slum clearance and urban redevelopment of inner-ciy areas. In 1964, the Urban Renewal Program for the Central China Town was launched, with the aid of foreign consultants (Lim, 1983). In this public-private partnership, land acquired by the state³ was cleared and assembled into larger sites then released on a competitive public basis to the private sector for development (Manning in Wong, 1974).

The Urban Renewal Program for the Central China Town resulted in the redevelopment of all colonial neighborhoods, which consisted mainly of two- and threestory century-old shop houses, and in the relocation of all original residents and businesses. The policy that no building can be demolished before alternative accommodations are allocated to its residents greatly reduced the trauma of resettlement. Affected households were generally rehoused in public apartments under special arrangements and were given priority on the waiting list for public housing. Businessmen were also given compensation and additional incentives to re-open businesses on the new housing estate (Siew-Eng, 1989).

Today, the central area has been completely redeveloped with shopping complexes, office towers, and apartment blocks, and the new high-rise Singapore has replaced the former colonial city. Only a few affluent colonial residential areas have been preserved. Considerable emphasis has recently been placed upon upgrading the physical environment of old inner-city neighborhoods (Castells et al., 1990).

³ The 1966 Land Acquisition Act gave the state increased powers to acquire land, allowing it to purchase land speedily and at reasonable costs for public purposes. As a result, the state acquired over 70% of the land on the island, which greatly simplified the urban renewal process (Castells et al. 1990).

Urban Renewal in Developing Countries

In developing countries, the process of urban renewal is still relatively new. Efforts are generally concentrated on solving the problems of urban slums, where from 30 to 60% of the urban population resides and which are considered the fastest growing portion of Third World cities (Hardoy & Satterthwaite in CHF, 1990). Before the 1980s, the main approach to urban renewal in developing countries was in the form of squatter eradication and relocation of the population to low-cost housing projects (Laquian, 1984).

In the late 1970s, a series of unconventional strategies, such as *slum and squatter* upgrading and sites and services, began to replace the previous clearance policies (Schmit-Kallert, 1990). Most governments started to acknowledge the socio-economic impacts of slum demolition, while substandard housing, including squatter shanties, was recognized as part of the housing stock. Community upgrading appeared as a way of improving living conditions in informal settlements (Laquian, 1984).

By the 1980s, many developing countries adopted an official policy of slum upgrading, realizing the potential for existing squatter settlements to be viable urban communities (Van Nostrand, 1982) (Faerstein, 1989). Basic services were introduced on the sites and house improvement works were undertaken by the residents themselves (Laquian, 1984). Settlements were upgraded by improving the infrastructure and legalizing land tenure (Faerstein, 1989). Today, upgrading remains the most sensible approach to resolving the problems of informal settlements in Third World cities, although clearance is still commonly used.

In summary, it can be observed that, both in developing and developed countries, the evolution of policies regarding urban renewal followed a similar pattern, gradually evolving from a demolition and reconstruction approach to a softer, more socially-oriented approach, which concentrates on the renovation of existing structures. The following section summarizes the possible approaches to urban renewal in residential areas, based on this brief review of urban renewal policies around the world.

1.2. MAIN APPROACHES TO RENEWAL

At the first International Seminar on Urban Renewal, in August 1958, the three principles of urban renewal were identified as *redevelopment*, consisting of demolition and reconstruction; *rehabilitation*, improvement of the original structures, and *conservation*, preservation of historical monuments, and generally not with residential areas (Miller, 1959). Claude H. Boistière, of the French Ministry of Reconstruction and Housing, identified the different approaches to urban renewal as *rehabilitation*, *complete demolition* and *rebuilding*, and a combination of both, considering conservation to be a form of rehabilitation (Boistière in Miller, 1959). These approaches to urban renewal correspond to those identified by Colborn in 1963. For him, urban renewal projects could be implemented in three different ways: first, they could involve acquiring and clearing a slum or blighted area and disposing of the land for redevelopment in accordance with planned uses; second, they could consist in the rehabilitation and conservation of structures in such an area by property owners, accompanied by improvement of community facilities by the local government; and, third, they could follow any combination of both. The possible approaches to neighborhood regeneration can therefore be identified as: *redevelopment*, wherein a neighborhood is rebuilt anew; *rehabilitation*, wherein the existing structures are preserved and upgraded; and *integration*, a combination of the first two approaches. Each approach can involve the rehousing of the populatica on the original site or its relocation to another part of the city. The three different approaches are presented here in more detail.

a) Redevelopment

Redevelopment consists of the removal of existing buildings and the re-use of cleared land for the implementation of new projects (Miller, 1959). This approach is applicable to areas in which buildings are in seriously deteriorated condition and have no preservation value, or in which the arrangement of buildings are such that the area cannot provide satisfactory living conditions (Miller, 1959). In such cases, demolition and reconstruction, of whole blocks or of small sections, is often thought to be the only solution to ensure future comfort and safety of the residents.

For developers, *redevelopment* represents maximum profit through the sale of new centrally-located units. For local governments, this approach represents maximum use of land, higher floor area ratio, and has the advantage of introducing higher income groups and commercial activities to the city center, which increase tax revenues. It also leads to higher population density and improved services and infrastructures, which is highly desirable for modernizing inner-city areas (Zhu Zixuan, 1989).

However, this approach may carry heavy social and environmental costs. The demolition of architectural environments is probably the most serious consequence of the redevelopment approach (Kazemian, 1991). It can bring about the sacrifice of a community's cultural heritage and the destruction of viable neighborhoods, depriving people of valuable housing resources which in many cases still serve a useful function (Frieden, 1964). *Redevelopment* generally involves the relocation of the original population to another part of the city. Even when the residents are rehoused on the same

site after its redevelopment, the transformation of the neighborhood beyond recognition has inevitable psychological impacts upon the community. In his book <u>The Future of Old</u> <u>Neighborhoods</u>, Bernard J. Frieden (1964: 123) summarizes the social costs of redevelopment in these terms:

"For tenants, owners, and businessmen alike, the destruction of the neighborhood exacted social and psychological losses. The clearance destroyed not only old buildings, but a functioning social system. The scattering of families and friends was especially harmful to the many older people."

Redevelopment leads to the destruction of badly needed housing units and it does not prevent slums from reappearing in other parts of the city. It also contributes to the impoverishment of the original residents by reduction of job opportunities, as resettlement areas are usually located outside of the city proper (Mirbod, 1984).

In the majority of western countries, *redevelopment* has been discarded as a way to rejuvenate old city centers. However, in many developing countries, *redevelopment* through slum clearance and reconstruction is still regarded as the only viable way to improve housing conditions and to modernize inner-city areas.

b) Rehabilitation

Rehabilitation, often termed conservation or preservation, can be defined as the opposite of redevelopment. It is based on preserving, repairing, and restoring the natural and man-made environments of existing neighborhoods. Rehabilitation is applicable to areas where buildings are generally in structurally sound condition but have deteriorated because of neglected maintenance (Miller, 1959). It takes advantage of the existing housing stock as a valuable resource and adapts old houses to present-day life and acceptable standards by providing modern facilities (Zhu Zixuan, 1989).

Citizen participation is a recurring theme throughout all phases of the rehabilitation process. People organize themselves into neighborhood associations which lobby local governments to provide technical and financial assistance and improve public services, and to encourage other residents to fix up their housing (Holcomb and Beauregard, 1981). Laquian (1984) considers security of tenure and homeownership to be essential ways to encourage self-help and community-based upgrading efforts.

Rehabilitation recognizes that the limited availability of funds for new construction and the serious housing shortage make the option of destroying already-existing housing appear both unaffordable and imprudent. It recognizes the value of old neighborhoods and, by preserving what is unique, ancient, and specifically local, it can also contribute to the development of the tourism industry and stimulate the economy. From the standpoint of time and cost, *rehabilitation* is a sensible solution to the problem of neighborhood regeneration⁴(Mirbod, 1984).

Concerning the impacts on the population, residential rehabilitation can take place in two distinct ways: gentrification⁵ and incumbent upgrading (Clay, 1979). Gentrification is defined as the process by which middle- and upper-class people move to a neighborhood, attracted by its proximity to central business districts and replace the previous workingclass inhabitants (Holcomb and Beauregard, 1981) (Varady, 1986).

Through the process of *incumbent upgrading*, the residents remain in place and invest in their own time, money, and energy into refurbishing their housing and improving their social conditions (Varady, 1986). In developing countries, *upgrading* generally refers to a comprehensive developmental approach wherein the original population remains on the site and incrementally upgrades the neighborhood, with or without public assistance. By treating the resident population as an active force in the housing process, this approach generates a greater pride in the neighborhood and halts the impending deterioration caused by a lack of investment and environmental concern (Holcomb and Beauregard, 1981). It also respects the social links that have formed within and among the communities over the years.

However, many people do not consider *rehabilitation* to be a realistic approach because of the technical difficulties and the amount of work and research involved. *Rehabilitation* is often perceived as a complex and time-consuming process which is more difficult to implement than redevelopment. It requires a high degree of social organization and social responsibility, as well as a total reorganization of the housing process. It is sometimes resisted by developers, who see it as an infringement on free enterprise and a barrier to large-scale redevelopment (Holcomb and Beauregard, 1981). In many instances, old houses are so dilapidated and their original character lost after so many years that it is

⁴ Experts do not agree on the actual costs of rehabilitation compared with reconstruction. In China the cost of rehabilitation is evaluated at about 50% of the cost of new buildings (McQuillan, 1985). According to UNCHS, some countries consider that if the cost of rehabilitation exceeds 1/6 of the cost or rebuilding, rebuilding is favored. In the United Kingdom, however, it is argued that it is worth spending up to 75% of the cost of rebuilding owing to the reduced loss to the housing stock (UNCHS, 1982).

⁵ The term gentrification is attributed to Ruth Glass, who described a phenomenon occurring in London in the early 1960's. Shabby, working class mews were acquired by middle-class people, who converted them to elegant and expensive homes. Because the word gentry implies a land-owning aristocracy, gentrification may be etymologically inappropriate. Nevertheless, it has acquired widespread and popular acceptance. Gentrification occurs when there is a substantial replacement of a neighborhood's residents with newcomers who are of higher income and who, having acquired homes cheaply, renovate them and upgrade the neighborhood (Holcomb and Beauregard, 1981). The term gentrification is commonly used to refer to changes in the composition of the neighborhood population, resulting in new social organizational patterns (Palen and London, 1984).

unrealistic to attempt to upgrade them and to raise their conditions to appropriate standards. The introduction of new infrastructure to old and dense neighborhoods can also be a difficult task.

c) Integration

The third approach to neighborhood regeneration, referred to as *integration*, views rehabilitation and redevelopment as complementary forces and combines the best aspects of both approaches. It consists of rehabilitation of what can realistically be saved, combined with reconstruction of new buildings in place of those beyond the reach of feasible rehabilitation (Yu Qingkang, 1988).

Integration is considered today to be the most acceptable way to regenerate old neighborhoods. It allows for flexible project implementation which can preserve the traditional urban environment and its human scale while achieving respectable densities. It respects the social order of the community by rehousing the majority of the original residents on the site and invites mass participation. *Integration* results in the creation of rich environments through the integration of new buildings within the existing neighborhoods and allows for the development of a new form of contemporary architecture with local characteristics, enriching the appearance of the old city while maintaining its identity. However, for many developers and local authorities, *integration* remains a timeconsuming process, less profitable than *redevelopment* with mass housing.

1.3. CRITICAL ISSUES

1

Urban renewal can affect the urban environment at many levels. The preservation of the city's identity, community, local culture and natural and built environments, must be given special attention in the process of renewal.

a) Urban Identity

A frequent challenge faced in the sensitive reshaping of an already-existing environment is discovering and preserving its own visible structure and drawing out its inherent image and identity. Urban renewal modifies not only the physical form of the urban environment but also transforms the way in which it is perceived and experienced, and the psychological and emotional relationships between humans and urban places (Holcomb and Beauregard, 1981). Among the most important elements cited in the literature regarding the definition of the urban environment are: diversity, and continuity (Mumford, 1956) (Lynch, 1960) (Jacobs, 1961).

Diversity, at all levels, is essential for the creation of a lively urban environment, and should be encouraged through urban renewal. According to Jane Jacobs (1961), one of the greatest assets of a city is its wholeness in bringing together an unpredictable mix of people with communities of interests. For her, big cities, with their intricate mingling of uses and complex interweaving of paths, are natural generators of diversity and prolific incubators of new enterprises and ideas of all kind (Jacobs, 1961). For Marcia Nozick (1992), form the Canadian Council on Social Development, diversity is essential for city life to work decently and constructively, and for the people to sustain and further develop their society and civilization.

Kevin Lynch (1960) considers that, although diversity is an essential characteristic of the urban environment, the complexity of the modern city also calls for continuity. He defines the city as :"... an area of homogeneous character recognized by clues which are continuous throughout the district and discontinuous elsewhere" (Lynch, 1960: 103). For Holcomb and Beauregard (1981), the sense of continuity of place is necessary to people's sense of reality, and the city should apprehended over time as a pattern of high continuity with many distinctive parts which are clearly interconnected. It is therefore important to maintain the city's homogeneity and continuity even after its renewal. According to Lynch (1981), local continuity should be a key aim in reshaping settlements. For him, the aim of renewal should be " to maintain *continuity*, both of the community itself and the image of history and of nature that is held by its members" (Lynch, 1981: 260).

Diversity and continuity appear to be essential components of the urban environment which must be preserved in the process of urban renewal. However, in recent years, the emergence of a global model has been threatening local identity, integrity and authenticity, and cities around the world have become increasingly uniform (Nozick, 1992). Respecting the city's own identity through urban renewal will help rescue cities from the "placelessness" of contemporary international architecture and the homogeneous values of the mass culture (Holcomb and Beauregard, 1981) (Nozick, 1992).

b) Environmental Concerns

The preservation of natural and man-made environments is another important issue which should not be overlooked in the process of renewal. Old buildings, monuments, parks, and neighborhoods, as well as the old pattern of the city which gives the city its unique character are necessary to maintain the city's vitality (Holcomb and Beauregard, 1981)(Van der Ryn & Calthorpe, 1986).

The preservation of the historic core, which provides future generations with stimulating ideas from their cultural heritage, is essential for the development of modern cities (Wang, 1992). Cervellatti⁶ considers the historic core of a city as the "collective memory of the population", and, even with its internal contradictions, as the only truly modern, authentically livable part of the city (Cervellatti, in Hatch, 1984).

Present, past, and future history are all equally important in the making of a modern city (Van der Ryn & Calthorpe, 1986). According to Lewis Mumford (1956: 156):

"No adequate image of the emerging city can be formed without reference both to the most enduring and valuable features of historic cities as well as to the fresh departure and fresh opportunities that our modern age, with its immense store of knowledge, wealth and power has opened up."

Over the last few years, there has been a heightened appreciation of the value of preserving old sections of the urban fabric. For more than one-hundred years, writers on architecture have returned to the pre-industrial town for models for a saner, more organic society. The historic core has become the point of reference for planners and architects. Some even consider the historic core to represent the design model that will ultimately be used to transform the remainder of the city (Cervellatti, in Hatch, 1984).

However, preservation must be handled with caution, and it requires a deep understanding of the nature of the city. A misinterpretation of the process by which cities evolve through time can lead to the creation of sanitized environments, or the reconstruction of an imaginary and more acceptable past (Holcomb and Beauregard, 1981). For Lewis Mumford (1961: 3):

"If we would lay a new foundation for urban life, we must understand the historic nature of the city, and distinguish between its original functions, those that have emerged from it, and those that may still be called forth."

c) Social Concerns

Concerns for the physical and psychological well-being of the individual and the community are essential for sensitive renewal. Urban renewal can either involve reaccommodation of the original population on the site after its renewal or its transfer to another part of the city through *relocation*. According to Kazemian (1991), relocation generally occurs in large-scale housing projects built in isolated environments and far from the city center, where access to facilities like schools and health services, is limited.

For the population, displacement carries not only financial costs, but social and emotional costs as well. Urban renewal often leads to the dissolution of urban communities

⁶ Mr Cervellatti was the chief architect for the historical preservation of the old city of Bologna

and the loss of proximity to friends and relatives. People need to know that their communities will continue to exist and be able to provide for the present and future needs of themselves and their children (Nozick, 1992). In general, new social links are not easily formed in large-scale mass-housing projects (Nozick, 1992).

It is generally recognized that displacement from familiar locations translates into drastic changes in lifestyle and requires long-term readjustment which can cause serious psychological trauma, especially for the most vulnerable portion of the population, i.e. young children and the elderly⁷ (Holcomb and Beauregard, 1981). The loss of contact with a familiar environment to which people have developed strong emotional attachments may occurs both when residents are displaced and when familiar environments are radically altered by revitalizing activities (Holcomb and Beauregard, 1981). Jane Jacobs (1961, 279) explains this attachment as "the security of the home base, being, in part, a literal security from physical fear" (Jacobs, 1961: 279). However, little is written about the psychological costs of the destruction of an environment to which one is emotionally attached.

The high economic, social and emotional costs paid by evicted residents have generally been written off as an unavoidable by-product of "progress" and a necessary consequence of modernization (Kazemian, 1991). While the governments can intervene to compensate victims for part of the economic costs of displacement, the psychological costs are less easily mitigated. Relocation therefore remains an important aspect of the process of renewal and should be given special attention.

d) Cultural Concerns

The preservation of a unique urban culture is another critical issue in the process of urban renewal. Culture has been defined as the whole social mode of life, or the mode of life of the people in general (Azevedo, in Teixeira, 1990), and as the collective expression of shared history, traditions, values and ways of life (Nozick, 1992). The continuity of a culture is carried in its architecture, urban design, and planning, as well as in its community life (Van der Ryn, 1986). Urban culture can therefore be said to be closely related to the evolution of the relationship between the urban built environment and its social structure. The disappearance of the physical and social manifestations of a particular culture would lead to the decline of this culture.

The changes brought to the social, natural and build environment of the city through

⁷ Studies have demonstrated that when the fundamental form of a living unit is changed, behavior is radically affected (Mann, 1984). Problems derived from breakdown from traditional family values and disorientation include violence, vandalism, and other forms of behavior, not uncommon among people living in large collections that are not communities (Chatfield-Taylor, 1981).



urban renewal can have a serious impact on the flourishing of urban culture. Just as much as the preservation of the environment and community can be important for that of the local culture, culture is itself essential in their development. It is often the local culture which defines what is special and unique about a group of people or a place, giving them their identity and making them last over generations (Nozick, 1992). It is therefore important to ensure that in the process of renewal, the urban culture is not destroyed, but stimulated and promoted through a conscious transformation of the urban environment.

1.4. Summary: Urban Renewal As A Multi-Faceted Process

Urban renewal can be defined as a social and technical partnership based on the unification of the vision of politicians and designers and on the wide acceptance of the same by the community. It is thus a multi-faceted and complex process which should not be viewed merely as a physical and financial proposition, but as a sociological, cultural, economical and political matter as well (Couch, 1990). Past experience has demonstrated the need to view neighborhood regeneration as a comprehensive and integrated process. According to Lewis Mumford (1956; 43), "an organic conception of city planning, dealing with all the phases of life as well as all the functions of a community, is essential to create a truly livable environment."

It therefore appears that a realistic renewal program must approach regeneration in a holistic way and be based upon a multi-disciplinary understanding of the social and economic forces affecting urban areas and the physical nature of towns and cities. It thus requires variety and subtlety in policy responses (Couch, 1990). Nearly one century ago, Patrick Geddes (1968 (1915): 205) drew critical conclusions about planning approaches, which can be related to urban renewal:

"...town planning is not something which can be done from above, on general principles easily laid down, which can be learned in one place and imitated in another... It is the development of a local life, a regional character, a civic spirit, a unique individuality, capable of course of growth and expansion, of improvement and development in many ways, of profiting too by the example and criticism of others, yet always in its own way and upon its own foundations."

The many facets of neighborhood life should be analyzed in the process of developing an urban renewal program (Colborn, 1963). The fundamental prerequisite to the success of any program of development or renewal is the complete integration of these programs with the general plan of the urban area (Miller, 1959).

This chapter gave an overview of the phenomenon of urban renewal and neighborhood regeneration in a global perspective. The following chapter familiarizes the reader with the Chinese context and provides background information on planning and housing issues in China.

CHAPTER TWO: HOUSING IN CHINA

The provision of housing in China is a complex and highly regulated process, and a number of factors must be explained to understand it fully. This chapter, which attempts to do so, is divided into five parts: the first part introduces the housing policies of Hong Kong and Singapore, after which Chinese policies have been modeled; the second part reviews different approaches to urban planning and housing design in China since the Revolution; the third part exposes the many factors involved in the housing process; the fourth part identifies and discusses the main problems in the present housing system; and finally, the fifth part presents the recent housing reforms and their impacts on the system.

2.1. HOUSING POLICIES IN HONG KONG AND SINGAPORE

The Republic of Singapore and the British Colony of Hong Kong are the two successful city-states in Asia, in terms of both economic and urban development. They were founded by the British to carry out entrepôt functions and recently emerged as two leading financial centers in Asia (Wang and Yeh, 1987). As the two market economies with the highest rates of economic growth in the last twenty-five years, they are also those with the largest per capita public housing programs (Castells et al., 1990). A brief review of the evolution of public housing policies in Hong Kong and Singapore is presented as an introduction to housing policies in China, which were strongly influenced by those of the two city-states.

a) Housing Policies in Hong Kong

The housing program has been one of the success stories of Hong Kong, and is among the most remarkable achievements world-wide. Almost three million people – or half of the population of Hong Kong – lives in public housing. Public housing has been a top priority for the government since the post-war period, with over 35,000 units built each year, divided into public rental apartments and home ownership apartments (HKHA, 1987). The development of the housing policy in Hong Kong can be divided, based on the level of government intervention, into three major periods: the resettlement stage, the restructuring period and the privatization policy (Castells et al. 1990).

The Resettlement Stage (1954-1964)

Before 1953, the attitude of the Hong Kong authorities with regard to the provision of housing was one of *laissez faire*. Following the disastrous fire which devastated the Shek Kip Mei squatter area in 1953, the government had to implement a large-scale resettlement program to rehouse the affected population. This marked the beginning of direct government intervention in housing in Hong Kong, mainly based on large-scale slum clearance, eviction of squatters, and their rehousing in emergency estates or temporary housing (Keung, 1985).

During the first decade of the implementation of the resettlement program, largescale, low-standard resettlement blocks were built to accommodate squatters¹. The goal was to produce huge numbers of resettlement units without any consideration as to quality or planning of facilities, and to clear and control as many squatters as possible. The public housing program moved ahead rapidly and, by the end of 1959, it had provided housing for a quarter of a million people (Yeh and Fong, 1984). By 1972, 1.6 million people were living in various types of government-subsidized housing (Yeh and Fong, 1984).

The Restructuring Period (1973-1983)

This period was characterized by the transformation of the *ad hoc* form of government intervention in housing to a continuous, direct and planned one. In October 1972, Sir Murray MacLehose, the newly appointed Governor, announced a Ten Year Program aimed at providing 1.8 million people with permanent, self-contained homes with amenities². It marked the planned physical decentralization of public housing development, upgrading of existing public housing, implementation of the Home-Ownership Scheme, and increased concern for the conditions of tenement slum dwellers in the central city (Castells et al., 1990). Strong emphasis was placed upon the construction of better quality public apartments for rent and for sale, and on general improvement in design and management of public housing estates. Better quality, however, often translated into less quantity.

