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BUILDING UNDER THE PLANNED ECONOMY

A HISTORY OF CHINA'S ARCHITECTURE AND CONSTRUCTION 1949-1965

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ABSTRACT

Recently, China's architecture is being paid increasing attention, due to the rapid development of China's economy and the country's construction boom. However, the research on China's architecture since 1949 has still lagged in comparison with related topics. This thesis is a historical review on the architectural development during 1949 and 1965 – a period directly following the founding of the PRC, in which a socialist economic system was established in imitation of the Soviet Union, and a period in which China's architecture and building construction developed under strong ideological control and a highly centralized planned economy. Although this control is fading out in today's China, the impact of the development of architecture and construction during that time is still evident. The goal of this thesis is to make clear the development processes of China's architecture during this period, as well as establish a background of the forces shaping this development.

Generally speaking, the history of modern China was a history of westernization. Since 1840, westernization penetrated gradually into every social aspect in China, as well as into China's architecture. Using the treaty ports as bases, western-style architecture increasingly emerged in China's cities. As a result of this transformation, modern architecture started to influence China's architecture in the 1930s. In opposition to these forces of westernization, the "Chinese renaissance" movement emerged since the end of the 19th Century. From the first incursions of western architecture, conflict and interaction between westernization or modernization and national identity formed the basis for architectural design in China. This conflict and interaction became a theme that would last for decades. Following the westernization, western-educated native Chinese architects emerged, and gradually grew into a key force of architectural activities in China.

After the founding of the PRC – especially when China launched socialist construction in imitation of the Soviet Union in 1953 – Stalinist creeds began to influence China's architecture. Modern-style architecture was criticized and led to the movement of "big roof" architecture. However, the "big roof" and its greatest advocate, Liang Sicheng, were soon sharply criticized by the Anti-Waste Movement. Architects found themselves in a dilemma, and in practice, scrupulously avoided both "big roof" and modern architecture. In 1958, "National Day Projects" were constructed to celebrate the tenth anniversary of the founding of the PRC. Constraints were somewhat loosed and architectural activities could blossom anew. The "new socialistic style" was called for while the concept of "Chinese and new" gained a consensus. At the end of the 1950s, two main streams emerged. One focused on a technical approach and the other on the fruitful practices of regional architecture.

As one of the most important economic branches, the construction industry was given priority by the PRC government, and became one of the earliest industrial branches to undergo socialization. The construction industry's administration system was established to suit large-scale planned construction in the PRC, and the state-run design institutions were set up in imitation of those in the Soviet Union. Meanwhile, the practice of urban and regional planning as an extension and embodiment of national economic planning was adopted form the Soviet Union. These practices played an important role in China's building construction. However, it was difficult to adapt these practices to China's economic situation, and they were eventually cancelled at the beginning of the 1960s. In order to suit the quantitative demand of building construction, various efforts were made to lower building costs and speed up construction and design. Industrialized construction was adapted in accordance with China's situation and standard design practices were learned from the Soviet Union and applied to mass-produced buildings.

Reviewing the history, we can identify some characteristics of the development of China's architecture from 1949 to 1965. Firstly, the impact of the Soviet Union was very extensive. Secondly, the "big architecture" and the "small architecture" presented different traces of development. Thirdly, the planned economy with a highly centralized authority led to a monotonous architectural style. Lastly, the ideological concerns and the pursuit of national form as national identity in architecture were basically confined within the architectural circle. Nevertheless, the development of architecture and building construction during this period has bequeathed a valuable legacy, from which one may learn important lessons and draw inspiration.

ZUSAMMENFASSUNG

Aufgrund der rasanten Entwicklung der chinesischen Wirtschaft und des Aufschwungs im Bauen wird der Architektur Chinas in jüngster Zeit zunehmend Beachtung geschenkt. Jedoch liegt die Forschung zur chinesischen Architektur seit 1949 im Rückstand. Diese Dissertation ist eine historische Untersuchung der architektonischen Entwicklung Chinas von 1949 bis 1965. Die Periode umfasst den Zeitraum von der Gründung der Volksrepublik China, als das sozialistisch-wirtschaftliche System in Nachahmung der Sowjetunion eingeführt wurde, bis zur Zeit, in der sich Chinas Architektur und Gebäudekonstruktion unter der strengen ideologischen Kontrolle und der hochgradig zentralisierten Planwirtschaft entwickelte. Ziel dieser Dissertation ist es, die Entwicklungsprozesse der Architektur Chinas für diesen Zeitraum zu verdeutlichen sowie die Hintergründe jener Kräfte aufzuzeigen, welche diese Entwicklung prägten.