To manage such an ambitious program, all existing housing agencies were unified in 1973 into a single integrated housing institution with comprehensive functions, the Housing Authority³. It was given responsibility for policy formulation, while its executive arm, the Housing Department, was entrusted with the translation of policies and goals into

¹The early resettlement estates consisted of six-story, H-shaped blocks, with back-to-back units accessed from open balconies running around the block. Cooking was done on the balconies and washing and toilet facilities were communal. Elevators and electricity were generally lacking.

² The Ten Years Housing Program soon appeared over-ambitious and was extended until 1985.

³ The Hong Kong Housing Authority was formed by integrating all functions in public housing -from policy formulation, financing, planning, design and construction of housing, and allocation and maintenance of housing stock, to management of the housing estate -- into one department. The housing Authority is responsible for its own finance and management. The government subsidizes the public housing program by providing free land and loans to finance projects. Today, the Housing Authority possesses one of the largest public housing stocks (over 550,000 rental apartment in 1987) (HKHA, 1987).

specific programs for implementation and the oversight of the planning, construction and management of public housing estates (Yeh and Fong, 1984).

The planning of some very large developments in the once rural parts of the New Territories led to the proposal for the new town program in 1973, wherein public housing, industrial units and commercial facilities would intermix in a decentralized and relatively self-contained area. Since then, most of the public housing has been built in the new towns. The Home Ownership Scheme (HOS) was introduced in 1976 to give people greater freedom of choice as to whether to buy or to rent their own flat and to enable lower middle income people to acquire homes at a reasonable price (HKHA, 1988). The Home Ownership Scheme is managed by the Housing Authority and financed by the government, which recoups its expenditure from the sale of apartments. Apartments are sold at cost price and below market levels. The eligibility criteria are based on income and household size. Special incentives were introduced to encourage the purchase of dwelling units⁴.

The Privatization of Housing Policy (1984 and beyond)

In the early 1980s, the Private Sector Participation Scheme, in which the government invites private developers to produce apartments similar to the Home Ownership Scheme to be sold at a fixed price to lower-income households, was introduced (Castells et al., 1990). Subsidized loans to help public housing tenants and newcomers to the market to buy private apartments were made available. The selling of public housing apartments to their tenants and the use of the Home Ownership Scheme in the redevelopment programs were also encouraged. In 1987, a Long Term Housing Strategy was elaborated, extending the housing policy beyond the end of British sovereignty until 2001. The new policy was dominated by the privatization of public housing, in terms of both supply and demand. One of the main objectives of the Long Term Housing Strategy was to deliberately limit the public subsidy to tenants who had improved their economic situation and were still in the public estates (HKHA, 1988).

Initially, most housing estates had followed a repetitive row layout, but since the mid-1980s housing design has been reoriented toward a variety of high-rise block types within the same estate, arranged around recreational spaces. This not only allowed for a slightly more diverse environment, but also for a variety of sizes of apartments and a better integration of the unique characteristics of each site.

In summary, the emphasis of the Hong Kong public housing program has shifted from one of quantitative emergency relief and squatter-clearance to a more quality-oriented

⁴ For example, a mortgage system, covering up to 95% of the purchase price and spread over twenty years, with a maximum interest of 9% per year, was introduced (HKHA, 1987).
but limited program, then to improved public housing and new town development, and finally to middle-class housing estates, urban redevelopment and privatization of public housing.

b) Housing Policies in Singapore

Singapore is the third most prosperous country in the Asian Pacific Rim, after Japan and Brunei, and has the second busiest port in the world (Castells et al., 1990). Its public housing program has been a critical factor in this prosperity. Singapore operates the largest public housing program among all the urban systems in the capitalist world, with 85% of its population housed in government apartments, 70% of whom have home ownership status⁵ (Castells et al., 1990). The evolution of the housing policy in Singapore can be divided into three main periods: the First Five-Year Program, the Second Five-Year Program, and the post-1970s period.

The First Five-Year Program (1960-1966)

When the People's Action Party came to power in 1959, the housing shortage and general housing conditions in Singapore were appalling. The highest priority was given to improving the housing situation, and public housing programs were to form an integral part of national development policies. The national housing program was initiated in 1960, and entrusted to the Housing Development Board (HDB), a public authority with comprehensive functions. The HDB was to be responsible for clearing land, redeveloping the urban area, and for the planning, management and production of housing⁶ (Castells et al., 1990). It was given great autonomy in implementing policies set by the government.

The HDB immediately initiated the First Five-Year building program to provide shelter for low-income people in the form of basic rental apartments. The strategy was to build as many housing units as cheaply and quickly as possible to solve the housing shortage and to meet the needs of the rapidly increasing population. The qualitative aspects

⁶ The scope of HDB activities include the planning of new towns and town centers as well as the design and construction of housing and other facilities. The HDB is also involved in the production of building materials and undertakes large reclamation projects. It is responsible for the maintenance and management services of the housing estates as well as for the upgrading of older estates. HDB designs and supervises its own projects. The HDB housing program is entirely financed through government loans. Subsidies are also allocated to small dwelling units usually occupied by poorer families. The HDB does not, however, have its own land bank. It has to bid for land from the authorities, in competition with other government agencies and users, and has to pay for the land at an agreed-upon negotiated price (Schmidt, 1989).



⁵ Eventually, 90% of the population is expected to be housed in public housing, leaving the remaining 10% in expensive but status-enhancing private properties (Castells et al., 1990).

of housing were sacrificed⁷. As a result, space standards were low, layouts monotonous, architectural design unimaginative and supporting facilities inadequate. To maximize the use of land, slab apartment buildings were built up to twelve stories, and in the 1960s, point blocks were developed up to a height of twenty-five stories (Hyde, 1989). The worst of the housing problem was resclved after five years.

The Home Ownership Scheme was introduced in 1964 to encourage private ownership and to enable lower income groups to own their units⁸ (Siew-Eng, 1989). Eligibility was based on four criteria: citizenship, non-ownership of private property, income, and family formation⁹. The allocation of housing units was and still is based on a first-come-first-serve basis. Originally, a registered household had the right to choose both the type of flat and the broadly defined housing zone in which it wished to reside, but not the specific block or floor. Final allocation was by ballot. Today, instead of balloting, applicants are called to select from the available desired flat-type and zone (Hyde, 1989).

The Second Five-Year Program (1966-1970)

The Second Five-Year Program, initiated in 1966, shifted priority from speed and expediency to quality and amenity. New housing estates were better planned, with bigger and less standardized apartments, more generous allocation of open space and greater emphasis on landscaping. The quality of life in the housing estates was enhanced through the provision of specialized facilities such as sports complexes. In 1968, an innovative housing financing scheme was introduced as part of the Home Ownership Scheme, to convert housing from a public good into a commodity. Citizens eligible to buy public housing were permitted to use a portion of their Central Provident Fund (CPF) savings to pay for the down payment and monthly installment payments on their HDB apartment. By 1970, 35.9% of the population in Singapore was living in public housing, while 9% was living in owner-occupied HDB apartments (Castells et al., 1990).

⁷ The early estates consisted of emergency slab blocks with one- and two-room units linked by a double-loaded corridor. Later, slab blocks changed to a single-loaded deck access corridor design. A segregated corridor design was developed to provide for greater social interaction and neighborhood surveillance against crime.

⁸ Units were sold on a ninety-nine years lease, to be occupied by the owner for a down payment of about 20%, the balance to be repaid over a fifteen-years period at 6.5 % interest.

⁹ Initially, to be eligible an applicant had to be part of a family of a minimum five persons. When the housing shortage eased, the number was reduced to three. Today, with a rapidly declining birth-rate, a series of incentives was introduced to promote the reinstitution of the traditional family structure. Larger families are now favored when flats are allocated (Siew-Eng, 1989).

The 1970s Onwards

In the early 1970s, HDB estates of unprecedented scale were built using the same planning principles as those of the early self-contained HDB estates, and the concept of the "new town" was introduced. High-rise, high-density new towns had larger populations which could support a broader spectrum of services and allowed planners greater flexibility in the planning of community facilities. A few years later, a new planning concept, that of the *precinct*, was introduced in response to the excessively large neighborhoods of the new towns which hindered social interaction (Hyde, 1989). These precincts were characterized by their emphasis on the human scale of the environment and the concentration of community facilities at a focal point among six to eight blocks characterized such precincts.

In 1971, as an incentive to encourage flat-dwellers to upgrade to larger apartments and to promote home-ownership, the HDB allowed homeowners to sell their apartments on the open market after five years¹⁰ (Lim, 1983). To prevent speculation, people who sold their unit on the market were not allowed to apply for public housing for two and a half years.

Before 1973, the HDB built exclusively for the low-income group, while private developers saw to the housing requirements of the middle- and high-income groups. But with the escalation in the price of private housing in the early 1970s, the Housing and Urban Development Company (HUDC) had to be set up in 1974 to provide middle-income housing. The HDB eventually absorbed the function of the HUDC and such units became fully integrated within the overall planning and development of HDB estates (Castells et al., 1990). As a result, there was a shift towards bigger and more attractively designed apartments to satisfy the demands of a more affluent group of home-seekers.

In recent years, there has been a major decrease in population growth in Singapore. As a result, too many housing units have been built and the HDB has been unable to sell or lease a significant quantity of its housing stock.

c) Common Traits

Although there are great differences in ideology and political systems between Hong Kong and Singapore, many similarities could be observed in the evolution of their housing programs. Both are characterized by strict and highly organized policies, and are controlled by decentralized housing authorities. A general trend toward the privatization of the housing stock became current, as well as a shift from inner-city development to the construction of self-sufficient new towns at some distance from the city center. All new

¹⁰ Originally, HDB units could only be sold back to the HDB at their original price.

housing units have been built in the form of large-scale, high-rise, high-density estates, with a recent tendency to integrate prototypes of various height and density to increase diversity.

The main motive for the development of such national strategies for the provision of public housing has been described by a need to stabilize the social, economic and political structures of the former colonies (Keung, 1985) (Siew-Eng, 1989) (Castells et al. 1990). In both city-states, the housing policy has resulted in the stimulation of economic growth, the creation of a stable society and a perpetuation of political legitimacy. Three characteristics common to both city-states have been suggested as necessary conditions for the development of such public housing programs: political commitment to housing provision and the contribution of substantial public funds; active land policies based on the public ownership of land; and the managerial efficiency and relative autonomy of both public housing authorities (Castells et al., 1990).

A strong political will and financial commitment to universal housing provision are essential to the development of successful housing programs¹¹. It can be argued that the non-democratic governments (in the western sense of the word) based on political authoritarianism played an important part. By enforcing strict population control to regulate housing demand and implementing regulations facilitating development, the governments could more easily implement their planned policies (Lima in Angel et al., 1983).

The public ownership of land was also essential for the development of such public housing programs (Kwok in Angel at al., 1983). It puts the government in a relatively strong position to influence the project design and densities through lease and planning control. In addition, land sales are a major source of revenue for public expenditure and investment (Kwok in Angel at al., 1983).

The flexible system of decentralized monitoring of the projects and of managing the housing estates, as well as the considerable power and relative financial autonomy of the public housing authorities, also help to explain the remarkable efficiency of the public housing programs. However, the authoritarian attitude of such organizations has resulted in high social, urban, and environmental costs.

¹¹ Over 30% of the Hong Kong total annual capital expenditure and 10% of the annually recurrent expenditure is devoted to the development, maintenance and subsidy of public housing. This compares favorably with anywhere in the world and far exceeds the 5-6% public expenditure generally accepted as being a desirable target for developing countries (HKHA, 1987).

2.2. PLANNING AND HOUSING DESIGN IN MODERN CHINA

As in most socialist countries, national government policies have shaped the direction of China's development (Kim, 1987). Since the Revolution, the important changes in the Chinese socio-political environment have influenced national urban development policies. These forty years can be divided into six major periods: the Reconstruction Period, the First Five-Year Plan, the Great Leap Forward, the Recovery and Consolidation Period the Great Proletarian Cultural Revolution, the Post-Cultural Revolution Period and the Open Door Policy (Hoa, 1981) (Yichun & Costa, 1991). This section presents the evolution of planning approaches and of the main housing prototypes through the diverse ideological changes that have taken place in China since 1949.

a) Reconstruction Period (1949-1952)

On the first day of October 1949, from his high tribune on Tian An Men square, Mao Zedong proclaimed the founding of the People's Republic of China. For the Chinese, this represented the end of over 100 years of wars and upheavals, and the restoration of the country's unity (Hoa, 1981). Eager to gain the population's trust and faith by demonstrating its concern and efficiency, the new government immediately launched a series of programs to reconstruct and reorganize the country (Hoa, 1981).

One of the first achievements of the Party in the field of housing was the nationalization of housing and the introduction of the equalization process in the early 1950s. Private homeowners were allowed to keep the portion of their dwelling necessary to house their family and the rest of the housing was confiscated by the state and distributed among the population.

Although urban population increased significantly during those years due to rural exodus and substantial urban growth, the construction of housing was not a national priority (Kwok, 1979). First priority was given to reconstruction of the infrastructure damaged during the war, and to catching up with the rest of the modern world, laying the foundations for the rapid industrialization of China (Léonardon, 1979). Urban design practice was left unchanged from that of before 1949, and the production of housing was characterized by temporary construction responding to immediate needs. Architects and planners were required to be pragmatic and to disregard aesthetic concerns in order to concentrate on functionality and economy (Kwok, 1979).

Since there were no precedents for mass housing in China and the notion of apartment buildings was still new, most housing produced during that period was in the form of single-story, continuous row housing (Léonardon, 1979). This was the simplest and fastest way of building, and resembled the ground-related traditional dwellings (Hoa, 1981). The long houses had a full north-south orientation, with independent or grouped rooms, and a front yard. Soon, two-story structures following the same model, with an external corridor replacing the front yard on the second floor, were introduced in order to save land (Hoa, 1981).

b) First Five-Year Plan (1953-1957)

According to Léon Hoa (1981), China's recovery was completed after only three years. In 1953, in virtually all major domains, production surpassed the highest levels ever achieved before Liberation. The situation was thus favorable for the implementation of the First Five-Year Plan, which was launched in the early days of 1953 (Hoa, 1981).

The Soviets had a strong influence on the realization of this first plan because of their political ideology as well as their twenty years of experience in urban planning. China was starting from zero (Hoa, 1981). The Soviet planners shifted focus to the development of strategies and planning concepts, giving priority to the strengthening of urbanization, development of suburbs, and urban renewal through slum clearance (Kwok, 1979). The development of heavy industries was also emphasized (Hoa, 1981).



Figure 2.1: Early 1950s, Soviet prototype (Hoa, 1981)

Concerning housing design, the 1949 temporary type was abandoned and systematic studies for large-scale projects and standardized housing were conducted (Hoa, 1981). The first prototypes consisted of three- to five-story apartment buildings arranged on large open spaces. The building form was simple and classic, and regularity and symmetry were encouraged. Apartments had comfort facilities – equipped kitchens, large

bathrooms and central heating- but were unnecessarily large and did not receive sufficient sunlight (Hoa, 1981). The idea behind such large apartments was to plan for future comfort, but for the time being, two families would have to share one apartment (Léonardon, 1979). As illustrated in figure 2.1, rooms were designed deep and narrow, with uncomfortable proportions, with concern for heat conservation. Such design, based on Russian norms, did not respect Chinese living habits, especially with respect to privacy and the separation of room functions¹² (Léonardon, 1979).

c) The Great Leap Forward (1958-1961)

This period represents a turning point in modern Chinese history. It is characterized by an increase of Chinese autonomy and the end of good relations with the Soviets, which led the way to years of experimentation and local technological development (Léonardon, 1979). The proposed strategy advocated the abandonment of foreign concepts and concentration on the development of local and indigenous techniques addressing local needs, using local resources and avoiding ready-made solutions (Hoa, 1981). Emphasis was on quantity, quality, speed and economy, seeking to increase production while reducing investment (Hoa, 1981).

During the years 1958-1959, efforts were concentrated on industrial production and agriculture was neglected, which resulted in great reductions in harvests. In 1959, 1960 and 1961, China experienced a succession of natural calamities, including droughts and consecutive cold winters. As a result, China was thrust into a great economic depression (Yichun & Costa, 1991). The sudden departure of the Soviets in 1960 translated into the loss of foreign advisers and the disappearance of essential resources and supplies, and also contributed to the crisis (Hoa, 1981).

Urban population growth was considerable during this period¹³. The principle of registration (*hukou*) was introduced in 1958 to control urban migration, and surplus population was transferred to rural areas (Kwok, 1979). Abundant and relatively cheap labor triggered an unprecedented large-scale construction process (Léonardon, 1979). Principal building activities were devoted to the construction of factories and housing for workers in the suburban areas, where the new industrial complexes were developed (Kwok, 1979). In the housing field, the new strategy was to house a maximum number of

¹² In most traditional oriental dwellings, the allocation of specific functions to different rooms is a foreign concept, and rooms generally serve various functions. In the current Chinese context, the great shortage of space resulted in that most rooms are used as living rooms during the day and bedrooms at night. The term bed-living room is often used to describe the main rooms in the Chinese housing.

¹³ Migration from the countryside to major cities continued and the urban population increased from 92 to 130 million between 1957 and 1960 (Kim, 1987).

people in minimum space with maximum comfort and at minimum cost (Hoa, 1981).

Most housing projects built during this period were based on the modification of the first Soviet prototypes. The first adaptation was the so-called 9014 plan, illustrated in figure 2.2 (Hoa, 1981). It had basically the same layout as the Soviet prototype, but with better proportions and systematic north-south orientation. A square lobby was introduced as well as a balcony or a loggia and a closet for storage (Léonardon, 1979). This new apartment type was very popular throughout China, although it was still excessively large (between 65 and 73 square meters) (Léonardon, 1979). The new structural system with transversal bearing walls allowed for more economic floor slabs, better seismic resistance and greater freedom for positioning openings in the facade.



Figure 2.2: 1958, 9014 prototype (Hoa, 1981)



Figure 2.3: 1959, 9014 Soviet prototype, smaller version (Hoa, 1981)

The 9014 plan was soon abandoned and replaced by a new model with a similar layout but smaller rooms. The bathroom was removed and replaced by a water closet. With this new design the floor area for a two-room apartment could be brought down to forty-six square meters, as illustrated in figure 2.3 (Léonardon, 1979). In the long run, the stress put on cost reduction led to a major decrease in quality. The new apartments had mediocre standards with thinner walls, lower doorways, no bathroom, no heating, shared toilets and sometimes not even a kitchen (Léonardon, 1979).

d) Recovery and Adjustment (1961-1966)

As the country's economy experienced tremendous hardship during the Great Leap Forward, the next period was one of readjustment and consolidation (Kim, 1987). The period is thus characterized by great shifts in direction regarding development priorities, with more emphasis on rural development and industry and less on urban concerns (Kwok, 1979).

The reorientation of priorities resulted in an almost complete halt in housing construction, allowing for a period of reflection during which professionals had the opportunity to conduct research on modern and traditional housing (Léonardon, 1979). Surveys on housing projects and standard building elements were conducted, as well as systematic interviews of dwellers (Hoa, 1981). This experimentation and evaluation period allowed for the collection of information essential for future project design (Kwok, 1979).



Figure 2.4: 1962, Typical prototype (Hoa, 1981)

In 1962, China's economy was stabilized (Hoa, 1981). After three years of intensive research, professionals were ready for a readjustment and standardization of the

housing production. The industrialization of construction allowed for mass housing projects to be built more quickly and more economically. Improved prototypes were developed with the introduction of reinforced concrete elements, which were produced on a large scale and sold on the open market. Housing quality was improved but remained inferior to that of the Soviet years (Léonardon, 1979). As illustrated in figure 2.4, each unit was composed of two main rooms, a kitchen, a shower, a lobby, and a balcony. The year 1962 thus reflected a certain maturity in housing production which struck a balance between too high and too low standards. After 1964, new directions were taken in mass housing production to reduce costs substantially. A new cost-cutting approach was introduced and a series of very low standard plans emerged (Léonardon, 1979).

e) The Cultural Revolution (1966-1976)

In 1966, a series of reforms in all domains was launched and led to what was called the Great Proletarian Cultural Revolution. The proposed reforms, which offered a new perspective on socialism, initially sounded very appropriate and had an incredible appeal in China as well as in the rest of the world (Hoa, 1981). The main objective of the Cultural Revolution was mobilize the masses and to redevelop their revolutionary consciousness (Kim, 1987). But soon, exaltation and fanatism led to a massive rejection of tradition, discipline, and all types of representations of power or elite. This brought the country to a state of quasi-anarchy and to the edge of bankruptcy (Hoa, 1979). Most universities and research centers were closed down between 1966 and 1970 and a large number of documents and archives were lost or destroyed (Hoa, 1979).

During this period, great importance was placed upon political ideology and cultural conformity. The focus was on production-oriented, industry-related buildings, and efforts were concentrated on the development of appropriate technologies and progress in rural areas (Hoa, 1981). As a result, housing production and design were neglected, public construction was reduced to a minimum and city planning offices were entirely closed down (Hoa, 1981).

Throughout the Cultural Revolution, the quality of urban housing production remained very low. The cost-cutting approach was reintroduced, leading to a drastic decrease in comfort level, which eventually reached the lowest housing standards ever seen in China. The plans were simplified, apartment sizes were greatly reduced, and most buildings had external corridors (Léonardon, 1979). Walls were thinner and insufficiently insulated, central heating disappeared and toilets had to be shared. Figure 2.5 gives an example of such prototype. Some designs explored the possibility of housing one family in a 3×8 meter module (Léonardon, 1979).



Figure 2.5: Late 1960s, Cost-cutting prototype with external corridor (Léonardon, 1979)

After 1971, the frenzy of the first years of the revolution began to calm down. In 1974 and 1975, the situation returned to normal, professionals were rehabilitated and production started again. The extreme cost-cutting trends were rectified, and new plans with ingenious layouts were introduced (Hoa, 1981). Figures 2.6 and 2.7 give two examples of apartments built during these years. In the same period, high-rise apartment buildings also appeared in China (Hoa, 1981).





Figure 2.6: 1975, Typical plan (Hoa, 1981)

Figure 2.7: 1976, Plan of three units (Hoa, 1981)

f) Post-Cultural Revolution Years (1976-1979)

In October 1976, after ten years, the Cultural Revolution, considered by some to have been an uninterrupted disaster for Chinese society as a whole, finally came to an end (Kim, 1987). The year 1976 also featured the death of Mao Zedong and the fall of the Gang of Four (Kwok, 1979). The new period was one of reflection and reassessment, and efforts were made to carry out policies of reform, consolidation, and improvement. Western concepts were reintroduced, along with the notion of urban renewal (Yichun and Da Costa, 1991). Construction activities and the production of prefabricated elements that had been almost paralyzed since 1967 slowly started functioning again.

Land shortage became an issue as it was realized that between 1949 and 1960, 50% of agricultural land around major cities had been taken over by urban expansion (Hoa, 1981). This justified the construction of new twelve- to fourteen-story apartment buildings throughout the country (Léonardon, 1979). In fact, very few buildings constructed during that period had fewer than five stories (Ekblad, 1990). The comfort level was brought back to that of 1962, but with relatively smaller rooms, as illustrated in figure 2.8.