Die Geschichte des modernen China war generell eine Geschichte der Verwestlichung, die von 1840 an allmählich in jeden sozialen Aspekt Chinas einschliesslich der Architektur eindrang. Ausgehend von den Vertragshäfen tauchte westliche Architektur zunehmend auch in den Städten des Landesinneren auf. In den 1930-er Jahren begann auch die moderne Architektur das chinesische Bauen zu beeinflussen. Gegen diese Verwestlichung trat die Bewegung der „chinesischen Renaissance“ an. Seit den ersten Einflüssen westlicher Architektur bildeten der Konflikt und die Interaktion der Verwestlichung oder Modernisierung und das Streben nach einer nationalen Identität über Jahrzehnte die Basis für das architektonische Schaffen in China. Im Westen ausgebildete chinesische Architekten begannen ihre Tätigkeit in ihrer Heimat und wuchsen allmählich zu einer Schlüsselkraft der architektonischen Aktivitäten in China heran.

Nach der Gründung der Volksrepublik China, vor allem seit der Lancierung des sozialistischen Konstruierens nach sowjetischem Vorbild im Jahre 1953, begannen die stalinistischen Doktrinen die Architektur Chinas zu beeinflussen. Die moderne Architektur wurde kritisiert und führte zur Bewegung des „grossen Daches“. Allerdings wurden das „grosse Dach“ und sein bedeutendster Verfechter Liang Sicheng von der „Anti-Verschwendungs-Bewegung“ bald scharf kritisiert. Die Architekten gerieten dadurch in ein Dilemma und vermieden in der Praxis das „grosse Dach“ sowie die moderne Architektur. 1958 wurden zur Feier des 10. Jahrestages der Gründung der Volksrepublik China „Nationalfeiertags-Projekte“ gebaut, deren Wirkung diesen Konflikt entschärfte und dem architektonischen Schaffen neuen Auftrieb verlieh. Der „neue sozialistische Stil“ wurde postuliert und die Vorstellung „chinesisch und neu“ gewann an Akzeptanz. Am Ende der 1950-er Jahre entstanden zwei

Hauptströmungen im Bauen, der technische Ansatz und die fruchtbaren Auseinandersetzungen mit der regionalen Architektur.

Als einem der wichtigen wirtschaftlichen Zweige gab die Regierung der Volksrepublik China der Bauindustrie den Vorrang. Diese entwickelte sich zu einem der am frühesten sozialisierten industriellen Zweige Chinas. Die Einführung des Administrationssystems der Bauindustrie ermöglichte in grossem Massstab geplantes Bauen. Entsprechend dem Vorbild der Sowjetunion wurden die staatlich geführten Entwurfsgesellschaften gegründet. Die sowjetische Praxis in Stadt- und Regionalplanung wurde übernommen, deren Anpassung an Chinas wirtschaftliche Situation war aber trotz ihrer wichtigen Rolle schwierig. Zu Beginn der 1960-er Jahre wurden sie schliesslich gestrichen. Diverse Anstrengungen zur Senkung der Baukosten und zur Beschleunigung des Konstruktions- und Entwurfsprozesses wurden gemacht, um den quantitativen Anforderungen an das Bauen gerecht zu werden. Unter Berücksichtigung der Situation in China wurden von der Sowjetunion das industrialisierte Konstruieren und Standardentwurfsmethoden übernommen und weitläufig in der Massenproduktion angewendet.

Die Analyse der Geschichte von 1949 bis 1965 zeigt einige Charakteristika der Entwicklung der Architektur Chinas auf. Erstens war die Einwirkung der Sowjetunion sehr umfassend. Zweitens stellten die „grosse“ und die „kleine“ Architektur verschiedene Entwicklungsstränge dar. Drittens führte die Planwirtschaft mit einem hochgradig zentralisierten Regierungsapparat zu einer Monotonie in der Architektur. Die Verfolgung der ideologischen Anliegen schliesslich, und mit ihnen das Streben nach einer nationalen Form als Ausdruck nationaler Identität in der Architektur, beschränkte sich grundsätzlich auf die Architekturkreise. Gleichwohl stellt die Entwicklung von Architektur und Gebäudekonstruktion ein wertvolles Vermächtnis dar, von dem wichtige Einsichten und Inspirationen gewonnen werden können.

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At last, I would like to express my sincere thanks to my family for their lasting support. Most importantly, without the consistent encouragement from my wife Wu Jianping, the work could not have been done.