Figure 2.8: 1978, Post-Cultural Revolution prototype (Léonardon, 1979)

g) The Open Door Policy (1979-1990)

Since the late 1970s, China has been moving in a new direction. At the Third Plenary Session of the Chinese Communist Party's Eleventh Central Committee in December 1978, Deng Xiaoping proposed a series of reforms that reflected a shift in national priorities (Fong, 1989). The new Open Door policy was introduced, leading to China's opening to the world and to the introduction of international concept at all levels (Kim, 1987). The new national goal was to achieve the modernization of industry, agriculture, science and national defense by the year 2000 (Slater, 1981).

In 1981, Chinese authorities restated the goals of the reforms and set basic limits to modernization: city size was to be limited, private automobiles would be discouraged in China, and the free market would not be permitted (Slater, 1981). Restrictions on popular movements in major cities were relaxed, but still strictly controlled (Kim, 1987). The Housing Reforms¹⁴ were introduced and housing became a stated priority. Municipalities and enterprises were asked to contribute to the production of housing and to use their own funds to build housing. As a result, public funding for housing were tripled after a few years and unprecedented rates of housing construction were reached (Hoa, 1981).

The post-Mao era transformed China from a rigid and traditional socioeconomic and political structure to a more flexible and adaptable modern state (Kim, 1987). People's living standards improved as the industrialization of the country proceeded. Housing production had to adapt to this increase in demand for more space, for a larger number of rooms, and for improvements in services, facilities, and equipment. With the introduction of refrigerators, washing machines, televisions, and furniture into many homes in the early 1980s, existing units no longer met the needs of the population (fig. 2.9). Designers had to find ways of accommodating a growing number of people, while at the same time preparing for future improvement in comfort.



Figure 2.9: With the introduction of refrigerators, washing machines, televisions, and furniture into many homes in the early 1980s, existing units no longer met the needs of the population. (Wang Fuyang, China Daily, 09/02 1986)



¹⁴ The housing reforms will be discussed in detail in section 2.5. of this chapter.

The prototypes built in the early years of the modernization period reflected the use of new techniques and building materials and the introduction of new theories and building forms. The use of concrete elements for the entire construction became widespread. A more effective use of the interior space was shown in the apartment layout with the enlargement of the living room and the reduction in size of the bedrooms. Bathroom design, natural lighting, and ventilation were improved. The average story height, which had been 3.2 meters in the early days of the People's Republic, was brought down to 2.6 meters.

Today, most planning practices for modern residential areas used in China are based upon Western planning theories. The Modernist ideas of city planning and building developed in the 1920s in the work of Le Corbusier have found solid support in new China (Fig. 2.10) (Solvic & Ligia, 1988). Sixty-three percent of all existing housing in Beijing is now in the form of *multi-storied* apartment buildings¹⁵ (He, 1993).

The most common type of low-cost housing currently built in China is a six-story walk-up apartment block (Zhou Wenzhen, 1983). Typical apartments consist of through units with a north-south orientation and two multi-purpose rooms. Services are usually grouped on the north side, while main rooms face south. A small central distribution hall is also used as a dining or living room (Zhou Wenzhen, 1983). Entry stairs are generally placed on the north facade and two to three units are accessed on each floor. Figure 2.11 gives an example of this typical apartment type.





Figure 2.10: Le Corbusier's plan voisin for Paris. (Lampugnani, V.M. ed. Encyclopedia of 20th-Century Architecture, New York: Abrams, 1986: 195)

(Beijing Shi Wei-Jiu Fangwu Gaizao Lingdao Xiaozu Bangongshi, 1990)

Figure 2.11: Early 1990s, Typical apartment.

¹⁵ According to Chinese specifications, high-rise buildings have between ten and thirty stories, midrise buildings seven to nine, multistoried buildings between four and six, and low-rise buildings are between one and three stories high (Song, 1988) (Liu & Li, 1988).

Although they have been discredited for public housing in the West since the 1960s, high-rise apartment buildings have gained the approval of a large number of planners and designers in contemporary China¹⁶. Mass housing and high-rise buildings are held in high esteem, as they represent China's drive towards modernization. The resulting urban skyline is the pride of local authorities (Yichun & Da Costa, 1991).

Since 1988, the Ministry of Construction has been attempting to popularize pilot projects in residential quarters and to encourage planners to create more imaginative projects and the integration of local features into the design (Wang Dehua, 1992). Researchers and planners are now starting to look for ways to develop prototypes of low-and medium-rise buildings which achieve high densities with a more integrated form of development (Wu Liang Yong, 1991).

2.3. THE CURRENT HOUSING SYSTEM IN CHINA

In China, the production of housing is very field and centralized. This section provides a synthetic overview of the main social, political, economic and technical issues involved in the housing production process, to provide a better understanding of the complexity and multiplicity of its mechanisms.

a) The Housing Process

Housing is a politically charged subject in China. The Chinese Communist Party's conviction that housing in a socialist state should be a social welfare provision that seeks only nominal returns led to the present housing system (Yok-Shiu, 1988). The state is thus responsible for the provision, allocation, administration, and maintenance of all housing, however heavy the burden of this responsibility (Chen, Lijian, 1988).

Although all land in China is owned by the State, housing ownership falls into three major categories: housing owned by the municipal government; housing under the management of various work units (*danwei*)¹⁷, which are divided into state-owned and collectively-owned enterprises; and private housing (Chen, Lijian, 1988). Housing under the management of state-owned work units represents the majority of houses (Wang

¹⁶ They now account for 30% to 50% of urban housing and average twelve to fourteen stories (Dixon, 1989). In Beijing, most high-rise buildings are eighteen stories or more (Mann, 1984).

¹⁷ The work unit (*danwei*), wrongly translated as *enterprise*, is a very important institution in socialist China. According to Kim Joochul, associate professor at Arizona State University, the work unit constitutes the basic unit of the social organization, central to the daily life of most workers. Work units are supposed to provide lifelong employment, health insurance, social security and housing for their employees (Kim, 1987).

Yukun, 1989), while between 15 to 20 % of urban housing is owned by the municipal government (Kim, 1987). Work units provide housing to their employees, and local governments generally accommodate people who are not attached to a particular work unit. Before 1978, private ownership was restricted to people who owned their house before the revolution. Private ownership is now encouraged as the commercialization of housing allows people to buy their own apartment.

Most dwellers in China are tenants who rent their apartments from their work unit or from the local government. Rents are highly subsidized and are generally very low, with annual rents covering only 0.08% of total building costs (Chang, 1987). People spend between one and three percent of their household's income on rent, and about the same amount for electricity – less than the price of a pack of foreign cigarettes (Ekblad, 1990)¹⁸. Utility companies supply water, electricity, and gas and bill the residents each month. Rent delinquency poses no problem. If a resident fails to pay rent, the work place is informed and the amount owed is deducted from the worker's pay (Friedman, 1983). A scoring system based on the applicants' current living condition, household size, seniority in service, position held, and contribution to the work unit, determines the priority and size of living space to be assigned (Fong, 1989)¹⁹. The control of housing by work units and the local government has led to a high degree of residential stability. Acrording to a 1984 survey, only ten percent of the population changed residence in five years and the average time spent in one house was eighteen years (Joochul, 1987). Tenants cannot be moved unless provided with accommodations (He, 1990).

Local governments are generally in charge of housing planning and construction. They follow standardized modes of construction and use building materials produced by state-owned companies (Slovic & Ligia, 1988). Each city district has its own local government and individual planning and design bureaus. Nearly all housing projects are designed and engineered by the state-owned Institutes of Architectural Design and built and finished by the Institutes of Construction (Slovic & Ligia, 1988). Occasionally, students in the schools of architecture and planning are also involved in project design²⁰. A few

¹⁸ In comparison, in developing countries at similar levels of development, households spend around 8.6% of their income on rent monthly; the average is 15% in developed countries (Li Ping, 1991). In the last thirty years, the average expenditure of urban households on rent has decreased steadily (State Statistical Bureau, 1988). In 1957, a family spent, on average, 2.3% of its income on rent, whereas in 1985, the figure was 1.1%. During the same time period, the expenditure on housewares increased from 8 to 20% (Fong, 1989).

⁽Fong, 1989). ¹⁹ For example, a three- to five-person household would be allocated a two-room unit and a six- to eight-person household would get a three-room apartment (Friedman, 1983). Young couples are not eligible for new housing and have to live with their parents if their combined ages do not add up to fifty years (Dwyer, 1986).

²⁰ Since 1958, students in the different schools of architecture have been involved in the conception of

state-owned companies monopolize all the housing construction in each city. That no individual takes responsibility for design and execution can explain the lack of originality in the design and its poor physical quality.

Formal training in architecture is a relatively new phenomenon in China²¹ and the practice of architecture is highly restricted. The rigidity of the production system, with its bureaucratic process, its standardized housing units and its monopoly on construction has constrained the role of design professionals. Diverse ideological influences are also reflected in the design²² (Rykwert, 1993). Today, the need for rapid and massive project implementation has reduced the time allocated for project design. As a result, projects are implemented without site analysis or impact studies, ready-made plans are still used and entire projects are often replicated.

Construction companies are generally in charge of general building maintenance during the first year following the completion of a new project. This responsibility is then passed on to the city districts' local government management bureaus, which are also responsible for the maintenance of outdoor collective spaces. *Neighborhood committees*²³ organize resident to take care of the interior common spaces.

b) Building Regulations

In China, building regulations vary from region to region. In Beijing, the main regulations for residential project design are related to building height, sunlight, apartment size, building density, and earthquake resistance.

In the inner city of Beijing, building height regulations vary according to proximity to the historic core and the Forbidden City. In historically sensitive areas, buildings are restricted to two or three stories. Elsewhere in the inner city, buildings can be up to six stories high. Outside the old city walls, regulations are not as strict and high-rise buildings

actual projects, in the frame of what is called the *real sword and real spear* design thesis (Gao Yilan & Liu, 1981).

²¹ Traditionally, the business of building was divided among masons, carpenters and potters. It was not until 1930 that a group of young Chinese architects, recently graduated from American schools, created the first professional body, the Chinese Architectural Society (Sun, David Paul, 1989).

²² The Beaux-Arts tendencies of the first returned scholars and the influence of Le Corbusier's planning ideas set the trend for the Chinese modern architecture. After the 1950s, most architectural production was influenced by communist ideology and justified in populist terms, as an attempt to appeal to the masses (Zhu Youxan, 1986). Today, the successful examples of Hong Kong and Singapore serve as the new models for housing design.

²³ In urban areas, each block or street has a neighborhood committee, which serves as an intermediary between local political organizations and family units (Liu Zhuyuan, 1989). The committees are responsible for public security and public health, mediation of civil disputes, and maintenance of public order. In addition, they are in charge of conveying the residents' concerns about public affairs and social services to the People's government (Friedman, 1983). Most of the members of the committees are retired women who receive subsidies from the government.

abound. Concerning sunlighting, regulations require that all main rooms have at least one hour of sun on December 22nd, the shortest day of the year²⁴ (IAURIF, 1987).

Due to the severe housing shortage, the Chinese housing authorities have adopted fairly stringent norms regarding per capita living area²⁵ (Bhatt et al., 1993-I). The number of rooms per unit, the total area of the unit and the distribution of apartment types in a project are specified in the regulations. National regulations for urban housing require that each person be provided with seven square meters per person, but the actual situation in major urban centers is even worse (Bhatt et al., 1993-I). One of the main goals of the Eighth Five-Year Plan is to bring the per capita living area in urban areas up to eight square meters by the year 2000.

In China, the floor-area ratio, or FAR²⁶, regulates residential project density and serves as an important measure of the optimum utilization of land. Developers often use the FAR to compare the profitability of projects and base their choice upon achievement of a high FAR. They will generally invest in projects with a FAR of no less than 1.5 (He, 1990). In the inner city of Beijing, the FAR is set at 3 (He, 1990). Since 1976, regulations regarding earthquake resistant structures have been imposed in the Beijing area.

c) Main Construction Systems

China's current level of industrialization favors construction systems which make use of semi-traditional materials such as bricks and hollow blocks (Xu Ronglie, 1988). For decades, small clay bricks have been the principal building material used in China²⁷ (McQuillan, 1985). The main construction systems currently used are the traditional brick or block masonry system, the cast in-situ system, and the frame and panel system.

The most prevalent structural form of housing is the brick-and-concrete multistoried building, which represents 80% of urban housing (Xu Ronglie, 1988). Solid

²⁴ In Beijing, this translates into a H to L ratio of 1:1.7, where H is the building height and L the distance between two buildings. The strict application of this rule reduces the flexibility in project layout and has resulted in the generalization of north-south oriented buildings.

²⁵ Housing areas are generally expressed in terms of built-up area, and living area. The built-up area includes kitchens, rest rooms and balconies and the area for vertical and horizontal common circulation space, as well as the area occupied by the walls. Living area consists of the calculation of the area of the rooms used for living. It excludes kitchens, rest rooms and balconies (Liu & Li, 1988).

²⁶ Floor area ratio (FAR) sometimes called *plot ratio* or *floor space index*, consists of the ratio of built-up area above grade to site area (Lynch and Hack, 1985). It is commonly used as a measure of development intensity. Various housing prototypes achieve different FARs. In general, traditional courtyard houses reach an average FAR of 0.5, without taking the self-built additions into consideration (which increases the FAR to up to 0.75). Alternative forms of housing reach FARs varying from 1.5 and 2.5, whereas mass housing projects may reach an FAR of as high as 6 (He, 1990).

²⁷ There are more than 1,800 brick plants in China where small clay bricks are machine-pressed or handmade (Xu Ronglie, 1988). However, since most building materials are under centralized planning control in China, there is no formal market for the people to buy them.

clay bricks are used for all interior and exterior load-bearing walls, whereas hollow clay bricks may be used for non-load-bearing partitioning walls (Zhou Wenzhen, 1983). Reinforced hollow concrete slabs are used for the floors (Xu Ronglie, 1988). Exterior facades may or may not be plastered. This system is adaptable to low- and medium-rise buildings which are from five to eight stories high (Chen and Yu, 1985). It is favored because of its low-cost, traditional technique, its simplicity of operation, and because all material can be acquired locally (Kwok, 1981). However, brick masonry is high in labor intensity and low in efficiency, which results in a long construction period. Burning of bricks is also highly consumptive of energy, and the production of clay bricks causes great damage to agricultural land (Xu Ronglie, 1988).

The medium and small size concrete block masonry system is also widely used, accounting for about 15% of total housing currently built (Chen and Yu, 1985). Blocks of various sizes are manufactured with the use of local industrial wastes and indigenous material available. This system is similar to the brick masonry system and is suitable for medium- or multi-story buildings. It is simple in fabrication and building technique, and similar in construction cost and efficiency to that of brick masonry (Kwok, 1981).

Another building system currently used consists of the cast-in-situ concrete system for interior walls with masonry exterior walls. Reinforced concrete interior walls are cast in-situ with gang forms while the exterior walls are either brick or block masonry. Sometimes exterior walls can also be made of cast in-situ concrete or prefabricated panels. In this system, all interior walls are load-bearing, while exterior walls serve only as enclosures. Floor slabs are made of precast reinforced concrete components. The system can be adapted to buildings of up to eight stories. This system has the advantages of being a fast-growing system which is structurally sound and resistant to earthquake. In addition, it can be left unplastered. However, this system allows for little flexibility in layout and requires the use of heavy duty hoisting machines (Chen and Yu, 1985).

With the emergence of high-rise buildings, framed construction with lightweight wall panels was developed in China. Buildings varying from eight to twenty-four stories high can be built with a load-bearing reinforced concrete frame and light-weight panels for partition and enclosure walls (Chen and Yu, 1985). Panel components are mostly factory prefabricated. This system has the advantage of being flexible in its plan layout, but it is both complicated and expensive to use.

Since the early 1970s, construction quality has been improving gradually, but has resulted in a substantial increase in construction costs. The cost of labor is very low in China – 7% of total construction costs – while material costs are high – as much as 80% of total building costs (McQuillan, 1985). Between 1972 and 1982, construction cost per

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square meter increased by 135.8% (Yok-Shiu, 1988). Today, a square meter of traditional masonry construction costs approximately 300 yuan²⁸ (Kim, 1987).

2.4. PROBLEMS IN THE HOUSING SYSTEM

Although it has been given first priority by the Chinese authorities, the housing shortage remains problematic in China. In recent years, serious housing inequalities have also emerged from the system (Chen Lijian, 1988). The shortcomings of the current housing system are discussed in this section, along with their possible causes.

a) Housing Shortage

In the last few decades, China's urban centers have faced a severe housing shortage which has resulted in serious overcrowding and has forced the great majority of the population to live in substandard conditions²⁹. Besides inadequate urban and regional planning and insufficient state investment, the urban housing shortages can be seen as the result of the current low-rent policy and the highly centralized building industry (Yok-Shiu, 1988). Figure 2.12 illustrates overcrowded housing in China.



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²⁸ In 1993, the average salary in greater Beijing was around 300 yuan a month, representing an income of 600 yuan per household (the 1994 rate is about eight yuan for one American dollar). In central Beijing, this figure is thought to be slightly higher. The average salary of a professor in China is 250 yuan per month (Bhatt et al., 1992).

²⁹ Only 7.9% of households of the inner city of Beijing have a per capita living area of more than ten square meters (Chen, Lijian, 1988). Each year, over two million newly married couples are waiting just to get a room to live in (Ke, 1987).

The welfare housing policy that has prevailed since the Revolution has greatly affected the housing situation in China. Highly subsidized rents are not sufficient to amortize the cost of new construction. Mediocre building quality and lack of funds for proper maintenance of the existing urban housing stock accelerated housing deterioration and reduced building life (Fong, 1989).

The inefficiency of the current building industry has also played a part in the housing shortage. Its low level of technology and the shortage of manpower qualified in construction, organization, administration and planning have limited the rate of housing production (Dwyer, 1986). A lack of systemization of the building process due to the absence of coordination of the whole construction industry, and the scarcity of modern building materials, also explain the low efficiency in housing construction (Kwok, 1981).

b) Housing Inequalities

The current housing system has given rise to diverse forms of housing inequalities. One's position in gaining access to housing depends to a large extent on the type of work unit to which one is attached (Fong, 1989). State-owned enterprises have more resources for housing than any private or collectively-owned work unit (Yok-Shiu, 1988). As a result, people who are self-employed or not attached to a specific work unit often face serious housing problems (Chen Lijian, 1988). Low rents also encouraged some people to secure more housing than they were entitled to. Similarly, rent subsidies are not distributed according to each household's financial needs (Yok-Shiu, 1988). They are given out by the state on a square-meter basis, regardless of the size of a household's living area. Therefore, people with larger apartments enjcy a larger government subsidy and there is a built-in incentive for urban residents to secure housing with the maximum amount of floor space (Yok-Shiu, 1988). The recent construction boom and the commercialization of housing have exacerbated the existing inequalities (Chen Lijian, 1988).

2.5. HOUSING REFORMS

In 1979, the Chinese government launched the new Open Door Policy, and, in its quest for modernization, introduced a series of economic reforms. The reforms were to allow the market forces and private enterprises to play an increasing role in the production and consumption of goods, following the world trend in the privatization of public services (Fong, 1989).

By 1981, the Commercialization of Housing Reform Policy was introduced to decrease housing subsidies and to stimulate China's construction industry (Fong, 1989).

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The initial goal of the housing reform was to establish an equitable and efficient system to solve the housing shortage problem and to convert the heavily subsidized house-building industry into a self-financing business (Fong, 1989). It was intended not only to relieve much of the State's burden, but also to help curb inflation and stabilize the economy (Barlow and Renaud, 1989). The reform also aimed at the decentralization of decision-making concerning housing production (Chen, Lijian, 1988).

The privatization of housing was announced as one of the most important objectives of the housing reform, which was to gradually transform housing into a *commodity*³⁰ (Ke Jian Min, 1987). Ideologically, housing was no longer to be treated as a welfare service but as a personal consumption good, with household savings playing a larger role in housing finance³¹ (Tolley, 1991). In 1985, the government launched a rent reform policy whereby rents would be readjusted to cover the costs of maintenance and management and would comprise a larger proportion of a family's income³² (Fong, 1989).

Over the years, the housing reforms have been slowly implemented, but they have not yet produced the expected results nor fulfilled their original goals. Low wages and lack of aid in the form of bank loans or mortgages have hampered the successful implementation of the commercialization scheme. Even when highly subsidized, the new units remain too expensive for the majority of the population and with the current low-rent policy it is still more convenient to rent an apartment than to buy it (Zhu Yan, 1989). Another problem is that the state still regulates ownership to prevent speculation and that home-buying is still not equated with home-ownership in China. Residents buying their units at a subsidized price are not allowed to sell or exchange it in the first five years. After five years, the house can only be sold back to the local government's management bureau or kept and passed on to the next generation by inheritance. Similarly, rent reforms have not been fully implemented. Until now, rents have been only slightly increased and are still far too low to cover basic costs. Even though there has been a large increase in the average per-capita income,³³ the percentage of income spent on housing is still extremely low

³⁰ Stalin, in his 1952 work entitled <u>Economic Problems of Socialism in the U.S.S.R.</u>, divided goods into producer goods and consumer goods, and identified consumer goods as *commodities*, which can be sold at a profit (Kojima, 1987).

³¹ For two generations of Chinese, housing has been seen as a public good rather than a commodity. The Chinese have recently begun speaking of *shangpinfang*, or *commodity housing*, i.e. housing sold to private parties, at fixed prices, for private ownership (Kojima, 1987).

³² For example, in Beijing rents are to be increased in a three-step process. Rents that used to be set at 0.13 yuan per square meters (often referred to as the *old rent*) have already been raised to 0.27 yuan per square meters and should reach 0.55 yuan per square meter (referred to as the *new rent*) in the near future (Fong, 1989). ³³ Since 1978 the income of China's urban residents has risen rapidly and its sources have

³³ Since 1978, the income of China's urban residents has risen rapidly and its sources have diversified. Apart from their regular wages, which have risen substantially, the balance of people's revenue has come in the form of bonuses, subsidies, dividends on shares and floating wages. These represented

(Yok-Shiu, 1988).

The government's failure to fully implement the housing reforms can be explained by political as well as economic reasons (Yok-Shiu, 1988). For the government, changing the socialist definition of housing is a sensitive issue³⁴. The Open Door policy introduced elements of capitalism into the system, but the government remains on guard against their potential outcomes -- such as high inflation and corruption (Fong, 1989). The complete restructuring of the rent system would require a total rearrangement of the economic system and must be tied in with some type of wage reform so that people's living standards would not be seriously compromised (Chen, Lijian, 1988). Implementing the housing reforms would also require the transformation of the housing policies and the readjustment of national housing standards (Yok-Shiu, 1988). Some of Beijing's officials estimate that it would take ten years to fully carry the reforms in the capital (Zhou Ganzhi, 1988).

Being more familiar with the complexity of the housing process in China, the reader is now ready to learn about the recent phenomenon of neighborhood regeneration in Beijing's old neighborhoods, which is presented in the following chapter.

about 34% of the income in 1988 (State Statistical Bureau, 1988).

³⁴ However, Engels, in his article "On Housing Problems", considered housing transactions to be a form of economic law also subject to the mechanisms of supply and demand, thus recognizing that the notion of housing as a commodity can apply not only to a capitalist economy but to a socialist economy as well. (Zhang Xiangu, 1986).

CHAPTER THREE: NEIGHBORHOOD REGENERATION IN BELJING

This chapter introduces neighborhood regeneration in the context of Beijing's inner city. It is divided in three parts. In the first part, the old city of Beijing is presented. The underlying principles which gave rise to the city's unique character are identified. The second part briefly reviews the history of neighborhood regeneration in Beijing and presents the current renewal program. The third part discusses the main issues involved in the regeneration process.

3.1. THE CONTEXT

a) The Old City of Beijing

Beijing is located in the northwest part of the North China plains, at the same latitude as Lisbon and Washington, as illustrated by figure 3.1.



Figure 3.1: China.

Its climate is rather inclement, with cold and windy winters and hot summers, although not as humid as Southern Asia. The proximity to the Gobi desert in the North creates a high incidence of sand storms and makes Beijing a very dusty city. From the Feng Shui¹ point of view, the site chosen was considered ideal a great city: it is protected on the north, east and west sides by high mountain ranges, while the south side, which is the favored orientation in Chinese traditional planning, is wide open.

According to Zhou Lei (1988), director of the Center for the Study of the History of Peking, the first human settlement on the actual site of Beijing dates back to 500 000 years ago. Historians claim that the first city built on the site was founded around the XIth century B.C., under the Chi dynasty. Several cities successively occupied the site by later ruling dynasties (Jonathan, 1983). The history of Beijing as a capital started in the early XIIth century, with the founding of *Zhong Du* (the central capital), and spanned over more than 800 years and five dynasties, with few interruptions (Zhou in Stave, 1988). Beijing has been the capital of the People's Republic of China since 1949. Today, it is the largest telecommunications hub and information center in China (Zhang Zhiping, 1991).

Beijing's urban pattern and architectural features are remarkable and unique. Ever since Marco Polo's visit to China, Beijing has been the object of high praise from planners around the world. The renowned Danish architect Steen Eiler Rasmus: en, in his book <u>Towns and Buildings</u> (1951; v), states his admiration for Beijing in these words: "...[T]he entire city is one of the wonders of the World, in its symmetry and clarity a unique monument, the culmination of a great civilization." Similarly, the American city planner Edmund Bacon (1980; 244) describes the old city of Beijing as "possibly the greatest single work of man on the face of the earth."

For Andrew Boyd (1962; 63), the urban structure of Beijing clearly emerged from a "creation rather than an accretion" and differs from cities which developed spontaneously and organically around a small trading center. It is typical of major capitals like Washington, New Delhi, Ottawa, and Brasilia, which were designed as monumental centers of political power and administration. According to Zhou Lei, director of the Center for the Study of the History of Peking, the intrinsic function of the city is that of a center of politics and culture. Beijing was never a center of economy (Zhou, in Stave, 1988).

Beijing's urban tissue is a heritage of the Ming (1368-1644) and Qing (1644-1911) dynasties and has remained intact until recent years (Zhou, in Stave, 1988). The Walled City of Beijing was composed of the Inner or Tartar City (*neicheng*) in the north, and the Outer or Chinese City (*waicheng*) in the south, covering about sixty-two square kilometers.

¹ Feng Shui, which literally translates as *vind and water*, is the ancient Chinese form of geomancy. It basically consists of theories and practices concerning the integration of built structures in the landscape, based on the analysis of its physical components such as the earth, the winds, the sun, the mountains, the water, the relief, the vegetation and the other built forms. It had been essential in the implementation of any structure since Chinese antiquity. However, since the Revolution, this practice has been more or less forgotten in mainland China, and now it is more commonly used in Hong Kong (Clément et al., 1987).

As illustrated in figure 3.2, the Old City follows a rigid grid street system with straight north-south and east-west orientations which overlaps a winding river network. Its plan is characterized by its central axis and its emphasis on hierarchy, regularity, horizontality and symmetry. The importance given to orientation and enclosure conforms to the traditional Chinese concept of space², which is reflected in the organization of both the city and of the individual house.



Figure 3.2: The old city of Beijing.

The Old City is divided into twenty-nine square city blocks measuring 750 meters on each side (55 hectares). Such mega-blocks are surrounded by main commercial streets where convenient shopping and public transport systems are located (He, 1990). The blocks are subdivided into long and narrow residential quarters by lanes called *hutong*³, which run from east to west, from 80 to 100 meters apart. Such lanes are mainly used by pedestrians and bicycles, and most of them are unsuitable for motor vehicles (fig. 3.3) (He,

 $^{^{2}}$ A true representation of the traditional Chinese space can be based on the principle of the Chinese boxes, where units sharing a similar structure are contained one within another. This image is equally reflected in the principles of the Chinese feudal society and corresponds to the balanced relationships between the individual and the family, the family and the state, the human order and the cosmic order (Zhu Zixuan, 1983). Beijing is often described as a "series of enclosed, self-sufficient representations of the world", the ultimate expression of the ideal traditional Chinese city (Jonathan, 1983).

³ Beijing is famous for its hutongs which are narrow lanes flanked on both sides by the blind walls of the traditional houses and bordered by trees. At one time most of them had a gate (*pailou*) at each end. Hutong are very active places in the neighborhood: they are used as an informal gathering place for people living in the neighborhood and as a children's playground. They can also accommodate the occasional spillover of domestic functions and serve as a kind of communal room where local craftsmen can earn extra income by selling their products or conducting small businesses from their homes (Mann, 1984) (Bhatt et al. 1992). There are more than 3 000 hutongs in the old city of Beijing, varying in length from 20 to 500 meters and from 60 cm to 6 meters in width (He, 1990).

1990). This kind of layout not only affords residents easy access to transport and shopping centers, but keeps noisy traffic away from the residential areas.



Figure 3.3: View of a typical hutong.

Figure 3.4: View of an old neighborhood.

Until the 1950s, the old city was constituted principally of one-story courtyard houses dominated by majestic trees, as depicted by Lu Junhua (1993-I; 27) from Tsinghua University:

"A bird's eye view of the sprawling districts of courtyard houses as they were until mid-century would reveal only a sea of greenery - a canopy of trees concealing a metropolis of hundreds of thousands of people - only occasionally broken by graceful, sloping roofs".

The horizontal skyline was occasionally disrupted by few temples and towers and dominated by the high city-walls.

But in the last fifty years, the forces of modernization and, more recently, the scarcity of land available for construction, have affected the once homogeneous structure of the old city of Beijing. In the 1950s, the massive city wall were demolished and replaced by the second ring-road. A large number of governmental institutions and factories were introduced to the inner-city area within residential quarters. Acres of the intricate and interlocking courtyard housing were demolished, in the 1980s, high-rise buildings were built along Chang'an Avenue, the main east-west axis separating the inner city from the outer city (fig. 3.5). As a result, the city has lost some of its original regularity and continuity. The once horizontal city now resembles a bowl, with high-rise buildings in the

outskirts surrounding the one- to six-story structures of the inner city. The proportion of open space has been increased in the old city, but now concrete, rather than trees, dominates the scene (Lu, 1993)







Figure 3.6: Administrative map of Beijing.

Today, greater metropolitan Beijing, spreading over 160 kilometers from east to west and 170 kilometers from north to south, has a population of about ten million⁴ (Yu Yi, 1989). The municipality of Beijing is divided up into ten urban districts and several rural counties which are all organized under their own local government. The inner city is divided into four major districts: the West City District (Xi Shi Qu), the East City District (Dong Shi Qu), the Xuan Wu District and the Chong Wen District (fig. 3.6). The old city covers an area of sixty-two square kilometers and suffers from serious overcrowding, with a current registered population of four million inhabitants, five times the 1949 population for the same area ⁵ (Yu Yi, 1989).

⁴ In China, it is not easy to evaluate populations, even in a well-defined area. They are often calculated in terms of households, taking 3.5 people per household as a national average (Jian Chuan, 1986). The figures given here do not take the *floating population* into account. Before 1979, individuals were not allowed to move freely from one city to another because of the registration system, *hukou*, introduced in the 1960s to control rural-urban migration (Hoa, 1981). Today, this system officially remains in place but the economic development in urban areas has forced the authorities to allow more freedom of migration. This has lead to the emergence of what is called *floating population*, referring to people who are living out of their official place of residence (Rocca, 1993). According to official figures, today the actual floating population in urban areas accounts for 70 to 80 million people, of whom 2 million are in the capital.

⁵ The average gross population density is around 300 people per hectare, reaching as high as 1000 people per hectare in some of the most crowded residential areas (Zhu Zixuan, 1989).

b) Traditional Housing

The Beijing courtyard house, or *siheyuan*, is considered one of the most interesting features of the Chinese traditional architecture (Hoa, 1981). It originates from the Han dynasty (200 B.C.-300 A.D.) and has a history as long as that of the city itself, having slowly developed over more than two thousand years (Casault, 1988). The *siheyuan* retains many of the characteristics of the feudal society from which present day China has evolved and reflects the traditional family system based on Confucian patriarchal patterns⁶ (Ekblad & Werne, 1990).

The Beijing courtyard house is typically composed of four pavilions surrounding a square courtyard (fig. 3.7). This ensemble is itself encompassed by a high wall which isolates the house from the outside world (Casault, 1988). Courtyard houses are generally arranged on north-south oriented lots, with the main pavilion facing south (Stave, 1988). The access gate is usually situated in the southeast corner, for sociocultural reasons linked to *Feng Shui* (Casault, 1988). Traditional houses consist of a timber framework with nonbearing gray brick walls, and a tiled roof (Zhou Wenzhen, 1983). Before the Revolution, the social status of the family was indicated by the dimensions and height of the buildings, as well as by the quality of the materials used in their construction (Zhang Bo, 1983).



Figure 3.7: Typical siheyuan (after Steen Eiler Rasmussen, 1951)

The Beijing courtyard house constitutes a closely packed, ground-oriented form of housing which is the result of a long process of interaction between the built form and the

⁶ Confucianism, never a religion in any accepted sense, is primarily concerned with social order. It is based on traditional Chinese thought combined with an ideally rigid and hierarchical order. It regards highly education, individual achievement and mobility within the rigid structure (China: A Country Study, 1988).

social, economic, and cultural needs and habits of the people (Ekblad & Werne, 1990). The intimate scale and tranquil ambiance of the courtyard create a strong sense of privacy and offer an ideal environment for raising children (Mann, 1984). One of the most important characteristics of the *siheyuan* is its flexibility in accommodating growth and change: the courtyard allows for a whole range of outdoor activities and can provide additional space to accommodate relatives or to store diverse items (Mann, 1984).

The majority of the *siheyuan* found in Beijing today date from the late 19th century (IAURIF, 1987). Until the Revolution, they had undergone very little change in their built form and still closely resembled the model from which they evolved. According to Norbert Shoenauer (1992; 172), of McGill University,

"The traditional Peking house evolved over centuries and was shaped by collectively held conventions and traditions that changed very slowly. Moreover, since Chinese urban dwellers did not stress individuality in the design of their homes and craftsmen adhered to traditional structural forms, the Peking house changed little until the middle of this century."

However, since 1949, most of the *siheyuan* in Beijing's inner city have been altered through a series transformations. The extreme housing shortage and overpopulation in the inner city area have exerted a great pressure on the traditional houses. After the Revolution, as a first step to solve the housing crisis, traditional houses were subdivided to accommodate several unrelated households, resulting in substantial reduction of the available floor area per household (Casault, 1987). Between five and ten households now share a compound originally intended for a single extended family (Hoog and Kennedy, 1979).



Figure 3.8: The transformation of the courtyard house.

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The 1976 earthquake also caused extensive damage to the centuries-old houses. After the earthquake, various forms of temporary shelters were erected in the yards, altering the houses' original state and hindering proper lighting and ventilation (Casault, 1987). Most building additions still remain standing today, used as kitchens, storage space, or as extra habitable space. According to professor Wu Liang Yong (1991; 52), with the lapse of time, traditional houses have "turned from courtyard houses, to multi-household compounds, and then to courtyardless compounds" ⁷ (Fig.3.8).

According to Yu Yi (1989), of Southeast University in Nanjing, the extremely low level of maintenance, due in part to the lack of public funds and the little proportion of home-ownership, also allowed climatic factors to contribute to the deterioration of the old housing. Traditionally, old houses were maintained regularly and rebuilt every thirty years by home-owners. But with the nationalization of housing, building maintenance has been neglected, resulting in the advanced state of dilapidation of the housing stock (Kirkby, 1985).





Figure 3.9: View of an overcrowded courtyard.

Figure 3.10: View of a hutong today.

Today, there are still 800,000 people living in ten million square meters of old house: in Beijing's inner city, 80% of which are considered to be extremely inefficient in terms of overall city land use and highly substandard (He, 1993). The majority of courtyard houses lack basic sanitary facilities and services, and living conditions in traditional neighborhoods are rapidly deteriorating (Yang Yanmin, 1990). In the last ten

⁷ For example, the living space within the same house grew from 2 440.5 square meters in the early days of the republic to 3 786.5 square meters (fifty-five percent increase) by 1987 (Wu Liang Yong, 1990).

years, thousands of traditional houses have been replaced by new developments and infrastructure. At this pace, it is estimated that the majority of the city's *siheyuan* will have disappeared in a few years.

This brief introduction to the context of the old city of Beijing will facilitate the understanding of the phenomenon of neighborhood regeneration and of its diverse implications, which are discussed in more details in the following section.

3.2. NEIGHBORHOOD REGENERATION

a) Definitions

As mentioned earlier, neighborhood regeneration can be defined as the renewal of existing residential quarters with the purpose of improving their present condition. For the purpose of this thesis, the term *neighborhood regeneration* is used to refer more specifically to the replacement of traditional housing districts in the inner city of Beijing by new residential projects.

Since the beginning of the century the idea of neighborhood had many different meanings, from that of being a unit of social analysis used by sociologists, to that of being a mere city block, then a self-sufficient spatial unit. With the rise of the urban renewal movement in the West, neighborhoods have become issue-oriented groups with a specific political goal. In recent years, the notion of neighborhood has evolved into a mere name given to a particular section of a city with which people identify themselves (Lynch, 1981).

The neighborhood can thus be defined as a physical entity of specific dimensions, as a grouping of a certain number of units or people, or as an area differentiated by social, cultural of historical factors. Kevin Lynch (1981) makes a distinction between *local district*, defined as an identifiable residential area; *neighborhood*, being a very small area within which people are acquainted, and *community*, defined as a coherent social entity. However, in the context of city planning, physical size is most often used to identify neighborhoods. Classical planning doctrines have sized the ideal neighborhood to fit an elementary school, but according to Lynch (1981), such neighborhoods are themselves formed of smaller ones, which are comprised of fifteen to thirty families and no more than one hundred households. For him, the actual idea of neighborhood remains:

"at the scale of the very local unit, within which people are personally acquainted with each other in reason of residential proximity, where size, homogeneity, street pattern, identity of boundaries, and common services, may play a definite role in premoting control, present fit, and stability " (Lynch, 1981; 246).

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Jane Jacobs (1961) also defines the notion of neighborhood as a residential area of modest dimensions where social links are easily formed. For her, neighbors are people united not necessarily by common origins or common purposes (although it is recognized that social ties are more easily formed among households of a similar socioeconomic class) but by the proximity of their dwelling in space.

Well-defined housing neighborhoods are at the base of strong communities in traditional Chinese cities. In Beijing, the physical organization of neighborhoods, with the narrow *hutongs* shared by a few households, contributes to the development among the residents of a sense of identity with their homes and surroundings (Bhatt et al., 1993-I). With reduced mobility and high residential stability, people of the same neighborhood have developed close relationships and a strong sense of solidarity. A Chinese proverb states that "a relative far away cannot compare to a neighbor nearby " (Zhou, in Stave, 1988; 256).

b) Brief History of Regeneration in China

Urban renewal is not a new phenomenon in China. Before 1980, old cities and old urban districts were renewed under the principles of full utilization and gradual transformation (Zhou Ganzhi, 1988). In Beijing, since as far back as the early 1950s, inner-city districts have been transformed to make way for wider roads and new projects with commercial, industrial and residential land uses (Yu Yi, 1989) (Hu Baozhe, 1990). The first example of neighborhood regeneration in the capital appeared in the 1960s when about 1.35 million square meters of new housing were built on sites previously occupied by traditional houses (He, 1993). In 1974, the municipal government invested 100 million yuan to redevelop three areas of the city. One hundred thousand square meters of old housing were torn down and replaced by 400,000 square meters of new apartments (He, 1993). Since 1980, most of the old urban districts and ancient city blocks have undergone some changes through urban renewal or neighborhood regeneration (Zhou Ganzhi, 1988).

It was not until the late 1980s, however, that local governments introduced policies to regulate the process of renewal in the old city of Beijing. In 1987, the Beijing municipal government ordered the development of four experimental projects to be implemented on the sites with the worst living standards within the four inner-city districts (He, 1993). Three of those four projects were implemented and completed by 1990 (He, 1993). They are illustrated in figure 3.11.

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c) The Old and Dilapidated Housing Renewal Program

In April 1990, the People's Municipal Government of Beijing commissioned the Beijing City Planning Institute to draw up a master plan for the four central city districts, in order to accelerate their renewal (Lu, 1993-I). What is known as the Old and Dilapidated Housing Renewal Program was then initiated. As many as thirty-seven regeneration projects were started in the old city districts through this program in 1990 (He, 1993). Only eight of them have so far been completed and inhabited.



Figure 3.11: The Old and Dilapidated Housing Renewal Program.

The renewal program was to be implemented in the old city of Beijing in four phases, starting with the sites in the worst condition and proceeding incrementally from the edge of the cld city towards its core (Lu, 1993-I). Neighborhoods to be regenerated were classified into five categories according to their location and to the emergency of their situation. The municipal government of Beijing has declared that by the year 2000, all new renewal projects should be given approval (Lu, 1993-I).

According to Lu Junhua (1993-I), three major forces have motivated the implementation of the Old and Dilapidated Housing Renewal Program. First, the Central Committee of the Communist Party's will to resolve most of the housing shortage before the end of this century has been a major force driving the implementation of the program. Second, the recent boom in real estate has attracted investment to the renewal of the old city center which helped trigger the implementation of the renewal program. Finally, the residents' aspiration for better housing conditions has also helped accelerate the renewal of the old city. Residents generally approve the renewal program and are willing to cooperate with the government's efforts to replace their old housing (Lu, 1993-I).

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4.3. THE REGENERATION PROCESS

a) Main Actors and Their Roles

The main actors involved in the process of neighborhood regeneration in Beijing are the diverse levels of local government, their various construction and development companies, and the actual residents of the neighborhoods to be redeveloped (He, 1993).

The district governments are usually the main coordinators for carrying out regeneration projects: they determine the location and size of renewal parcels, choose the type of development and project design, and take responsibility for management after construction (Lu, 1993-II). Project are generally designed by architectural institutes which are under the control of one level of the local government or another. The development agencies, or developers, are companies attached to the city or district Housing Management Bureau (He, 1993). They are evolving into profit-making, self-supporting businesses, although they continue to operate within the government's imprimatur (Lu, 1993). The original residents are often left out of the process, despite the fact that 40% of Beijing's residents will be affected by housing regeneration. Their role is limited to the acceptance or refusal of relocation to another site (Yang, 1990).

In June 1992, Beijing's municipal regulations began to permit the lease of land to developers who have rapidly taken the leading role in the regeneration process. Developers are now responsible for the construction of housing and infrastructure on the site and for the provision of housing for the original population on or off the site.

b) Financing

The comprehensive cost of regeneration is very high in Beijing. Besides the cost of the project itself, costs include many other items: the off-site infrastructure, public services (kindergarten, neighborhood committee office, shops, etc.), demolition and removal of the old structures on the site, new housing for the relocation of the original population, moving expenses, and demolition compensations⁸ (He, 1993). Since 1992, the municipal government has played a smaller part in the financing of regeneration projects. Developers are now required to cover all project costs and receive no subsidies besides land, which is allocated for free.

⁸ Private home-owners are usually compensated for the demolition of their old house by the developer. This compensation generally ranges between 1000 and 1500 Yuan per room, regardless of the building quality. Some developers might offer the residents another house of similar condition in some other part of the city instead of financial compensation. In Beijing, 11% of houses are privately owned, and since most of them are concentrated in the old neighborhoods, the proportion in these areas varies from 25% to 70% (Fang He, 1989).



With the commercialization of housing, one way for developers to recuperate their investment is by selling the new units built on the new housing market. Potential buyers are generally large national work units, wealthy private entrepreneurs, and overseas Chinese. There is therefore an incentive for developers to profit from differential land values and to relocate a majority of the original residents in housing units purchased at advantageous price in the outskirts, while selling the units built on the site at market price⁹. They are also inclined to appropriate as much land as possible to amortize the cost of regeneration. Another way of financing projects is through the sale of commercial and retail spaces on the site.

c) Relocation

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Original residents are generally relocated to walk-up or high-rise apartment buildings in large-scale mass housing projects located on the periphery of the city. Relocation sites are generally inconveniently located, badly serviced, and suffer from poor security and high crime rates. Because of the registration system, relocation remains a complex administrative process. The transfer of the *hukou* can take several months, causing major inconveniences to both relocated people and new residents on the site.

Although most people look forward to the regeneration of their neighborhoods, they are generally opposed to relocation, over which they have a limited control, as to where and in what conditions. Most people prefer to remain in their original neighborhoods because of its prime location near the city center. One of the initial goals of the renewal program was to retain a minimum of 30% of the original site population on the site after regeneration (He, 1990). Yet, because of the absence of strong enforcement of the regulation regarding the requirements for minimum number of residents to return to the site after its regeneration, the current system has allowed developers to benefit from every resident not returned to the site. It has also made it possible for the developers to create artificial constraints to convince residents to accept relocation. The need to find temporary housing¹⁰ and the payment of the

⁹ In general, local governments intend that 30% of housing built should be reserved for sale or rent at minimum profit (fixed at 8% of development costs) while the remaining 70% can be sold at market rate (Lu, 1993 II). Units in the outskirts are bought for as much as three times cheaper than those in the city center which are sold at market price.

¹⁰ Residents wishing to be rehoused on the site after its regeneration are required to find temporary housing with friends or relatives for the duration of the project construction, which can last between one and three years. The developer usually gives a monthly compensation of ten yuan per person for the whole period of temporary living. Since most people only have access to bicycle carts for moving, the task of moving all of their belongings twice in a relatively short period of time can be overwhelming. Many prefer moving directly to a new site, for which the developer often supplies moving trucks free of charge. The developer may occasionally arrange for housing facilities in another part of the city or provide temporary shelters next to the construction site.
rent deposit¹¹ have often discouraged people from staying. The prospect of larger units, lower rents, facilitated moving, or compensation bonuses proposed by the developer often convince residents to leave their old neighborhood and accept relocation.

The size of the units allocated to each of the original households is based on the size of their original living space. However, the calculations do not account for the many additions that have been built throughout the years to solve problems of space shortage¹². In cases where families are found to live in unbearably crowded houses, the right to have more living space has to be purchased from the local government for about one thousand yuan per room. The household's work unit generally covers this cost, but the family has to pay rent monthly for the extra space.