CONTENTS

ABBREVIATIONS

ASC	Architectural Society of China
CCP	Chinese Communist Party
CPPCC	Chinese People’s Political Consultative Conference
JZ	*Jianzhu* (Building)
JZS	*Jianzhushi* (Architect)
JZXB	*Jianzhu xuebao* (Architectural Journal)
KMT	Kuomintang (Nationalist Party)
MBE	Ministry of Building Engineering
MUC	Ministry of Urban Construction
NPC	National People's Congress
PLA	People’s Liberation Army
PRC	People’s Republic of China
SCC	State Construction Commission

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INTRODUCTION

In correspondence with historical eras, the development of architecture in modern China was differentiated into two periods according to the terminology of historical research in China – "jindai" and "xiandai." The former refers to the period between 1840 and 1949, and the latter describes the period after 1949. Although these words are distinct in Chinese language as well as in historical research, they both can be translated to the English word "modern." In this thesis, the word "modern" covers both periods of "jindai" and "xiandai," and a Chinese amalgamation would be "jinxiandai."

Comparatively, the research on architecture in "jindai" China is more developed than that in "xiandai" China. There are special conferences convening yearly on the architecture of "jindai" China, resulting in the publication of many research results in the archaeology and reinterpretation of the architecture in this period. Research on the architecture of "xiandai" China is less prominent, perhaps due to the relatively recent occurrence of the period. The development of China's architecture after 1949 is far from being widely acknowledged, and the effects of its influence are not so explicit. Many seemingly strange problems in China today can be traced back to this period to find answers or precedents. For example, when foreign architects design housing in China, they are usually confused by the southern orientation of all structures. The basis for that custom can be found in the housing design and allotting practices in China in the 1950s and 60s. Another representative instance of this disconnect is the dispute concerning the Grand Theater in Beijing at the turn of the century, of which a similar precedent could be founded in the design of the Great Hall of People in Beijing at the end of the 1950s.

Despite these limitations, research on China's architecture since 1949 has nonetheless commenced. At the end of the 1970s, when the first edition of *Zhongguo jianzhu shi* (The History of China's Architecture) – the reference book for instruction in Chinese architectural schools – was written, architectural development during the "xiandai" period was outlined, although not eventually included.[1] It was delayed until the fourth edition of the book was published in 2000, and occupied the last five chapters.

[1] Zhongguo jianzhu shi (di wu ban), Preface, P.1

Some of the initial research on China's architecture after 1949 was conducted by Gong Deshun, Ze Denong, and Dou Yide. Supported by the Bureau of Technology and Science under the Ministry of Construction, they commenced an extensive investigation on this period's architecture at the beginning of the 1980s.[2] Their book, *Zhongguo xiandai jianzhu shi gang* (An Outline of Modern Chinese Architectural History), was published in 1989, and chronicled China's architecture between 1949 and 1985. Further studies were carried out by Ze Denong, who published the 776-page book *Zhongguo xiandai jianzhu shi* (A History of Modern Chinese Architecture) in 2001, covering more material and a longer period. Another prominent contributor to the research is Yang Yongsheng, who, since the 1980s, put an effort into assembling the materials of architecture in modern China. The books he edited, such as *Jianzhu bai jia huiyi lu* (A Hundred Recollections by Architects), *Jianzhu si jie* (Four Prominent Architects), *Zhongguo jianzhushi* (Noted Architects in China), and so forth, provide substantive references for our research. The book *Ershi shiji Zhongguo jianzhu* (China's Architecture in the 20th Century), which he and Gu Mengchao edited, discusses in specific detail the representative examples of China's 20th-century architecture. Moreover, he enabled the publication of the memoirs of senior Chinese architects, such as Zhang Bo's *Wo de jianzhu chuangzuo daolu* (The Track of My Architectural Creations).

Related research results emerged in fragments, such as in Wu Guangzu's paper based on his postgraduate study, "Shi lun woguo jianzhu xin fengge de chuangzao jingyan" ("On the Experiences of Creating New Architectural Style in China"), published in the early 1960s, and Liu Ting's paper, "Dangdai jianzhu sichao 1949-1964" ("Contemporary Architectural Thoughts 1949-1964"), published in August 1989. All these sources offered some clues for my research.

Recently, China's architecture has been paid increasing amounts of attention as China's economy and construction industry see drastic levels of development. As a result, some English-language research was published, such as *Architecture Encourters with Essence and Form in Modern China*, written by Peter G. Rowe and Guan Sen; *Modern Urban Housing in China 1840-2000,* edited by Lü Junhua, Peter G. Rowe and Zhang Jie; and *Building a Revolution: Chinese Architecture since 1980,* written by Xue Qiuli (Charlie). In addition, some English-language papers concerned with the topic were published in various journals.

Since the 1980s, various localities began to compile a number of annals and corpus to record their achievements and thereafter, they published many materials on China's building industry and urban construction. These materials offered additional plenteous references for my work.

[2] Gong Deshun, Zou Denong & Dou Yide, *Zhongguo xiandai jianzhu shi gang* , P.1

However, the general research on China's architecture since 1949 still receives less attention in comparison with other topics. The time span of existing research results is usually long, the depth of research is still shallow, and many questions remain unsolved. Encouraged and supported by Professor Herbert E. Kramel, the direction of my dissertation was oriented to the history of China's architecture since 1949, and the research work was started in 1998 with the collection of concerned materials. The goal of my research is to make clear the development process of China's architecture in this period as well as a correlative background. Meanwhile, since the thesis is written in English, it can provide a valuable source for foreign researchers who are interested in China's architecture.

When my research began, I found that the existing research results were lacking in quality, and in addition, reference sources were seldom listed or clearly noted in the researchers' books or papers. As a result, most of my research materials came from magazines, annals, and corpus, especially *Jiznzhu xuebao* (*JZXB*) and *Jianzhu* (*JZ*). The former is an architectural journal published by the Architectural Society of China (ASC) and the latter is a journal published by the Ministry of Building Engineering (MBE), both of which recorded the historical fragments of China's architecture since the 1950s.

The original ambition of this thesis was to cover the architectural development during the whole period of planned economy in China; namely, the history of China's architecture from 1949 to 1979. However, as my research work progressed, I found it too difficult to accomplish this task within a dissertation, due to the vast amount of work required and the complexity of the history itself. Particularly because the architectural activities were not recorded properly during the chaos of the Cultural Revolution (1966-1976), the research on architecture in this period was lacking. I decided to confine the range of the thesis to the period between 1949 and 1965, which, in comparison with the years of the Cultural Revolution, was a more compact period when a highly centralized planned economy strongly impacted the development of China's architecture. The highly centralized model also shaped China's architecture a relatively unitary developing course, which make it easier to make conclusions and "package" the results.

Observing the phenomena of China's architectural activities between 1949 and 1965, one would discover that the "big architecture" and the "small architecture" had different modes of development. The former, which mostly involved prominent Chinese architects, was mired in the predicament between modernization and nationalism. Much like it had been puzzling most Chinese scholars, this problem had inevitably been confronting Chinese architects since the beginnings of China's modernization. When China began its large-scale construction in imitation of the Soviet Union in 1953, the pursuit of nationalism in architecture was strengthened by the historicist architectural principles

imported from the Soviet Union, while modern architecture, which had taken a leading role in China's architectural activities since the 1940s, was ideologically spurned. Soon after, the ephemeral flourish of historicist architecture was criticized due to its incompatability with the current economic situation. Thereafter, the conflict between modernization and nationalism bewildered the Chinese architectural circle, up until the 1980s and even to the 1990s.

Closely related to the national economy, the mass-produced "small architecture", such as residential building and generic office building, was always controlled by economic situations and policies. This area had much less prestige than "big architecture" – in this area, the role of ideology fell behind that of the economic condition, and "more, fast, and cheaper" was always the main concern in construction. In addition, a key question in "small architecture" was how to organize the planning, design, and construction within economic and administrative systems in order to adapt the economic situation from 1949 and to suit post-1953 rapid economic development.

Corresponding with the subjects discussed above, this thesis is divided into two parts. The first part focuses upon the course of development of China's "big architecture." Because it was closely related to architectural history before 1949, the discussion dates back to 1840, which was regarded as the starting point of China's modern history. The second part of this thesis discusses several aspects concerning building construction under a planned economy, including a state-operated system and urban planning, as well as the design and construction of mass-produced buildings.

Part I is comprised of three chapters. Chapter One is a retrospect of the architectural development before 1949 in modern China, and briefly introduces the themes of western influence in architecture, westernization of Chinese-owned buildings, Chinese renaissance architecture, and influences of modern architecture. In addition, there is a review of the emergence and significance of native Chinese architects who would play a key role in architectural design after 1949.

Chapter Two concentrates on the "big roof" architecture, a style that flourished from 1953 to 1954, when Soviet architectural principles dominated China's architectural design. There is a brief introduction of the development of the Soviet principle and the examples built in China at that time. Following the introduction, I conduct a careful review of Liang Sicheng's advocacy of "big roof" architecture, and then introduce some representative instances of two tendencies – modern style architecture and "big roof" architecture, the former thriving at the beginning of the 1950s, and the latter flourishing from 1953 to 1954. In the last section, I review the criticism on "big roof" architecture launched by the Anti Waste Movement in 1955.