This overview of the phenomenon of neighborhood regeneration and of the diverse issues involved in the process provides an appropriate background to critically review the diverse neighborhood regeneration projects that are presented as case studies in the next chapter.

¹¹ When residents are rehoused as tenants in new apartments on the original site, they are required to pay a rent deposit to the developer prior to occupying the new unit. The deposit of about $40 \text{ }4/\text{m}^2$ is calculated based on the total built area of their apartment, including balconies (He, 1993). Residents are then required to pay a monthly rent at a highly subsidized rate. After three years, the deposit is generally reimbursed and the rent is raised to the new non-subsidized rate. The interest on the deposit, together with the rent, cover maintenance and management costs. If the residents cannot afford to pay the deposit, they may have to pay the normal rent right away.

¹² In the inner city of Beijing, such informal additions were found to represent as much as 25 to 30% of all built-up area (Wu, 1991).

CHAPTER FOUR: CASE STUDIES

During the summer of 1993, the author undertook a three-month field trip to China to gather information about the implementation of neighborhood regeneration. Among other things, this field trip allowed her to conduct a survey of eight housing regeneration projects recently implemented in the inner-city of Beijing. This chapter, which presents the information collected during the project surveys, is divided into two parts. The first part presents the organization and methodology used to conduct the field study. In the second part, the eight case studies are described.

4.1. THE FIELD SURVEY

The main objective of the field survey was to collect information about specific regeneration projects which would constitute the case studies for the present thesis. It was also intended to complete the available information on the process of regeneration, to verify the accuracy of data previously collected. The survey focused on the physical aspects of the projects, such as site organization, building quality and layout, alterations of the design; the accuracy of the projects, including the residents' different uses of the space and community life; and the more technical aspects of the projects such as building costs, relocation procedures, and home-buying.

For obvious reasons, the survey could not be undertaken by the author alone. Coincidentally, a group of students working on the issue of housing regeneration in Beijing under the direction of professor Lu Junhua of Tsinghua University had planned to undertake a survey of regeneration projects in the old city during the first two weeks of June 1993. After discussions with professor Lu, it was agreed that the author could join the team and that the information collected could be used for the present thesis. Besides the author, the survey team was composed of four graduate students, including two Chinese students, Tan Ying and Liu Yang, both from Tsinghua University School of Planning, and two visiting scholars, Daniel Abramson from the M.I.T. School of Architecture and Planning and Jonathan Hannam from Melbourne University Planning Department.

The methodology used for the project surveys was based on past experience and on the type of information sought after. It consisted of a desktop survey and the surveys of the different projects, which was further divided into physical surveys, informal interviews, and observations. Data was gathered from both primary and secondary sources in the form of plans, sketches, photographs, and notes.

The desktop survey was carried out prior to the project surveys in order to gather

quantitative data and graphical documents on each of the projects to be visited. This information provided the team members with a basic knowledge of each project which proved essential for the conduct of the project surveys.

Each site visit involved a physical survey of the project to complete the information gathered in the desktop survey. The major public transport systems and daily services in the vicinity were identified. Landscaping, site furnishings, private appropriation of the space, modifications of the original plans, and alterations such as building additions, enclosing of balconies, security doors, window awnings, etc., were carefully recorded with photographs and sketches and located on the site plans. In each project, eight to ten apartments, chosen randomly among the different housing prototypes, were visited and surveyed.

Informal interviews were conducted in each of the projects to get feedback from the diverse actors involved in the process, especially from the residents who had experienced regeneration. The interviews were conducted with the head of the household of the apartment visited or with residents encountered in the outdoor spaces. Between eight to twelve residents were interviewed in each project. They were generally very cooperative. The interviews were conducted informally, without the use of a questionnaire, to insure the spontaneity of the replies. After the researchers briefly explained the purpose of the study, a discussion would begin, often over a cup of tea. Information was shared -- generally without hesitation - about original living conditions, the household structure, the form of tenure, the relocation process, how long the resident's family had been living on the site etc., and the residents were asked to comment on the new project design and the apartment layout. The interview was usually followed by a tour of the apartment. Neighborhood committees were also systematically interviewed in each project to get information about project management and more accurate data regarding population, costs and general relocation procedures. In a few instances, project architects were also interviewed, with the purpose of acquiring more technical information about the projects.

Observation was used to gather information regarding the particular use of interior and exterior spaces at different times of the day. The behavior of people in the space were observed and recorded. One whole day was spent at each of the projects to allow team members to witness the whole range of activities taking place. This also permitted residents to become familiar with the team's presence and carry out their daily activities as usual. Observations were noted chronologically and the exact time of the day was carefully recorded. Sketches and photographs were also numbered and located on the site plan. Samples of such recordings can be found in Appendix I.

Specific tasks were assigned to each team member. The three foreign students

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concentrated on the physical survey and observation work, while the two Chinese students conducted the interviews. After visiting the projects, the team members started organizing the data. The information collected was briefly analyzed, some plans were redrawn, and a report was produced. The information for the case studies presented in this chapter comes mainly from this report. Further information and new illustrations were later added by the author.

4.2. CASE STUDIES

The case studies comprise eight projects implemented in the inner-city of Beijing (fig. 4.1). All consist of residential projects built on sites previously occupied by old residential quarters, located in the old city of Beijing along or within the second ring-road. They are among the first neighborhood regeneration projects to be partially or fully completed under the Housing Renewal Program, and the only ones that are inhabited. Three relocation projects located in the outskirts of the city were also visited. Because of the great dimensions of some of the estates, the study concentrates on the most representative portion of each site, in most cases the one which had been completed and inhabited for the longest period.



Figure 4.1: Location of the projects surveyed.

The projects are presented chronologically according to their date of completion. Each is accompanied by a short qualitative description and illustrated by relevant graphical material. Project description is presented in terms of general conditions, which includes location, original site conditions, and the project strategy; and in terms of design features, including housing prototypes, apartment types, site organization, and outdoor spaces. The description is concluded with a brief evaluation based on the residents' observations regarding the positive and negative aspects of the project. For each case study, a summary table with quantitative data is provided. At the end of the section, a general cumulative table is presented for comparison purposes¹.

a) Xiao Hou Cang

Xiao Hou Cang is a small estates composed of a variety of traditional looking prototypes bordering both side of shady, planted lanes (fig. 4.2).



Figure 4.2: Axonometric view of the project.

General Conditions

Xiao Hou Cang is located in the northwest corner of the old Tartar City, in the East City district (fig. 4.3). The Xi Zhi Men transport hub is within walking distance of the site. There is a hospital and a large public garden in the vicinity. A kindergarten and a primary school are adjacent to the site. A lively shopping area can be found one block north on Xi Zhi Men street (fig. 4.4).

The site was originally occupied by single-story courtyard houses. More than half of the original houses on the site were built before 1949 and most were in very poor condition, overcrowded and lacking basic facilities (Huan Hui, 1991) (fig. 4.5). The new project was designed in 1987 by Huan Hui, an architect at the Beijing Institute of Architectural Design and Research, and built between 1988 and 1990 as part of the four experimental projects implemented before the introduction of the renewal program. The main goals of the project were to preserve the community by rehousing all the original residents on the site and to increase their living standards by providing them with betterbuilt houses and more storage space (Huan Hui, 1991). In order to recover the costs of renewal, additional units as well as a commercial building were built to be sold at market rate.

¹ Most of the figures have been collected during the desktop survey and have not all been verified on the actual plans. They should thus be considered with caution.



Almost all of the original residents moved back to the site after its renewal. They had to find temporary housing for themselves during the construction period and had to pay a rent deposit before moving into their new units, but were forgiven from paying rent for the first three years. They only recently started paying a low rent. Only twenty households bought their units at the subsidized price of 280 ¥/m^2 . Commercial units were sold for $3,000 \text{ ¥/m}^2$ (Huan Hui, 1991).



Figure 4.5: Original site plan

Figure 4.6: Project site plan

Design Features

The project consists of nine residential and one commercial building arranged along small lanes (fig. 4.6). Each plot is enclosed with a high wall along the street edge. Most

buildings consist of walk-up apartment buildings ranging from two to six stories with north-south exposure. Some east-west oriented buildings were built to increase land-use efficiency. One of the main features of the projects is the preservation of the original lanes and trees on the site. Their location had a great impact on the design, resulting in a diversity of housing prototypes and apartment layouts.





Figure 4.7: Floor plan sawtoothed building

Figure 4.8: Floor plan, walkup prototype



Figure 4.9: Typical elevation

Figure 4.10: View of a prototype

There are three different housing prototypes on the site. One consists of a large slab-type east-west oriented building which functions with a double-loaded corridor (fig. 4.7). It has a terraced roof and sawtoothed facades to increase southern exposure. Units are deep and narrow, with a polygonal living room. The other two prototypes consist of small apartment blocks with a central staircase and sloped roofs (fig 4.9 & 4.10). One prototype

has only two units per landing, all enjoying a double orientation; the other have up to five units per floor, some of which are single-oriented (fig. 4.8). Staircases and most kitchens are lit and ventilated by light wells or air shafts. Ground floor apartments are provided with small enclosed yards, while those on the upper floors have standard-size balconies. Top floor apartments have attics and large roof terraces. Central gas and heating systems were not included in the initial project design.

The amount and form of outdoor space on the site varies widely. It includes small yards allocated to individual households, large: semi-private yards connected to an entry stairway shared by two to ten units, small open sitting areas, and the lanes themselves, lushly planted on both sides. The large collective yards act as exterior hallways and are used mainly for circulation and bicycle parking. Both private and semi-private yards are surrounded by high walls of traditional gray bricks and accessed through red gates, inspired by the local architecture. The lanes, broader than an average hutong, serve as the only collective outdoor space. Site furnishing, however, was not provided along the lanes. Access to the estate was initially uncontrolled, but a gate was recently placed at the southeast entrance next to the neighborhood committee office to control access.

Observations

The main positive aspect of the project is the preservation of the social and physical structures of the original neighborhood. The preservation of the street pattern and trees, the use of traditional building materials, the application of concepts borrowed from the traditional architecture, and the relatively small size of the project contribute to its successful integration into the surroundings. The old trees have become focal points of the public space. The garden walls unify the street edge, ease the maintenance of the public areas, provide many households with secure outdoor space, successfully mask building additions erected at the base of the buildings, and protect the public space from too much encroachment. The small yards have been highly individualized and a few have been converted into private businesses. The large roof terrace of one of the top floor units was also turned into a private kindergarten managed by the residents themselves.

On the negative side, the absence of central heating and gas is seen as a major problem. Inhabitants also complain about the limited living space, which has led to the proliferation of balcony and terrace enclosures. In some instances, balcony areas have even been enlarged with the use of cantilever systems, illustrated in figure 4.11. Construction quality is poor, and the single-oriented units in the sawtoothed building are particularly unpopular, especially because of the polygonal rooms. Light wells and air shafts are dirty and smelly, and management and maintenance of the indoor common space is poor.



Xiao Hou Cang (1988-1990)	Original site	Renewal project	
Site population · people	1 062	-1.062	
 households 	298	350	
Population density people/Ha	70%	-815	
 twoscholds/Ha 	199	209	
Relocation - on sic (heardedds)	•••	350 (100%)	
- off sile		0%	
Site area - total area (bectare)	1.5	1.3	
Built area · (csdential (m2)	8721	15 800	
- average per person	8.21	-14,87	
 average per household 	29.27	45,14	
- commercial/institutional	0	7 200	
Building height - range (stories)	1	2.6	
- average	L L	3.8	
Building density 7 ground coverage	"	?	
- residential FAR	0.58	1.35	

Figure 4.11: Self-enclosed balconies Table 4.1: Xiao Hou Cang

b) Dong Nan Yuan

Dong Nan Yuan is a small and dense estate of traditional-inspired houses arranged in clusters around small communal yards. A narrow lane, reminiscent of the animated hutong, runs between the clusters (fig. 4.12 & 4.13).

General Conditions

Dong Nan Yuan is located in the old Outer City and is part of the Xuan Wu City district, known to be the poorest of the four inner-city districts (fig. 4.14). The site lies just south of the famous Liu Li Chang traditional shopping street, which attracts thousands of tourists each year. It is surrounded by a particularly confusing and inaccessible maze of narrow hutongs which constitute a predominantly pedestrian environment. The He Ping Men subway station and the Qian Men transportation hub are within walking distance of the site (fig. 4.15).



Figure 4.12: View of the sentral lane

ter tradi



Figure 4.13: View of a yard



The site is part of what was traditionally a poor workers' residential area suffering from serious overcrowding. The very narrow hutong limited access to the site to emergency vehicles. This neighborhood was said to have the worst living conditions in the district, with 80% of the old houses dating from before 1949. Most houses poorly ventilated and received little lighting. The average ground level of the site was lower than that of the surrounding area, which, combined with a poor drainage, made the neighborhood damp and susceptible to frequent flooding (fig. 4.16).

Dong Nan Yuan was one of the four pilot projects carried out prior to the implementation of the Housing Renewal Program in Beijing. The project was designed by

the Beijing Institute of Architectural Design in 1987 and built between 1989 and 1991. One of the main objectives of the project was that all original residents would be rehoused on the site after its renewal. Ten percent more units would also have to be built to allow extended families to split into independent households. In addition, twenty-four units had to be provided for different work units as a compensation for the loss of the office space they previously had on the site. Building height had to be limited to three stories because of the proximity to the Liu Li Chang historical area.

The project was built in different phases so that only a few households at a time would have to find temporary housing. All original residents moved back to the site after only one year in temporary housing. No rent deposit had to be paid by the residents before returning to the site and the rents paid are standard subsidized Beijing rates. Very few people have been willing to buy their own units, even at a highly subsidized rate.





Figure 4.16: Original site plan

Figure 4.17: Project site plan

Design Features

The project consists of thirty-eight almost identical three-story walkup apartment buildings and one conventional slab apartment building intended for newlywed couples. Buildings are arranged in clusters to create four well proportioned communal yards, as illustrated in figure 4.13, and a few smaller, more private yards. The main lane that used to service the site was preserved (fig. 4.17). Clusters line up along the lanes so that no open space is left unused.

Prototypes consist of traditional gray bricks walkups with sloped roofs (fig. 4.18). Each one contains six units, two on each floor, which are exposed on three sides and accessed through external staircases. Apartments are small, deep and narrow with main rooms placed at each end and services grouped in the center (fig. 4.19). Buildings are not equipped with central gas and heating systems, although space for their future installment was built in. Storage space for bicycles on the site is noticeably absent.

All residents are provided with private outdoor spaces. Ground floor apartments generally have access to a small private yard or to the communal yard. Second floor units have a standard-size balcony. Top-floor units enjoy an attic for storage and a large roof terrace shared by two units. The communal yards, shared by about fifteen households, are lushly planted. Access to these yards is sometimes indirect, which contributes to their privacy. Gates located at both ends of the central lane regulate access to the site and limit vehicular circulation. The neighborhood committee's office is located near the southern gate and provides good surveillance.



Figure 4.18: Side elevation and typical section



Figure 4.19: Typical floor plans

Observations

The project is a good example of very economical public housing. The high ratio of external stairs to units allows direct and personal connection to the outdoors for most households. This small-scale project, built with an incremental approach, provides a very human environment. The use of local building materials, such as gray bricks and roof tiles, and of traditional elements such as sloped roof and interior courtyard, contribute to the successful integration of the project to the environment. The original street connections have been preserved and residents continue to interact with old neighbors in the vicinity.

The outdoor spaces, although limited in size, are quite popular. The project layout provides a good hierarchy of space, from public to private, and allows for a wide range of outdoor activities in the yards or the hutong. Communal yards are sized to suit neighborly activities and are easily monitored and identified. Each one has its own distinct character and is well maintained by the residents. The yards are often used as an extension of the living space by ground floor residents. The central lane is used as a traditional hutong and has been appropriated by residents whose apartments are not connected to a yard. A small shop for daily goods was opened by one of the residents under a staircase in the lane, as illustrated in figure 4.12.

Dong Nan Yuan (1989-1991)	Original site	Renewal project	
Site population • people	805	890	
- tunectuskis	208	230	
Population density - people/Ha	895	990	
- houncholds/Ha	231	256	
Relocation - on site (households)		230 (100%)	
- off site	-	0 (0%)	
Site area • total area (bectare)	0.90	0.90	
Built area - residential (m2)	5 572	11 588	
- average per person	6.92	13.02	
- average per household	26.79	50.38	
- commercial/institutional	1 048	0	
Building beight - range (stories)	1	2-4	
- average	t	3	
Building density • 7 ground coverage	74	55	
- residential FAR	0.74	1.29	

Table 4.2: Dong Nan Yuan

However, most residents consider the building standards to be too low. People have enclosed their balconies, landings and even the space under external stairways to increase their living area. The absence of central gas or heating systems, and of any form of bicycle shelter, causes great dissatisfaction. Another problem identified by the residents is that second floor dwellers do not have sufficient private outdoor space, and that top floor terraces have to be shared by two units.

c) Ju Er Hutong

Ju Er Hutong is a small fragmented estate composed of clusters of high quality courtyard prototypes whose elaborate design was inspired by the traditional Chinese architecture (fig. 4.20 & 4.21).



Figure 4.20: View from a lane

Figure 4.21: View of a yard

General Conditions

Ju Er Hutong is located in a lively neighborhood along Jiao Dao Kou street in the northern section of the old Inner City, part of the East City District (fig. 4.22). It lies a few hundred meters from the classic historical block of the Drum and Bell towers and the historic Shi Sha Hai lakes district. The historic and cultural value of this area explain the small scale and great scrutiny used in development. The area is well serviced with convenient public transportation and the An Ding Men subway station to the north of the site can be easily reached (fig. 4.23).

Ju Er Hutong was identified as one of the sites most in need of renewal. It suffered from extreme overcrowding, with a ground coverage reaching 80%. The ground level was lower than that of the street, causing humidity problems, and two-thirds of the households received little or no sunlight. The nearest public toilet was one-hundred meters away. A non-polluting semiconductor factory complex originally located on the site and difficult to relocate was allowed to remain after regeneration. To do so, the project had to be fragmented, and implemented in different phases.



Figure 4.22: Project location A

Figure 4.23: Situation plan 🕨



The first phase of the project was developed as one of the four experimental projects launched in 1987 and was built between 1990 and 1992. The second phase, which is only partially completed, is among the first projects to be regenerated as part of the renewal program. The design was conceived by professor Wu Liang Yong's research group of Tsinghua University in Beijing, and implemented by the East City District's housing development company. One of the main design objectives was to develop a new housing prototype that would improve the living standards and achieve higher densities while, at the same time, retaining some aspects of the traditional environment and preserving the existing community.

The condition placed upon old residents for being rehoused on the site was that they purchase their apartment. In other words, only people who could afford to buy their units were allowed to stay. In the first phase, thirteen households out of forty-two could afford to come back. Most of the remaining residents exchanged their *hukou* with families from other parts of the old city who were willing to pay to move into Ju Er Hutong². Others

² One means by which residents' mobility can be increased within a city is through house exchange, a system which is gaining popularity in China today. House exchange is generally performed by homeowners who are unsatisfied with the location of their dwelling and who find another household willing to exchange dwelling units with them. Ownership certificates and *hukou* are transferred to regulate this transaction.



were relocated to various housing estates in the city. In the second phase, thirty out of eighty households were able to stay. The majority of the rest were moved to Xiao Ying, north of the old city's An Ding Men gate, next to the Asian Games village. This new site was being constructed at the same time as Ju Er Hutong, so residents could be transferred gradually. Temporary one-story housing at Dong Hua Ba was provided by the developer for people who were returning to the site. Residents spent about one year in temporary housing before moving back to Ju Er Hutong.

A housing cooperative was originally organized for old residents to purchase their units, with a membership fee that was to be split between the government, the work unit and the residents. However, the residents ended up paying the entire amount. The units could be bought by the original residents at the subsidized rate of 350 ¥/m^2 , whereas the market price was fixed at $3,500 \text{ ¥/m}^2$ and later raised to $4,100 \text{ ¥/m}^2$.



Figure 4.24: Project site plan

Figure 4.25: Basic unit

Design Features

Although in the initial design a model courtyard with standard apartment types was proposed, the numerous site constraints and the positioning of the old trees necessitated important modifications in the design so that today, most of the buildings and apartments are different. The project consists of two- and three-story walkup apartment blocks designed as perimeter buildings with a central yard. Buildings are tightly organized on the lots and sited specifically to preserve existing trees. Circulation space on the site is kept to a minimum and is limited to the two lanes bordering its southern and eastern edges.

The gray bricks, red doors, sloped roof and the layout with interior courtyard used in the design recall the style of the traditional Beijing house (fig. 4.26). Entry stairs are located in each corner of the yards and lead to external galleries overlooking the yard, from which units are accessed. In general, apartments are based on the typical Chinese apartment layout, with a larger central hall used as a living room and smaller bedrooms (fig. 4. 25). Kitchen are placed along one external facade, while the bathroom and toilet are separated. Most units enjoy a double orientation and standard-size balconies. Top-floor units have a roof terrace and an extra room in the attic (fig. 4.27). Bicycle parking is provided under the stairways.



Figure 4.26: Typical side elevation



Figure 4.27: Typical section

The enclosed yards are the principal open spaces at the project. They consist of square paved yards of about fifteen meters on each side which are used as large external hallways. Entry to the yards is uncontrolled, but since as many as fifteen units look down upon each yard, intrusion is rare. Vegetation is scarce, although some yards enjoy the presence of an old tree.

Ju Er Hutong (1990-1992)	Original site	Renewal project	
Site population - people	139	138 46	
- hexachoida	-44		
Population density - people/Ha	665	657	
- households/Ha	221	220	
Relocation - on site (households)		13 (33%)	
- olî bic		27 (67%)	
Site area - total area (hectare)	0.21	0.21	
Built area - readential (m2)	1 672	2 760	
- average per person	12.03	20	
- average per household	38.00	60	
- commercial/institutional	0	0	
Building height - range (stones)	1	2-4	
- average	1		
Building density - 7 ground coverage	80%	x	
- residential FAR	0.80	1.32	

Table 4.3: Ju Er Hutong

Observations

The project is of high construction quality, with an attractive overall appearance. The high level of general maintenance, supplied by the East-City district, can be explained by the importance placed upon the image of this highly-publicized project. Strong regulations have forbidden residents from enclosing their balconies in the first phase, which is now permitted in the second phase, with restrictions regarding the design and the type and color of material used. The small-scale, incremental implementation of the project has been beneficial to the environment and the community. The preservation of the street pattern, of the site layout, and of the old trees on the site; and the use of building materials and patterns borrowed from the traditional architecture, helped to integrate the project to its surroundings.

However, the great complexity and high quality of the project have translated into very high costs, which have resulted in the low number of returning residents. The relocation of many of the original residents contributed to the scarce community life in the project, especially in the second phase, where most of the units were bought by wealthy work units to serve as offices or guest apartments. The quality and prestige of the project have attracted market-rate paying buyers from around the world. Private appropriation of the common space is limited, even by the residents living on the ground floor. A small shop for daily goods was opened by residents in their tiny private yard along the southern edge of the site, although this practice is strictly forbidden.

d) Chun Feng Hutong

Chun Feng Hutong is a small estate subdivided into small well-planted lots on which brightly decorated apartment blocks are orderly arranged (fig. 4.28).



Figure 4.28: View of the project

General Conditions

Chun Feng Hutong is located in the western part of the old Outer City, in the traditional Muslim neighborhood, along Niu Street in the Xuan Wu District (fig. 4.29). The site is situated within a densely-built city block and is isolated from the main traffic roads. The historic Niu Jie Mosque, a popular tourist attraction, is adjacent to the site. Two other mosques are also located nearby, while the Muslim hospital is three-hundred meters away. Daily shopping, including stores carrying Muslim specialties, is conveniently located in the vicinity (fig. 4.30).

Prior to renewal, the site was a typical neighborhood of dense, one-story courtyard houses, an unusually high proportion of which were privately owned (up to 76%) (fig. 4.31). Eighty percent of the original residents were Muslim and most were small shop owners. The new project was designed after the research for the four experimental projects was over but before the official renewal program was established city-wide. It was built between 1990 and 1992.



Figure 4.29: Project location A





All of the original residents moved back to the site after its renewal. They had to find temporary housing for themselves for the year-long construction period. Only eleven households bought their apartment at a subsidized price. Units were sold for 304 ¥/m^2 if paid all at once; the price was raised to 420 ¥/m^2 if the total amount was paid over three years. People were allowed to choose the floor of their new units when they signed the rehousing contract. As a result, most of the aged residents could get apartments on the ground floor, which is more convenient for them.



Figure 4.31: Original site condition

Figure 4.32: New project

Design Features

The new project consists of block-type walkup apartment buildings with flat roofs, arranged around planted open spaces (fig. 4.32). The building height in the first phase was limited to four stories because of its proximity to the Mosque. In the second phase, some buildings have as many as six floors. The majority of buildings on the site have a north-south orientation, although there are a few east-west oriented buildings. The first phase of the project has already been occupied, while the second phase is still in construction. The original lane layout was basically preserved.

One housing prototype is found in the project, highly decorated with colorful features inspired by Muslim architecture. The units follow the typical Chinese apartment layout with a the small entrance hall while introducing a larger distribution hall, which is used as a living room (fig. 4.33). All units have a double orientation. Ground floor units do not have direct access to the outdoors and do not have private yards. All units have two balconies: a small one adjacent to the kitchen and a large one connected to one of the bedrooms.



Figure 4.33: Typical unit

The open spaces on the site consist of large landscaped yards which surround the buildings and resemble semi-public parks. There are basically no private or semi-private outdoor spaces on the site. Access to the estate is tortuous, consisting of narrow and mainly pedestrian lanes.

Observations

In spite of its unimaginative walkup design which does not really fit in to the traditional environment, Chun Feng Hutong, with its small scale and concern for the preservation of the original site layout, closely resembles the three pilot projects. Since the only lane servicing the project is almost exclusively used by the residents, the environment is quiet and secure.

The fact that the original population is part of a religious minority and is very homogeneous, coupled with the fact that all of the original residents were rehoused on the site, helped to preserve a strong social community. There are very few conflicts among residents, and most say they prefer this new environment to their old ones.

The main problems raised by the residents are related to poor apartment design. Units are too small and to have inconvenient layouts. For example, in many apartments four doors open on the small hall, and the toilet faces the main entrance to the apartment. Many residents have enclosed their balconies to increase their interior space, altering the designer's Muslim-inspired loggia detail. However, most of these problems were solved in the second phase of the project. There is, however, very little appropriation of the common space for use by individuals.

Chun Feng Hutong (1991-1992)	Original site	Renewal project	
Site population - people	583	ņ	
- hounchailds	205	292	
Population density • people/Ha	614	?	
- households/Ha	216	307	
Relocation - on nic (howcholds)		205(100%)	
- (X) XIIC	-	0 (0%)	
Sile area - axial area (beciare)	0.95	0.95	
Built area - residential (m2)	5 000	14 480	
- average per person	8.58	?	
- average per household	24.39	49.5 9	
 commercial/institutional 	0	0	
Building height - range (stones)	1	4	
• average	ı ı	4	
Building density - 7: ground overlape	ន	38	
- residential FAR	0.53	1.52	

Table 4.4: Chun Feng Hutong

e) Huai Bai Shu

Huai Bai Shu is a very large estate subdivided into large lots on which half-open clusters of brightly painted walkup apartment buildings are arranged (fig. 4.34).



Figure 4.34: View of the project

General Conditions

Huai Bai Shu is located in the western part of the old Outer city, just within the second ring-road next to the Xuan Wu District Art Garden (fig 4.35). The site spreads on both sides of Huai Bai Shu street, which connects two main north-south arteries. The project is divided into the first phase, south of Huai Bai Shu street, and the second phase to the north, along the ring-road. The site is bounded on the west site by Xi Bian Men Nei street, which is a lively, informal shopping street. Convenient public transport systems are within walking distance, as is Guan An Men hospital (fig. 4.36). There was a primary school on the site that was upgraded during the construction of the project.



Figure 4.35: Project location 🔺





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The project occupies a very large site where about two-thousand households used to live in very poor conditions. It used to be a very congested, one-story neighborhood originally built as a barrack compound for imperial troops. The construction of the new project began in October 1990 and the first residents moved into the first phase on January 20, 1992, to celebrate the Chinese New Year and the Spring Festival in their new house, as promised by the city mayor. The second phase, which includes market-rate apartment buildings, a cluster of high-standard low-rise apartments for central government planning committee administrators, and a large commercial office building along the ring-road on the northern edge of the site, is still under construction.

Ninety percent of the original residents moved back to the site after its renewal. Although a moving-out bonus was offered to those willing to leave, the majority of the people preferred to remain at Huai Bai Shu because of its convenient location. People had to find temporary housing where they spent between eighteen months to two years. Original residents could buy their apartments at a subsidized price of 308 Y/m^2 if paid all at once. They could also pay in two stages, but the price was then raised to 380 Y/m^2 . Only five percent of the residents chose to buy their unit. Market rate units have sold for 6,000 to 7,000 Y/m^2 .

Design Features

The new project consists of four- to six-story walkup apartment buildings arranged around large semi-open meandering yards (fig. 4.37). The buildings tend to form a wall around the site, leaving gaps for the two north-south through-streets. Access to the site is largely uncontrolled and the main lanes are used by vehicular traffic.



Figure 4.37: New project

Approximately one-third of the buildings in the first phase have an east-west orientation. Most buildings are identical, pitching down two stories on one side, according to the angle of the sun. Staircases are centrally located within the buildings, which provides more light and ventilation to the apartments. Stairs are lit by light wells and skylights, and give access to two units per landing. All residential buildings have bicycle storage in the basement. There is also a small community center in the basement of one of the buildings. A central gas system was installed but has not yet been connected. All buildings along Huai Bai Shu street have commercial space for daily shopping on the ground floor.All units in the project have a double orientation. In general, apartments have a small entrance hall and a large central room which is used as a living room (fig. 4.38). Kitchens are placed along one facade. Some ground floor units enjoy small private yards surrounded by high walls. Upper floor units have a small balcony connected to the kitchen and a larger one adjacent to one of the bedrooms. Top-floor units have north-facing terraces and extra rooms in the attic, both accessed from the kitchen (fig. 4.39).

There is no great variety in the form of the outdoor spaces on the site and there is no hierarchy of semi-private to semi-public spaces. Most green areas appear unnecessarily large and flow around the buildings, following the circulation paths. A broad strip of unused land separates the buildings and the street edge. Many large trees have been preserved and several new ones were planted, but site furnishing is scarce.



Figure 4.38: Typical floor plans

Figure 4.39: Typical section

Observations

Compared to other projects, Huai Bai Shu has few advantages. The preservation of the original community is perhaps the best aspect of the project. Units are more generous than in other low-cost developments, and the central staircases allow for better apartment layout. The small enclosed yards of the ground floor units offer the possibility of being converted into small shops or extra rooms.

The major problems are related to poor building quality, low level of maintenance, and impractical design. The first phase of the project had to be completed quickly for political reasons, so the construction quality suffered as a result. The exterior finish is already highly deteriorated and most of the buildings have a decayed aspect. Maintenance has also become a serious problem. Staircases are dark and dank and the light wells dirty and smelly. Access to the underground bicycle storage is inconvenient and it remains practically unused. Most balconies have been enclosed by the residents.

Huzi Be: Shu (1990-1992)	Original site	Renewal project	
Site population - people	-6751	-7308	
- househoids	1 929	2 088	
Population density - people/Ha	-591	-640	
- households/Ha	169	183	
Relocation - on sate (households)		1 890 (98%)	
- off site	-	39 (2%)	
Site area - solal area (hectare)	11.41	11.41	
Built area - resdentat (m2)	?	120 000	
- average per person	?	16.42	
- average per household	?	57.47	
 commercial/institutional 	?	67 000	
Building height - mage (stones)	1	46	
- #///7480	1	?	
Building density - A ground coverage	?	?	
- residential FAR	;	1.05	



The very large scale of the project and its uniform design have resulted in a rather cold and monotonous environment. The general site layout is highly inefficient in terms of land use. The outdoor spaces are too poorly defined and furnished to provide much support for any outdoor activities. As a result, there is little appropriation of the common space by individual households, and many individual activities such as woodworking or bicycle repair take place in the lanes. People also complain that socializing is not as spontaneous as in their old environment. Uncontrolled access and inadequate security measures allow many strangers to enter the site. Many bicycle thefts have been reported.

f) De Bao

De Bao is composed of four clusters of tall, white apartment buildings tightly arranged around large communal courtyards (fig. 4. 40).



Figure 4.40: View of one of the yards

General Conditions

De Bao is located outside the old Xi Zhi Men gate in the northwest corner of the Old City and is part of the West City District (fig. 4.41). The site is adjacent to the Beijing Exhibition Hall, just outside the second ring-road along Xi Zhi Men street. The area is very convenient for shopping and going out, with the Xi Zhi Men transportation hub only three-hundred meters east of the site. The Beijing Zoo is another major bus exchange, twohundred meters to the west (fig. 4.42). North of the site is a cluster of well-maintained low-rise hotels and restaurants. There is also a small lake and watercourse fifty meters north of the site, but access to the water is difficult. There is a primary school on the eastern side of the site.

The site was previously occupied by old one-story structures built before 1949. Almost one thousand families used to live on the site, some of whom were housed in shacks erected for workers building the Exhibition Hall in the 1960s. There were also some multi-story buildings constructed during the Cultural Revolution following the cost-cutting approach. Housing was, in general, in very poor condition. This part of the city just outside Xi Zhi Men, like most informal settlements outside old city gates, has traditionally been a very poor and marginal neighborhood. As the site lies along a watercourse, the



environment is very damp and unhealthy. The West City District government considered it to be the site in most urgent need of renewal.



The renewal project was designed at the Beijing Institute of Architectural Design and built by the West City District local government. The project consists of six- to sevenstory buildings arranged around four large enclosed yards (fig. 4.43). The two southernmost yards along Xi Zhi Men street, occupied by returning residents, contain mostly eastwest oriented buildings. The units in the two northern-most yards, which have a predominant north-south orientation and are to be sold on the market, are still under construction. There is a distinctive two-story commercial building at the corner of the southwestern yard. The project also included the construction of a kindergarten in the same yard.

About seventy-five percent of the original residents moved back to De Bao after its regeneration. These families had to find temporary housing during construction. The developer offered ownership of a number of existing one-story houses scattered in the southern part of the city to original homeowners in exchange for their previous homes. Returning residents could buy their apartments at a subsidized price of 300 ¥/m^2 payable in installments. Very few residents actually bought their units. Five-hundred twenty-two market-rate units were sold to the Ministry of Finance for $3,500 \text{ ¥/m}^2$. A small number of units were offered through public bid and sold for $7,000 \text{ ¥/m}^2$. All the original residents who moved back to the site were housed together in the two southern-most yards. The 228 families who moved out were resettled in En Ji Zhuang, ten kilometer west of De Bao, beyond the third ring-road (fig. 4.41).

Design Features

There are three main housing prototypes on the site. The first one consists of apartment blocks with a staircase accessed from the northern facade servicing two units per landing (fig. 4.44). The second prototype consists of east-west oriented buildings with a sawtoothed facade. Such buildings have single-oriented units, accessed off central double-loaded corridors. The third prototype, located along Xi Zhi Men street, has a ground floor reserved for commercial uses. Residential units on the stories above are accessed through single-loaded corridors along the northern facade, facing the yard. All three prototypes are accessed from the yards. They have sloped roofs which provide extra living space in a loft for units on the top floor. In general, there is no distinction in design between the first-floor units and those above. The ground floor in all buildings is raised half a story above ground level so the units have no direct connection to the outdoors. Small studios are provided in the basement for temporary housing, storage, or commercial uses. Bicycle storage rooms are also found there.

The single-oriented units are deep and narrow, with a polygonal living room along the external facade. Kitchens, found on the peripheral facade, are lit and ventilated with shared light wells. In the double-oriented units, main rooms generally face toward the yard, and have a balcony, enclosed as part of the initial design. A large central hall is used as a living room.



Figure 4.43: New project

Figure 4.44: Typical double-oriented unit

Most outdoor spaces in the new project consist of large yards offering a great diversity of textures and forms and allowing for a wide range of activities. Greenery is confined to well-defined central areas raised above ground level and bordered by masonry retaining walls on which people can sit comfortably. Storage of personal items in the yards is forbidden. The general project layout, with as many as 350 units overlooking the yards, allows for good surveillance. Circulation lanes run along the peripheral facade of the clusters and are used mainly by local traffic. The yards themselves are pedestrian and through-traffic is limited to tricycle cart vendors, taxis, and emergency vehicles.

De Bao (1991-1993)	Original site	Renewal project	Relocation (En Ji Zuang)
Site population - people	4 260	-4522	19 380
- households	99 8	1 292	5 539
Population density - people/Ha	819	-869	631
- households/Ha	192	248	180
Relocation - on site (howeholds)	-	770 (77%)	
- off sate	-	228 (23%)	
Site area - total area (hectare)	5.2	5.2	30.71
Built area - residential (m2)	ŗ	69 <i>5</i> 00	352 000
- average per person	?	15.37	18.16
- average per household	ŗ	53.79	63.55
 commercial/institutional 	?	32 000	36 300
Building height - range (siones)	?	5-7	↓ 16
- average	?	į	?
Building density - & ground coverage	?	;	ŗ
- residential FAR	?	1.34	1.15

Table 4.6: De Bao

Observations

One of the positive aspects of this project is the partial relocation of the original population and the grouping of returning residents together in the same clusters. This allowed for the continuation of long-established social interactions, while giving the developer the opportunity to save on expenses by providing returning residents with units of lower standards than the market-rate units. The project layout is interesting and facilitates surveillance. The yards are well isolated from the busy street, so children can play outside safely. However, the absence of any transition from public to more private spaces has prevented people from conducting private activities in the outdoors.

The greatest dissatisfaction expressed by the residents regarding building design was with the east-west oriented buildings, especially with those with the sawtoothed layout. Units were found to be too deep and narrow, and the polygonal main room inconvenient. The one-room units intended for young newly-wed couples were also found to be too small. The shared light wells were greatly disliked because they do not provide adequate light and ventilation and tend to be dirty, smelly and noisy. Another problem is that the absence of direct access to the outdoors by ground floor units hinders their conversion into small private businesses, although a few examples of such conversions were encountered. The absence of separation of public and private outdoor spaces also limited the appropriation of the space by individual residents. In the shared facilities, one problem is the storage of bicycles and other large items in the basements. Access to the storage rooms is by a steep and narrow ramp. Only the most expensive bicycles are kept there, while the others are left in the yards.

Great dissatisfaction also arose from the relocation project. En Ji Zhuang consists of a mixture of low-rise, multi-story and high-rise buildings. Relocation housing for residents from inner-city redevelopment sites is confined to low-standard high-rises. Building number thirty-seven, which is a poorly serviced sixteen-story structure, is occupied by people from De Bao (fig. 4.45). Electricity and elevator services are unreliable and many people, especially the elderly, have been injured falling down the unlit stairway. Thefts and burglaries have occurred to such an extent that ground floor units have been abandoned and left to be vandalized. En Ji Zhuang has serious problems due not only to its poor management but also to its inconvenient location, far from shopping and basic services.



Figure 4.45: View of building no 37 at En Ji Zhuang

g) Hu Bei Kou

Hu Bei Kou is a large estate subdivided into well-planted lots where high-standard apartment buildings are arranged in regular rows (fig. 4.46).



Figure 4.46: View of Hu Bei Kou

General Conditions

Hu Bei Kou is located in the northeast corner of the old Outer City, just south of the second ring-road in the Chong Wen District (fig. 4.47). The site used to be a typical neighborhood of densely-built one-story courtyard houses. There is an extremely lively flower and vegetable market on Dong Hua Shi street, running on the southern edge of the site. The market will be relocated to another part of the city after completion of the project. More established shops and restaurants are just east of the project on Bai Qiao street. Public transportation is convenient in the area. The Jian Guo Men financial district and the Beijing railway station are in the vicinity (fig. 4.48).

The project was designed by Zhong Jing architects and developed by the Beijing Real Estate Development and Management Corporation. It was divided in two phases: the first one, on the eastern side of the site is almost completed and is partially occupied, while the second part to the west is still under construction. The project consists of four- to sixstory walkup apartment buildings arranged in regular rows with north-south orientation on four landscaped parcels (fig. 4.49). The southeastern corner of the site is occupied by a large commercial complex. A kindergarten was built on the site as part of the project.

None of the original residents were allowed to move back to the site after its regeneration. Most were resettled in Nan Mo Fang, a large housing estate ten kilometers to the southeast of the site. Some households were also relocated to Xi Luo Fang, to the south of the old city. All apartments built on the site were sold at market price to wealthy work units, such as the Food and Oil Import-Expert Company and the Foreign Commerce and

Administration Corporation. Apartments were bought on a 6,000 Y/m^2 basis. Private individuals, even those with sufficient funds, have not been allowed to buy the apartments.



Figure 4.47: Projects Location 🔺

Figure 4.48: Situation plan 🕨

Design Features



There is only one housing prototype modeled after Western condominiums. Apartments are large and comfortable and are accessed from the north side through stairways servicing two units per landing (fig. 4.50). Entryways are electrically locked and equipped with intercoms. Kitchens are located on the north side and have small adjacent balconies. Each unit has an enclosed solarium-style balcony with a sliding door accessed from the living room. Top-floor units enjoy an extra room in the attic and a roof terrace.



Figure 4.49: New project



Figure 4.50: Typical floor plan

The outdoor spaces on the site consist of open spaces between two rows of buildings. Greenery is lush, site furnishings are ample and maintenance is good. There is only one main access to the site, and a gate with security guards ensures the residents' safety.

Observations

Hu Bei Kou enjoys a prestigious reputation due to its high quality in construction and design and the relatively large size of the apartments. Still, most families have converted two units into a larger one and actually occupy an entire floor. There is no apparent appropriation of the common space by individual households, which can be explained by the size of individual units and the lifestyle of the residents. Most of the new residents are young professionals who lead busy lives. They spend relatively little time at home and do not socialize with their neighbors. The use of the streets on the site is restricted to local residents, but since traffic is rather light, they are mainly used by local children to play.

Hu Bei Kou (1991-;993)	Original site	Renewal project	Relocation (Nan Mo Fang)
Site population - people	?	4 168	15-450
- households	?	1 191	4415
Population density - peopie/Ha	ş	798	649
- households/Ha	?	228	186
Relocation - on site (households)	·	0 (0%)	
- off sale		1 91 1 (100%)	
Site area + total area (boctare)	5.22	5.22	23.80
Built aren - residential (m2)	; ;	67 000	274 000
- average per person	?	16.07	17.73
- average per household	?	56.26	62.06
- commercial/instrutional	?.	34 000	45 000
Building height - range (Moncs)	?	4-6	5-18
- average	?	?	:
Building density - % ground coverage	ż	?	ż
• residential FAR	?	1.28	1.15

Table 4.7: Hu Bei Kou

However, many new residents feel that Hu Bei Kou does not live up to its prestigious reputation. Interior finishing is of an average level, with regular kitchen cabinets and sinks, exposed pipes, and standard steel sash windows. Most residents had their window frames replaced by high quality aluminum ones and air conditioning systems installed as soon as they moved in.

The total relocation of the original residents can be viewed as one of the major shortcomings of the project. Residents from Hu Bei Kou at Nan Mo Fang occupy six-story walkup apartment buildings arranged around large, open spaces, which are still to be landscaped. Some residents admit feeling isolated there -- not only because they are so far from the city, but also because they are scattered in different buildings and have lost contact with their old neighbors. In general, security is bad on the site and all units have security doors. Although Nan Mo Fang is far from the city center, transportation is very convenient and a single bus route reaches it in twenty minutes.

The relocation process was further complicated by problems related to the transfer of *hukou*. Due to long administrative procedures, the *hukou* of the residents has not yet been transferred to their new place of residence. Original residents still have to go to Hu Bei Kou to get their gas rations and to bring their children to school (the new kindergarten has temporarily been converted into a primary school to accommodate the children of the original residents). This problem is also faced by the new residents of Hu Bei Kou, whose children must attend their old schools for another two years.

h) Tian Ning Si

Tian Ning Si is a very large estate fragmented into a number of lots which have been redeveloped over the years and consist of various housing prototypes (fig. 4.51).



Figure 4.51: View of the most recent section of Tian Ning Si

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General Conditions

Tian Ning Si is located outside the old city, west of the second ring-road, in the Xuan Wu District (fig. 4.52). Guan An Men Wai boulevard, just south of the site, offers convenient shopping and transportation (fig. 4.53). The historical Tian Ning Si temple, an ancient pagoda now off limits within a factory compound, stands at the north edge of the site. The Guan An Men Hospital is within walking distance. The site was previously occupied by old one-story housing of an informal sort.



The project was developed by the same people who built Hu Bei Kou. It consists of six-story walkup apartment buildings arranged in north-south oriented rows on large open spaces (fig. 4.54). Of all the projects surveyed, this is the least completed. Portion of the old neighborhood still have to be demolished. Three of the recently completed buildings in the eastern part of the site are occupied by original residents who were allowed to return. One of these buildings has retail space built onto the first floor. The western part of the project is occupied by high-standard apartment buildings which were built a few years ago and put up for sale. A large commercial building is under construction in the southeastern corner of the site, on Guan An Men Wai Street. Low-rise buildings and green space are planned for the area surrounding the temple to the north.

Residents who moved back to the site had to find temporary housing for themselves for a period of thirty months³. People who could not be accommodated back on the site were relocated in Wu Li Dian, about twenty kilometers west of Tian Ning Si, near the famous

³ The proportion of original residents allowed to return to the site after its regeneration could not be determined and is assumed to be about 30%.
Marco Polo bridge (fig. 4.55).





Figure 4. 55: View of the Wu Li Dian relocation project



Figure 4.56: Typical floor plans

Design Features

Housing prototypes on the site are rather conventional. In the lower standard section reserved for returning residents, buildings are entered from either the southern or northern side, although their interior layout remains otherwise the same (fig. 4.56). All units enjoy cross-ventilation and kitchens have small adjacent balconies. Rooms in general are rather small. Top-floor units have extra living space in the attic. In general, construction quality is good.

Ground coverage is very high in this project and open spaces are limited to layers of greenery between the buildings. There is no hierarchy of outdoor spaces and no form of enclosure which would have promoted their use. At the time of the visit, site work and roads were largely unfinished and vegetation was scarce. The site is located along two m. in arteries from where it is accessed at many points.

Tian Ning Si (1990-1993)	Original die	Renewal project	Relocation (Wu Li Dian)		
Site population - people	?	6 -409	10 129		
- households	?	1 885	2 894		
Population density - papioHa	ŗ	-401	713		
- households/12a	į	118	204		
Relocation - on site (howeholds)		?			
- «viľ sakc		?			
Site area - total area (hectare)	16.00	16.00	14.20		
Built area - residential (m2)	114 700	168 163	167 600		
- average per person	ŗ	26.24	16.55		
- average per household	ç	89.21	57.91		
- commercial/institutional	÷.	47 100	15 300		
Building height - range (stones)	1-6	3-6	5-6		
- average	?	?	?		
Building density - % ground coverage	ŗ	?	ų		
- readential FAR	0.72	1.42	1.18		

Table 4.8: Tian Ning Si

Observations

The low level of completion of the project complicates its evaluation. The grouping of all returning residents together in the same section can be considered a positive aspect of the project, essential for the preservation of the community. The future integration of the pagoda temple, which will be surrounded by gardens, will also bring more life to the project.

The main problems identified at Tian Ning Si are related to its large scale and to the limited amount of people allowed to move back to the site. The lack of well-structured outdoor spaces was also felt to be a negative aspect. Proximity to the second ring-road make the area noisy and unsafe.

Relocation at Wu Li Dian was a major problem, especially because of its location at such a large distance from the city center. Wu Li Dian was developed to rehouse residents from a number of inner-city renewal projects. It consists of a typical mass housing estate

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with rows of identical slab apartment buildings. Community and public services are scarce, especially in the administrative realm. There is no police station and only one neighborhood committee for nine-thousand households. The surrounding town has no major market, so an informal one has sprung up along the central street of the housing estate, which has brought strangers to the site. Security is poor and bicycle thefts are frequent.

Table 4.9 summarizes the information about the case studies. After the completion of the project survey, to get more representative information and insights regarding the recent trends in the implementation of regeneration projects in Beijing, the author also visited over forty other housing projects in or around the old city. Such projects are illustrated in Appendix II. They include projects built before the implementation of the renewal program, as well as recent projects, most of which are still in construction. An analysis of the findings from the case studies and the diverse project visited is provided in the following chapter.

Cumulative Table	Dong Nan Yuan (1991)	Xiao Heu Cang (1920)	ju Er Hutong (1992)	Chun Feng (1992)	Hual Bal Shu (1992)	De 8ao (1992)	Hu Bel Kou (1993)	Tinn Ning Si (1994)	Nan Mo Fang (1977)	En Ji Zhuang (1997)	Wu Li Dian (1997)
Site Population - people	890	~1060	138	~1022	~7308	-4522	4 168	6 409	15 450	19 380	10 129
- households	230	350	-46	292	2.088	1 292	1 191	1 885	4415	5 539	2 894
Pop. Density - people/Ha	990	-815	657	~971	-640	-869	798	401	649	631	713
- homehold/Ha	256	269	220	307	183	248	228	118	186	180	204
- on site (%)	100%	100%	33%	100%	_ 98%	77%	0%	>0%			
Site Aren - Total area (Ha)	0.90	1.3	0.21	0.95	11.41	5.2	5.22	16	23.80	30.71	14.20
Built Area - residential (m2)	11 588	15 800	2 760	14 480	120 000	69 500	67 000	168 163	274 000	352 000	167 600
- avge per person	13.02	14.87	20	14.17	16.42	15.37	16.07	26.24	17.73	18.16	16.55
- avgc/bounchold	50.38	45.14	60	49.59	57.47	53.79	56.26	89.21	62.06	63.55	57.91
- commercial/inst.	0	7 200	0	0	67 000	32 000	34 000	47 100	45 000	36 300	15300
Building height - Range (stories)	2-4	2-6	2-4	4	4-6	5-7	4-6	3-6	5-18	4-16	5-6
Bidg density - residential FAR	1.29	1.35	1.32	1.52	1.05	1.34	1.28	1.42	1.15	1.15	1.18

Table 4.9: Cumulative table

CHAPTER FIVE : ANALYSIS OF THE DATA

This chapter presents an analysis of the information found in the case studies. It is divided into two different sections: approaches to regeneration, and project design. In each section, observations are made regarding common features, and patterns are identified and illustrated in comparative charts. Distinctive phenomena and alterations of the initial design are outlined, and general insights on the probable causes of these transformations are discussed. An interpretation of the results concludes the chapter.

5.1. APPROACHES TO REGENERATION

This section outlines the different approaches to housing regeneration used in the studied projects, classified as to implementation approaches and relocation approaches. They are presented along with their basic characteristics and where they were observed.

a) Implementation

According to definitions given in section 1.2., projects followed either an *integration* approach or a *redevelopment* approach. There were no examples of *rehabilitation*. Dong Nan Yuan, Xiao Hou Cang and Ju Er Hutong, with their concern for the conservation of the natural and man-made environment, are well-integrated projects. They demonstrate a realistic preservation of the main structures of the neighborhood, as well as its land use patterns, original street layout and vegetation. Their housing prototypes retain some of the characteristics of the vernacular housing and blend in with the traditional environment. In contrast, De Bao, Huai Bai Shu, Tian Ning Si, and Hu Bei Kou consist in rather large-scale redevelopment. Their sites have been totally rebuilt anew and nothing of the original neighborhoods has been preserved. Chun Feng Hutong, with its small-scale and phased construction, but whose design is not physically integrated with its surrounding environment, retains some aspects of both integration and redevelopment.

Today, redevelopment remains the most popular approach to the implementation of new regeneration projects in Beijing, although it has a serious impact upon the urban environment. Profitability and speed of implementation explain the popularity of redevelopment. Developers and authorities view redevelopment as the simplest and most profitable way to regenerate the inner city, and as the approach which can reach the highest densities and floor area ratios. A lack of awareness on the part of designers of alternative approaches and of their advantages also plays an important part. Hong Kong's and Singapore's modern and highly organized redevelopment projects are seen as viable models to be followed.

The fact that there is no example of rehabilitation in the studied projects can be easily explained. The incompatibility between the traditional dwelling and the new requirements for modern lifestyles complicates the preservation of old houses. In the West, the successful transformation of traditional urban dwellings into modern apartments is made possible, in part, because of the similarities between the old and new housing types. But in Beijing, the contrast between the centuries-old housing and the new prototypes is so great in terms of layout, scale, density, and lifestyle that it is not realistic to integrate them fully. In addition, it may prove difficult to upgrade services and infrastructure and to widen streets without adversely affecting the dense neighborhoods.

The government's reluctance to encourage rehabilitation projects has also played a part. The dramatic housing shortage necessitates immediate and substantial production with minimal resources which can best be met by large-scale redevelopment projects. Rehabilitation is a complex and lengthy process which is inefficient in terms of land-use and density and not highly profitable. In addition, it does not fit the image which the authorities want for the renewed city. The government is also reluctant to implement rehabilitation because this would require major changes in the current housing system, especially in terms of design and implementation procedures and financial arrangements.

Finally, the general disdain for old houses, which are considered a "symbol of poverty, lack of choice, neglect, and oppression, viewed as small and squalid, and unfit for human life " also plays a part (Chatfield-Taylor, 1981, 200). Most people living in traditional houses admit that they would prefer to have their neighborhood redeveloped and move into a new apartment with modern facilities and higher standards.

Yet, there have been a few successful examples of housing rehabilitation in China. In 1983, the Shanghai municipality started to work on the transformation of its old neighborhoods. By upgrading the old houses and improving the interior layout, the per capita living space has increased considerably. This approach has yielded good results in terms of economy, as well as social, historic and environmental continuity (Gu Yun Chang, 1987).

b) Relocation

In the case studies, different trends were observed concerning the relocation of the population. Figure 5.1 illustrates the percentage of returning population in each of the projects surveyed.



Figure 5.1: Relocation

Three basic patterns of return (no relocation, partial relocation, and total relocation) were identified¹. In the first pattern, all of the residents returned to the site after its regeneration. Two situations could occur: the new project accommodated exclusively original residents, as in the Dong Nan Yuan, Xiao Hou Cang, and Chun Feng Hutong projects, or original residents only occupied a portion of the new units, while the remaining units were sold on the market, as in the case of Huai Bai Shu.

In the second pattern, only a portion of the original residents moved back to the site. In the projects surveyed, the proportion varied from 30 to 80%. The remainder of the original residents were relocated together in nearby suburbs. In some projects, such as Ju Er Hutong, only families willing to buy the new units were allowed to move back. Although most residents prefer to remain in their original neighborhood because of its convenient location, they generally cannot afford to buy their units. Returning residents are usually rehoused together in a specific section of the project, as seen at Ju Er Hutong, De Bao, and Tian Ning Si.

The third pattern observed was the total relocation of the original population, wherein none of the original residents return to the site after its regeneration. In this case, residents are given no other alternative than relocation to new housing projects in the suburbs. They are generally rehoused together in the same buildings. This was the case in the Hu Bei Kou project.

Today, most new regeneration projects tend to maintain the minimum returning rate of 30% required by the government. Although the relocation of the population bears heavy social costs and complicates the regeneration process, potential profits from the differential value between new units in the center of the city and those in the outskirts have motivated

¹ These patterns correspond to the three approaches identified by He Hongyu (1993).

developers to favor the maximal displacement of the original population². Whether on or off the site, original residents are rehoused together in buildings with lower physical standards than the market-priced ones. This practice has allowed the developers to save on building costs while maintaining the existing social structure.

5.2. PROJECT DESIGN

a) Site Organization

This section presents the major findings regarding project design in terms of scale, land use, project layout, open spaces, and accessibility.

Scale

Among the projects studied, there is a great disparity in project scale in terms of site area and of population affected. As illustrated in figure 5.2, the site area of the first four projects implemented was, on average, at least five times smaller than that of the four more recent ones. The population of the different projects followed a similar trend, as illustrated in figure 5.3.



Figure 5.2: Site Area

It is difficult to determine the reasons for such differences between the first four and the last four projects. The criteria used to determine the area of a site allocated for regeneration remain unclear. It was observed that the four larger projects are all located along or outside the old city walls, whereas smaller projects such as Dong Nan Yuan, Xiao Hou Cang, Ju Er Hutong and Chun Feng Hutong are more centrally located. The time of

 $^{^{2}}$ In 1993, the average price difference between units sold in the old city and those in the suburbs was around 1000 $\frac{1}{2}$ /m², which represents from 15 to 30% of the price (He, 1993). According to He Hongyu (1993), to be viable a redevelopment project needs a minimum of 30% residual units, thus implying that 70% of the units can be inhabited by the original residents.

implementation may also influence the size of the site allocated. Early experimental projects may have been given smaller sites to reduce the risk factor, while larger sites are now allocated to speed up renewal and to allow developers to amortize infrastructure and relocation costs.



Figure 5.3: Population

Land Use

The types of land use and its distribution on the site was identified as another interesting aspect of project design. Figure 5.4 illustrates the different proportions of built area for commercial/institutional and residential uses in the projects.



Figure 5.4: Built Area

Some projects, such as Dong Nan Yuan, Ju Er Hutong and Chun Feng Hutong, are strictly residential, while other projects have residential, commercial, and institutional functions, including community services such as schools, kindergartens, and community halls, within the site. The mixing of uses on a site follows two basic patterns: different functions are either integrated within one building or segregated in different buildings or portions of the site.

In the case of integrated land uses, new functions are mixed within residential clusters, generally located on the ground floor and along major roads. At De Bao, for example, retail space is introduced on the ground floor level of the apartment buildings along Xi Zhi Men street. In the case of segregated land uses, there is a strict separation of functions, and non-residential uses are concentrated in separate buildings or sections of a site. Commercial buildings are often sold on the market to cross-subsidize the project, as was the case at Xiao Hou Cang, Huai Bai Shu, Hu Bei Kou and Tian Ning Si.

In many instances, original land uses are partially modified by private individuals who informally conduct small commercial activities from their home. Activities include small convenience stores, barber shops, and tailors, as well as daycare services and kindergartens. Planners, designers and authorities are not unanimous in their attitude toward the introduction of unplanned land uses. Some projects have, intentionally or not, offered support for such activities, as for example the small individual yards at Xiao Hou Cang, while in other projects, the design has prevented or has made inconvenient the conduct of such activities from the units. For example, at De Bao, Chun Feng Hutong and Huai Bai Shu, ground floor apartments have been raised above ground level, making access by customers inconvenient.

The insufficiency of services provided as part of the initial project design often explains the informal introduction of new activities. As a result, a small convenience store was opened by residents of the first phase, although this practice is strictly prohibited. With the liberalization reforms which allow people to start private businesses on their own, many people have chosen to convert part of their dwellings for such purposes. At Xiao Hou Cang, part of a dwelling and a roof terrace were converted into a small, privately-managed kindergarten.

Still, most new projects do not integrate land uses nor facilitate the conversion of dwellings for commercial purposes. For developers, segregated land uses allow for higher revenues from rental or sale of commercial space, while for the government they simplify land use planning and bring in higher tax revenues. However, this strict separation of functions does not allow for the traditional self-sustaining mix of production, residential, and service activities and creates sterile, purely residential districts, destroying the old city pattern³.

³ The conduct of commercial or institutional activities from the house is common in China, where there is a long tradition of spatially-integrated living and working arrangements. This tradition creates a lively and diversified environment and allows individuals to earn an extra income from their home while



Project Layout

In the case studies, three main types of project layouts have been identified: the streetfront, the court, and the row layouts. The streetfront layout, where buildings follow the orientation of the streets or lanes, results in a random ratio of north-south to east-west oriented buildings, as in the case of Xiao Hou Cang. The court arrangement consists of clusters of buildings facing inward onto a common open space. Traffic is generally restricted to the periphery of the clusters. Examples of this type of layout are found at De Bao, Dong Nan Yuan, and Ju Er Hutong. The row layout consists of regular strings of buildings, generally with a north-south orientation, arranged on large open spaces. This type of layout exists in projects such as Chun Feng Hutong, Huai Bai Shu, Hu Bei Kou, and Tian Ning Si.

The majority of regeneration projects implemented in recent years have been following the row layout. Such projects, which consist of series of identical apartment buildings in parallel rows, have created impersonal and essentially suburban environments which harm the visual integrity of the city. The street and court layouts more closely resemble the traditional pattern and create more dynamic environments which are often more responsive to social interaction.



Figure 5.5: Building Density - FAR

The requirements for sunlighting and ventilation can explain the prevalence of the row layout. It usually proves easier to provide all units with an equal amount of sunshine with this type of layout. The resulting orderly and uniform environment conforms to communist aesthetics. Developers also argue that the row layout is easier to implement and allows for higher building densities and a more profitable use of space. Surprisingly, however, the measure of the building densities in the different projects through their FAR,

representing an economical use of land and infrastructure (Bhatt et al., 1993-I). Beijing's neighborhoods are famous for their mixture of different activities.



as illustrated in figure 5.5, does not fully support this thesis. Although projects such as Chun Feng Hutong and Tian Ning Si did reach high FARs, Huai Bai Shu and Hu Bei Kou have the lowest building density among all projects surveyed.

Open Spaces

Different types of outdoor spaces with various levels of privacy were found in the case studies. Some projects had semi-public or communal spaces, which were shared by the majority of the residents on the site. Other contained semi-private spaces, shared by a limited number of residents (generally up to fifteen households), while some had private spaces, including private yards, roof terraces, or balconies. At Dong Nan Yuan, Xiao Hou Cang and Ju Er Hutong, residents enjoy a whole variety of outdoor spaces with different levels of privacy. However, other projects such as De Bao, Huai Bai Shu, Tian Ning Si, Hu Bei Kou, and Chun Feng Hutong, lack semi-private outdoor spaces that serve the needs of few families at a time and where different forms of social interaction take place. Such projects lack of a transitional space between the very private individual apartment and the very public open space.

The level of privacy found in the outdoor space is closely related to the type of project layout and to the form and dimensions of the space. Some of the projects studied have well-defined open spaces which consist of relatively small yards enclosed by the buildings on the site. Well-defined open spaces are commonly found in projects which follow the street or court arrangement patterns. Other projects have large and undefined open spaces which constitute the residual space between the buildings, typical of large-scale projects following a row layout.

The nature and form of the open spaces have a great influence upon social interaction. Since most projects lacked a community hall where people could meet and organize social activities, most socializing occurred in the outdoors. Well-defined, small open spaces are generally well appropriated by the residents. Generous planting and appropriate site furnishing enhance social interaction, as in the Dong Nan Yuan, Chun Feng Hutong and De Bao projects. Old trees located at the center of the communal outdoor spaces become symbolic traces of the past and favorite meeting points for socializing, as in the cases of Ju Er Hutong, Xiao Hou Cang, De Bao and Huai Bai Shu. The demographic profile of the residents and the size and level of amenities of the apartments also influence the level of use of the common space, as is the case at Hu Bei Kou.

The communal open space is also appropriated for private uses. Activities range from drying clothes and gardening to the storage of goods and the conduct of commercial activities. The physical appropriation of the space can consist of anything from the fencing - Chapter live ; Analysis of the Data +

of small areas to the construction of permanent structures. However, although it constitutes an economical way for people to get badly needed space, this practice can be seen as a violation of the public space and is not always tolerated by the local authorities. Lack of space for the conduct of private activities explains this appropriation of the common ground. Storage areas are rarely included in the apartment design and private outdoor spaces are either nonexistent or insufficient. Only at Dong Nan Yuan, Xiao Hou Cang, Ju Er Hutong, and some parts of Huai Bai Shu are ground floor units directly connected to private or semi-private yards.

One of the main problems related to the outdoor spaces is maintenance. Small, welldefined spaces, as well as privately-appropriated communal outdoor spaces, are those best taken care of by the residents, while large open spaces are generally neglected and have to be maintained by the government at high costs. Without proper funds for maintenance, such spaces are often left devoid of vegetation and eventually turn into a no-man's-land, as is the case at Huai Bai Shu and at most of the relocation projects.

Access

The type and number of entrances to a site are important aspects of project design. Some projects have only one or two entry points and access is controlled by devices such as gates and security guards. Surveillance from communal meeting places or from the units also discourages access by non-residents. In other projects, access is largely uncontrolled and nothing prevents people from going through the estate. This generally occurs on large sites with multiple entry points and where original street connections cannot be blocked, as at Huai Bai Shu and Tian Ning Si.

Although regulating devices are usually not part of the initial design, they are added shortly after the project was occupied. The main reason for controlling the access to the estates is to ensure the security of the residents. It reduces the incidence of thefts and burglaries⁴ and improves security for the children. Fewer bicycle thefts are reported in projects where access is controlled. For developers, high security and regulating devices add to the prestige image of the housing estates, as in the example of Hu Bei Kou. However, limiting the access to housing estates can disrupt the original road network and destroy the pattern of continuity of the old city, fragmenting its homogeneous structure.

⁴ In recent years, with the liberalization of the economy and improvements in living standards, crime rates have increased in China and people fear for their security.

b) Housing Prototypes

This section deals with the most significant aspects of the design of housing prototypes in the case studies. Aspects such as building design, orientation, interior layout, and building quality are discussed.

Building Design

Among the projects, the majority of housing prototypes consisted of different forms of walk-up apartment buildings. Three main types of walkups were identified: the conventional walk-up apartment block, found in the majority of recent projects, the sawtoothed building, as seen at Xiao Hou Cang and De Bao, and the peripheral walkup courtyard housing, as in the case of Ju Er Hutong. Only one alternative housing prototype, the stacked housing, as found at Dong Nan Yuan, was identified. Most had from four to six stories, depending on the location and on the building regulations for that area (figure 5.6).



Figure 5.6: Building height

The most common prototype is the conventional six-story walkup apartment block, found at Xiao Hou Cang, Chun Feng Hutong, De Bao, Hu Bei Kou and Tian Ning Si. Some recent examples of projects with interesting low-rise housing prototypes -- such as row housing, terraced houses or new courtyard houses prototypes -- are found in and around Beijing. Figures 5.7 and 5.8 illustrate two examples of such alternative housing projects.

Most prototypes consist of conventional brick and concrete structures plastered over in different colors. In a few instances, traditional gray bricks are used, as in the Xiao Hou Cang and Dong Nan Yuan projects. Such bricks are more expensive than regular red ones but require no plastering and retain their original aspect even after being exposed to dust and pollution. In general, only one housing prototype exists within each estate. Diversity is only found in the arrangement of the buildings on the site, and in details such as the type of roof and balcony. Examples of flat, terraced, and sloped roofs are found, and some balconies have been enclosed as part of the initial design.

The popularity of conventional designs as opposed to alternative housing prototypes, is understandable, for they are easy to implement and replicate. They also represent a widely accepted form of socialist public housing. Developers are reluctant to invest in new prototypes which may turn out to be less profitable and reach lower FARs. Lack of time and funding for research on new replicable prototypes has further hindered their development.





Figure 5.7: Terraced housing designed by Lu Junhua Figure 5.8: Terraced housing at Fang Zhuang

Orientation

Building orientation is a frequently discussed aspect of housing design. Among the projects studies, the majority of buildings have a north-south orientation, although some projects also have some east-west oriented prototypes. Buildings in projects laid out in a row pattern generally have a strict north-south orientation, and in the case of Hu Bei Kou and Tian Ning Si, while projects following a court arrangement or the street layout necessarily require a certain proportion of east-west oriented buildings.

In general, residents favor north-south orientation. North-south oriented buildings generally have through units, with principal daytime living spaces facing south and all living and sleeping areas enjoying cross-ventilation. The general disdain for east-west oriented buildings may be explained by the influence of *Feng Shui*, in which the south is a symbolic and privileged orientation. For developers, the introduction of east-west oriented buildings allows for more flexible layouts and offers an economical way to increase land use efficiency. Unfortunately, east-west oriented buildings designed for rehousing original residents have single-oriented units with lower standards and fewer amenities. They could be more acceptable if they were complemented with other advantages such as crossventilation, good layout, increased apartment depth, and better amenities.

Interior layout

In terms of apartment layout, most projects conform to the typical Chinese model (described in section 2.2.), but transformed and adapted to new needs. In general, the central distribution hall is larger and has been converted into a windowless communal room from which bedrooms are accessed. The traditional concept of multi-functional rooms is gradually losing popularity in favor of Western-type apartments, where each room has a specific function. The kitchen generally has natural ventilation and is provided with a small balcony. In the majority of projects, top floor units were provided with roof terraces and extra living space in the attic. As illustrated by figure 5.9, little disparity was found among the size of the units in the various projects surveyed.



Figure 5.9: Average unit size †

This similarity is easily explained by the strict regulation concerning apartment size. For the government, the standardization of units simplifies the bureaucratized allocation system, while for developers it facilitates production.

The main problem concerning apartment design is its lack of flexibility. Residents have very little freedom to adapt the dwellings to their needs. Still, extraordinary effort to modify or enlarge apartments is visible. For example, structures are erected on the ground level, or front yards, balconies, roof terraces, stair landings and porches are enclosed.

[†] The unjustified divergence between the figure concerning Tian Ning Si and the rest of the projects has led the author to question the validity of this information, which was collected from recent publications and whose accuracy could not be verified.

Examples of such transformations at Xiao Hou Cang and Huai Bai Shu are illustrated in figures 5.10 and 5.11.

Shortage of living space and the lack of responsiveness of the design to the users' needs help to explain such transformations. Although new units generally provide more living area than traditional houses, they do not accommodate the possibilities of enlargement found in the traditional courtyard. Many households enclose their balcony as an extra barrier against dust and pollution, which are problematic in Beijing, and to acate a space where clothes can be hung to dry without getting dirty. Similarly, balconies are enclosed for reasons of security, and ground level units often have metal cages built on the balconies to discourage burglars. In some instances, balconies are converted into small commercial activities. Unfortunately, these ad-hoc enclosures tend to cut off the main interior spaces from direct sunlight and fresh air, while the dwelling units are deprived of their only semi-private outdoor space.



Figures 5.10: Small convenience store in an enclosed balcony at Huai Bai Shu

5.11: Self-enclosed balconies at Xiao Hou Cang

Certain prestigious estates, such as Ju Er Hutong and Hu Bei Kou, have strictly forbidden such practices. Most recent projects now enclose the balconies in a uniform matter as part of the original design in order to protect the orderly appearance of the project.

Building Quality

Although building quality and maintenance at Hu Bei Kou and Ju Er Hutong were acceptable, the great majority of low-cost buildings are poorly maintained and deteriorate rapidly. Recent buildings look more than a decade old and brightly painted facades turn gray only a few months after the project's completion. In general, interior finishing is also of low quality. Walls are left unpainted, concrete slabs left uncovered, and plumbing is exposed. Bathroom facilities are basic; showers are planned for but rarely installed. One serious problem is the poor-quality steel sash window frames. Aluminum frames are available in China but are too expensive for low-cost housing projects. Shared facilities such as bicycle storage areas, internal stairs and corridors, light wells and air shafts are also poorly designed and maintained. The absence of basic services like central gas and heating systems in the initial design also cause great dissatisfaction among the residents, and installing them later on is significantly more costly. Still, residents – mostly homeowners – invest ingenuity, time and money in the improvement of their units, especially in interior decoration and window replacement.

The main explanation for the poor quality of the housing is the highly controlled and centralized housing construction system which prevents competition and thus efforts to improve quality. The developers' desire to speed up construction and to save on initial investment has also resulted in the poor quality of housing and subsequent high maintenance costs, for which government funds are not available.

5.3. SUMMARY OF THE FINDINGS

This section summarizes the main issues identified from the analysis of the case studies. These issues, broken down into social, heritage, physical, policy and economic issues, are discussed along with their probable causes.

a) Social Issues

The majority of the projects studied met their main social goal, that is, the improvement of the living conditions of the residents. However, little importance has been placed upon the preservation of existing communities and people's attachment to their old neighborhoods. The little responsiveness of the projects to the users' needs revealed the low level of social considerations put into renewal.

This lack of concern for social issues is easily explained by the priority given by developers to speed of implementation and profitability. It can also be due, on the part of the government, to a lack of awareness of the possible impacts of regeneration⁵. The

⁵ So far, there have been no studies of the social impacts of regeneration, and no data exists on the effects of relocation on the Chinese population. According to Gu Yu Chang (1987), moving from a the traditional courtyard house to the modern multistory dwellings brings important changes in the lifestyle of the Chinese family. Displacement from where their families have lived for several generations can have a serious impact on people's lives. Solvig Ekblad, a clinical psychologist at the Department of Stress Research of the Karolinska Institute in Stockholm, has been conducting research on housing and health in



current political ideology and the Confucian heritage also explain the little priority given to social issues: throughout Chinese history, the population has been sacrificed for the wellbeing of the nation, arguing that Chinese people easily adapt to any situation.

b) Heritage Issues

The study reveals the low priority placed on the conservation of the domestic architecture and preservation of the traditional urban pattern and overall aspect of the city. The importance of saving old buildings, neighborhoods or even traditional streets is just beginning to be acknowledged in China. Only recently has domestic architecture started to be recognized as part of the cultural patrimony (Slovic & Ligia, 1988). Architectural preservation is still limited to monuments and temples; very few vernacular housing compounds have yet been regarded as an inheritance worth protecting. The general disdain for the symbolic value of the old housing and the desire to recreate an urban environment modeled on Hong Kong and Singapore also helps explain the lack of interest shown for preservation. Today, with increasing land scarcity, the replacement of old neighborhoods with high-density housing projects has a great attraction for both the government and the developers, as it allows them to improve housing conditions, while modernizing the city center. The absence of integrated policies for preservation, coupled with lack of experience and awareness, have become major barriers to the conservation of the environment.

c) Physical Issues

In all of the projects studied, there was a conspicuous absence of diversity in terms of site organization, building form, and apartment layout. Prototypes are generally limited to a small number of basic types which demonstrate little originality and innovation in their design. Construction quality and living standards are usually poor.

The developers' concerns for maximum production, speedy implementation and minimum cost has resulted in the production of uniform projects. Many people argue that with the present shortage of trained professionals, mass production is the only realistic way to cope with the housing production. The highly centralized and controlled housing production system and the absence of leading figures in the architectural profession also plays a large part. The lack of public expression of opinion on architecture, and especially of critical journalism on current architecture, may explain the lack of diversity and imagination found in design, and the passive acceptance of architecture.

Beijing. Her studies on the impact of mass housing and high-rise living have revealed that, on average, Chinese people are more able to adapt to such conditions than their Western counterparts (Ekblad, 1991).



d) Policy Issues

Although a series of regulations regarding the implementation of regeneration projects was formulated as part of the initial renewal program, they have not been strongly enforced, and the process by which such regulations can be bypassed remains unclear.

For example, the municipal regulation which states that 30% of an original population should be rehoused on the site has not always been respected, as happened at Hu Bei Kou. Also, the process by which neighborhoods in Beijing are selected to be regenerated as part of the renewal program remains obscure. Although the initial renewal program selected projects to be regenerated based on their physical condition, recent projects are often found in central areas or near major tourist attractions, where physical conditions may not be the worst but where profitability is higher. Similarly, the criteria used to delimit the specific portion of a neighborhood to be regenerated and its area are nebulous and seem to be subject to diverse influences. The absence of a master plan for the renewal of the city and the lack of coordination of the regeneration process are other defects of the current renewal program. Most regeneration projects are designed as individual projects that have no connection with one another or with the city as a whole.

The main reasons for the lack of enforcement of the regulations is the government's need to attract developers' investments in regeneration projects. The desire to pass the management and financing of the program on to developers have forced the authorities to make concessions and loosen their regulations to satisfy some of the developers' demands.

e) Economic Issues

The renewal program only offers partial responses to the housing reforms. Efforts have been made to popularize housing commercialization, but, in reality, only wealthy work units, private business owners, or people with relatives abroad have access to the new housing market. Very few residents can afford to buying their dwelling units, even at highly subsidized prices. The absence of financing structures to facilitate home-buying by low-income people has resulted in that the majority of the population still relies on the welfare system for the provision of housing. In the majority of recent projects built under the management of developers, economic concerns have been given priority over other aspects of regeneration. The delegation of the management of the renewal program to developers and the absence of other means of financing projects have resulted in the sacrifice of social, environmental, and physical aspects for the sake of speed of implementation and profitability.

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5.4. INTERPRETATION OF THE RESULTS

In summary, the main problems in the current regeneration process appear to have come from two sources: the current political system and the renewal program itself. The authoritarian political system has led to the highly controlled and centralized housing process which hinders competition, and has resulted in the low quality and homogeneity of the housing production. The absence of an integrated renewal program with strict and adapted regulations and more varied financing modes has allowed to shift priority from social and environmental issues to project profitability.

Although the Chinese authorities have been following the example of Hong Kong and Singapore to model their own approaches and policies, two essential components of the success of the two city states seem to be missing in China: the entrepreneurial government, and the leadership of a strongly committed housing authority. In Hong Kong and Singapore, the introduction of a free market was essential for the production of highquality housing. Decentralizing the production system and allowing for greater freedom and competition, while maintaining strong governmental control were key elements in their housing programs. Well-defined and integrated housing policies under the management of a relatively autonomous and powerful housing authority, were other key elements in the success of the housing programs in the two city-states.

This brief analysis of the main findings from the case studies allowed for the identification of the problems in the current regeneration process. The next and final chapter provides an assessments of the renewal program and points out directions to be taken for future project implementation.

CHAPTER SIX: NEW DIRECTIONS FOR THE FUTURE

The identification of the main issues involved in neighborhood regeneration in Beijing has clarified the complexity of the relationships among the different actors involved, along with the interests they serve, and allows one to assess the current renewal program. The last chapter concludes the thesis by providing a short review of the evolution of the implementation of the renewal program and proposes suggestions for future readjustments to the program.

6.1. SUMMARY

Since the first studies for the development of a renewal program for the inner city of Beijing in the late 1980s, great changes have occurred in the way regeneration has been implemented. Some roles have been modified and priorities have been redefined.

The initial goals of the program were to solve the housing shortage, improve housing conditions, modernize the infrastructure, and reduce the population density in the city center. The government's priority was to achieve this objective with minimal public investment. To do so, it reduced subsidies for regeneration projects and eventually decided to transfer responsibilities to developers. As a result, the renewal program has moved gradually from being a public housing program to becoming a partnership between the public and private sectors, similar in some ways those in Hong Kong and Singapore. In this partnership, the government was to regulate the process but let private funds from developers implement regeneration. However, to attract private sector investment, the government had to create conditions that would facilitate intervention. In the absence of the leadership of a strong housing authority, regulations were loosened and developers have gained increasing powers. The government has now limited its role to policy formulation, land allocation, and housing distribution and management. Consequently, certain aspects of regeneration have been sacrificed to the interest of profit.

The result has been a move from a small-scale, integrated, and sustainable form of regeneration, found in the early pilot projects, to a larger-scale redevelopment approach involving massive relocation. As the main interest of the developer is for maximum profit, projects now concentrate on the financial aspects of regeneration and emphasis is placed upon strategic location, larger estates, and prestige image to increase project profitability. Contented by the developers' current approach which satisfies its main interests, the government favors the maintenance of the *status quo*. Consequently, authorities have adopted a *laissez faire* attitude toward regeneration, and turn a blind eye to the resulting

social and environmental impacts.

6.2. TOWARD AN INTEGRATED RENEWAL

The present study reveals that the current approach to neighborhood regeneration in Beijing is not *sustainable*¹in many aspects. The process rests on a precarious financing system which can only be sustained as long as investments can be attracted. When speculation is no longer possible, developers will go invest elsewhere and regeneration will be halted. In addition, the lack of well-defined policies or of rigor in their enforcement, as well as the absence of commitment to social and environmental issues may carry important costs in the future.

A gradual restructuring of the current renewal program at all levels appears necessary. The experience of other countries has demonstrated that a realistic renewal program must view neighborhood regeneration as a comprehensive and integrated process. But such transformation of Beijing's current renewal program is no easy task. It would not only require the transformation of the housing design and production systems, but also the redefinition of overall policies, readjustment of the management system, and the introduction of new financing means. New directions can be explored in the design of a more balanced approach to neighborhood regeneration. Some suggestions can be made concerning the social, environmental, design, economic, and policy aspects of such an approach.

For regeneration to be implemented in a more integrated way, a great concern for social issues and for the protection of the existing communities must be developed. Past experience worldwide has revealed that citizen participation at all levels of the regeneration process can be an important factor in the success of renewal programs (Colborn, 1963). A greater involvement of the users, at the design, building, financing or management levels, could thus be part of a new regeneration program.

It is recognized that user participation results in more adapted housing design and helps promote an interest in home-ownership. In the Chinese context, this could contribute to the realization of the housing reforms, by encouraging a greater involvement of private individuals in the process. Increased home-ownership could lead to the prolongation of the lifetime of the housing stock through better maintenance. However, the introduction of such an approach would require important political considerations by the regime,

¹ The word "sustainability", generally defined as "the ability to meet the needs of the present without compromising the ability of future generations to meet their own needs", can be used to describe a form of development which combines and resolves the demands of economic growth, social equity and ecosystem viability while minimizing the harmful impacts of human activities on the environment (Nozick, 1992).

modifications in the existing urban housing system, and a high degree of social responsibility, which may prove difficult in the current Chinese context.

Great consideration for the protection of the natural, historical and physical aspects of the neighborhood and the region would also be necessary for the development of a sensitive approach to neighborhood regeneration. Regeneration should be implemented with respect for the underlying principles that generated the city and for the remaining traces of the past. A mastery of the urban planning and design legacy of China and a clear set of policies concerned with the visual form of the city are essential for the development of a renewal program which respects the identity of the city. This can only spring from a deep understanding of the environment and would necessitate changes in the attitude of professionals and authorities.

A form of contemporary architecture which integrates traditional styles with the new requirements of a modern society could also be developed. The adaptation of tradition to modern city living could help create an environment that is technically functional and perceptually coherent. New housing prototypes could emerge from an in-depth analysis of the attributes of traditional housing and a better understanding of the current problems in housing design. Such prototypes should fit in with the scale, texture and color of the traditional environment and justify the existing urban patterns while displaying the clarity and simplicity of modern functions and technological requirements. New prototypes should allow for variety and flexibility and be both replicable and affordable.

An improved housing finance system based on diversified funding sources could also be developed. By integrating different forms of cross-subsidies, introducing a greater participation of the users in project financing, and providing new financial structures such as housing cooperatives, loans, and a mortgage system, the dependency on developers could be reduced. Housing cooperatives constitute a form of social organization that could play an important role in solving the housing problem in China by promoting the financial involvement of users in housing provision². To be viable, they would require the introduction of preferential policies such as tax exemptions and the creation of savings and credit associations. Yet, this may prove difficult in the current Chinese context, in the absence of a strong economic system and of stable macroeconomic policies.

² Housing cooperatives are involved in design, construction, distribution, renovation and exchange, although their main purpose is to organize residents to raise funds and encourage savings for home-buying. The first housing cooperative created in China was in Shanghai in July 1986. Today, over one hundred housing cooperatives can be found in more than thirty Chinese cities. Many different types of housing cooperatives exist in China: housing cooperatives for employees and workers organized by government departments, work units and industries; joint housing cooperatives organized by trade unions and housing management departments with interested enterprises and institutes; and community housing cooperatives organized by families and whole communities confronted with housing difficulties (Cui Wei, 1991).



To coordinate the whole process, a more comprehensive developmental approach to urban renewal must be developed. The current renewal program needs to be readjusted and policies and regulations adapted to new realities. Objectives have to be redefined, roles redistributed, new regulations enforced, and post-evaluation studies carried out. The most important element of such a new program would be the creation of an independent housing authority, similar to those found in Hong Kong and Singapore. Such an institution could design policies, manage housing provision, and enforce regulations without being in conflict with the diverse players in the process.

Unfortunately, some of the proposed transformations of the current renewal program cannot realistically be introduced in the Chinese context as of today, especially in the present ideological environment. Most transformations would require a loosening of the centralized control of the state, the allocation of a greater level of autonomy to the people, and a high degree of social responsibility. The socialist system, and before that Confucianism, have, for decades, taken responsibility out of the hands of individuals. Collective organizations and enterprises were responsible for the provision of work, housing, and food, for settling disputes, and for decision-making at all levels. By controlling public expression, they have also prevented people from stating their opinion and asserting their right to choose. Although the political system is slowly evolving, China is still dominated by its Confucian heritage and remains a communist state which is based on a centralized and authoritarian control of power systematically opposed to change and to individual initiative (Hornik, 1994). The proposed integrated approach cannot be implemented without changes in the deep-rooted attitudes of the population and the state, which, as history has often proven, may not be for tomorrow. Still, some of the proposed modifications of the renewal program could be adapted to the current situation and be introduced as the system gradually evolves, or simply serve as a guide for the formulation of future renewal policies.

6.3. CONCLUSIONS

Today, two options are available to the Chinese government for the regeneration of the old city of Beijing: either to maintain the *status quo* and ignore the negative impacts of the current regeneration process, or to take action and look for innovative ways of transforming the city. Maintaining the *status quo* could have important consequences for the urban environment and for the generations to come. One can easily imagine what Beijing could become in the next few years: courtyard houses could be replaced by uniform



six-story buildings, while the Forbidden City and the few temple areas would remain as the last low-rise enclave in the old city and as mere tourist attractions. Increased building densities and the segregation of land uses would also greatly modify the aspect of the city, which would appear as a continuous and essentially residential fabric occasionally disrupted by commercial or institutional areas. The gentrification of the inner city would expally affect the character of the city and would bear heavy social costs. The traditional city of Beijing would slowly disappear and with it, the values and treasures of a whole culture.

Although experts from around the world are warning the Chinese about the shortcomings of the current renewal program, authorities argue that the Chinese situation is unique and cannot be compared with the experience of other countries. As the old Chinese saying goes: "Experience is a lantern which only sheds light on who holds it." Today, the fate of the old city of Beijing is in the hands of the Chinese authorities, who must decide between two options -- or, to use Marco Polo's words in his last recital to the great Khan in Italo Calvino's Invisible Cities (1979; 126), between two infernos:

"The inferno of the living is not something that will be; if there is one, it is what is already here, the inferno where we live everyday, that we form by being together. There are two ways to escape suffering it. The first is easy for many: accept the inferno and become such a part of it that you can no longer see it. The second is risky and demands constant vigilance and apprehension: seek and learn to recognize who and what , in the midst of the inferno, are not inferno, then make them endure, give them space."

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APPENDIX I: SAMPLE OF NOTES FROM PROJECT SURVEYS

XIAO HAN CAMA 24. LILLES NO TLINNED ATIONLY PATTA BROW BOLCONNUS FACATOR 15 A JUMPLE OF BALCONIES ENCLOSE IN VARYING WANG, W/ VARING MATBOARDS, AT VARDING ANGLES -ONLY 4 BALCONIES NOT ENCLOSED (FHOTOS) POLICE STATION ACROSS ALLEY. . . . i

Xiro Hou Cana Young APT 501 -FAHONES MUSICIAN'S FAHILY (MUSICIAN, WIPE AND SON) "SANTOOTH BUILDING"* SILL STATE CONTLACER CUNSICIPAL CONLING BALLONY ALL PANTOP WHE WINDOW! GTORAGE (ABWE) SBNDILL PIANO loor / nicked with GUM GOOR SULLER POOR Wall paper publicled; Ч₹ CABINET SET (SUITCASES LIDER CILLER! GARL COGNET GURHS MON MIDDR ON WILL FU: L'UENGIM OF ADOM HAN force blue No STOKAL CANNEL sign invall, but he sinches contractly Mantwic Mazilline Where does the little boy sleep? HGHT & ENTRY FROM STAIR 2 3.0m

* HAS WUUSUHL AREPAGEMENT: DARK, GROUND LEVEL CORREDOR LEADS TO DEPHRATE STAIRWAYS FLANKED BY LIGHT WELLS ON SNE SIDE; GROKAGE ADOLDS (WI BIOKLES MAINLY) ON WEST SIDE.

This any her love an admirable job of furnishing and destating the approximent.

The building as a whole, however is poorly scrigned. to at the control corridor is dark and derup and dirty. At least the strikways have light, so muy the ground look is

德宝匹配。				
N°	Jure 11th 1th	r crhyrd Obeen vations	commants	
1	Dh 25	old mor jecting fractions on 1157 floor bollcony	maybe old scope are alleaded lower-floor appartments.	
44. 2.4	8h3D	lote of pople are on-their enclosed balany looking down-investil gen window to what is going an wintime your	good survenbrice , of the youd.	
2	8h30	main fixing his cart and other protocold, are locally of him.	It is very imperiorily for people to have attalear common apace large analysis to allow them to payons such type of essential activities without amonging the communities.	
3	8h35	uide playing around a the procement (1-5 years old)	Paved youds are cleaner than one will wents earth	
4	8140	woman looking-hough pik of garbage.	le not writing grokerse, more deliver y consistent still	
5	8h45	old man unloading his carl (with but cargo)	the for in the commerced part. Rope might reoperate	
6	໖າ⊽	duer men clauding inthe convention	"The yest is already well currayed by the residents. "Themselves so there wants much to do go the gavard	

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PEBAO

fo many menholes 1 Apparenting these is no coordination between The ventous utilities, and each lattily is given a generous sight-of-way. Wonder 17 manhole - manufacturer has chrescised on interior in the selevant regulations / standards.

Central court is actually very theatrical, with garden raised on a data and bordered by seet-height retaining with and overlocked on Jonsth 1 ide by a "grand statical" All the belowies of the surrounding apartments also overflok the court, like so many "boker" from winch residents can watch the article selow.

Ľ Г *Æ ΡT **ll**∗¹ *. п DZ* П *, Ţ [¥4] 19 7П ר י DE -1-סכ * Ω. 间口口 d. 15 L V זחר - 14 п חם 07 lt *20 18-11 × ٦ПГ 150 Т * *27 (*<u>26</u> Z ** ¥ Π * 34 *33 Πt 7[22] סנ תכום *2 מסכ *32 * // Υ. יחנ סחר T н

APPENDIX II: OTHER PROJECTS VISITED

LEGEND

1	Nan Bei Cao Chang (1987)
2	Nan Tai Ping Zhuang (?)
3	De Sheng Men Wai (1994-?)
4	Qing Nian Hou (1975)
5	An Ding Men Wai (1993)
6	Xiao Huang Zhang (~1992)
7	He Ping Li (1985-1990)
8	Tu Er Hutong (1989)
9	Bei Guan Ting (1979-1985)
10	Cha Ci Hutong (1993)
11	Huan Xing Hutong (1989)
12	Mei Shu Guan Hou (1980)
13	Ji Shi Kou (1993)
14	Ya Bao Lu (1993)
15	Chao Wai Nan Ying Fang (1993)
16	Bei He Yian (1978-1986)
17	Nan Shi Zi (projected)
18	Cao Chang Tou Tiao (1990)
19	Dong He Yian (1988)
20	Zhong Shi Li (~1991)
21	Gao Jia Zhai (1984-1988)
22	Tao Ran Ting (1974-1985)

- 23 Lu Chang Jie (1993)
- ? (1993) 24
- 25 Jin Yu Chi (1974-1985)
- 26 Fa Hua Shi (1994)
- 27 An Hua Bei Li (1975-1985)
- 28 Xi Zhao Si (1984-1986)
- Chang Qing Yuan (1994) Liu Jia Yao (1979-1990) 29 30
- 31 Xi Ge Xin Li (1990)
- 32 You Wai Jian An Li (~1991) 33
 - Zao Lin Qian Jie (1975-1985)
- 34 35 Bei Cai Wan (1992-1993)
- Shun He San Xiang (1988-1993)
- 36 San Miao Yuan (1991)
- 37 Gan Yu Qiao (1993)
- 38 Mao Ling Yu (1983-1989)
- 39 Wan Ming Si (1990)
- 40 Bei Ying Fang (1993)
- Kou Zhong Miao (1992-1993) 41

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- 42 Guo Ying Hutong (~1990)
- Guan Yuan (1993) 43