Chapter Three discusses the evolution of architectural design after the Anti Waste Movement. Firstly, I describe the scrupulous work of China's architects directly following the movement and the trend in favor of modern architecture in the free atmosphere fostered by the "Hundred Flowers" policy. Then I introduce the flourishing of architectural design for the "national day projects" built at the end of the 1950s for celebrating the 10th anniversary of the PRC, and thereafter, review the emergence of the term "socialist new style" as well as the concerned debates. At last, I discuss two main directions – technical tendency and regional approaches – both formed after the construction of the "national day projects."

Part II investigates the aspects concerning building construction under a planned economy. Chapter Four concentrates on the socialist system of building construction and architectural design. I first explain the process of socialization, and then study the administrative structure of building construction, the mechanism of state-owned design institutions, and the role of the Architectural Society of China as a semi-official organization.

Chapter Five presents the development of urban planning and regional planning, both of which were influenced by ideas from the Soviet Union. In this chapter, I will establish how Soviet planning was first copied and modified, but eventually failed to serve China's needs.

Chapter Six is a discussion on how China dealt with the large quantity of building construction in the 1950s and the first half of the 1960s, reviewing the efforts of lowering the building costs, the strategies of industrializing the building construction, and the development of the standard design. Chapter Seven is a case study of mass-constructed buildings, which discusses housing design and construction during that period and especially examines the evolvement of housing unit plan.

With this thesis, I hope I can craft a comprehensive picture of China's architecture between 1949 and 1965, and achieve a clearer understanding of architecture in modern China.

Part I

ARCHITECTURAL DEVELOPMENT AND THE QUEST FOR NATIONAL IDENTITY

Generally speaking, the history of modern China is a history of westernization. Since 1840, westernization gradually penetrated into every aspect of Chinese society, especially into China's architecture. After the 1840s, due to successive treaties signed after defeats in the wars with Western powers and Japan, China was forced to open a number of ports. Using the treaty ports as bases, western-style buildings were gradually erected by westerners. As the Westernization Movement was launched in the 1860s, western styles also appeared in the buildings built by the Chinese. As a part of westernization, modern architecture began to influence China's architecture in the 1930s and 40s. As an opposing force, the approach of applying traditional architecture to new buildings also began to emerge. This practice first appeared in missionary buildings and was then largely witnessed in new official buildings promoted by the Nationalist government. This interaction between westernization and nationalism formed the basis for architectural design in China and lasted for decades. The pursuit of nationalism in architecture reached its high point in three separate eras: from 1927 to 1937, in the 1950s, and in the 1980s.

Historically, the profession of "architect" did not exist in China. The westernization of China's building industry increased with the construction of every new western-style building. One aspect of this modernization was the emergence of professional architects. In the 1920s and 30s, native Chinese architects, most of whom were trained at Japanese or Western colleges under the Beaux-Arts tradition, gradually became a key force behind architectural activities in China. The Chinese architects' Beaux-Arts education set the tone for a continual architectural exploration between national identity and modernity.

In the following chapter, we shall go back to the beginnings of modern China to discuss how China's architecture developed in the context of the struggle between westernization/modernization and nationalism. Then we will discover how architecture evolved and even struggled between 1949 and 1956, when China ran large-scale construction in imitation of the Soviet Union.

CHAPTER 1 • HISTORIC REVIEW: 1840-1949

1.1 The Transplant of Western Architecture

Before 1840, there were two major instances of foreign cultural influence in China's history. The first one took place during the Han Dynasty (202 B.C.-220 A.D.), when trade between China and the West was first established. Many new architectural elements that emerged in Chinese architecture as a result of this contact reached a high point in the Eastern Han Dynasty (25-220), when Buddhist culture was largely transplanted from India to China. The second instance was during the Yuan Dynasty (1271-1368), when Mongols occupied a large stretch of territory in Asia and Europe. In this period, the Buddhist architecture from India, the Islamic architecture from western and central Asia and the Lamaist architecture from Tibet greatly influenced the development of Chinese architecture.

The influence of European architecture first came into play during the Ming Dynasty (1368-1643), when ever-increasing traffic on the seas between Europe and Asia allowed the Portuguese to reach China. In 1553, the Portuguese obtained the lease of Macao by force. Soon after, European buildings of a Spanish-Baroque variety began to spring up on the islands of Macao. At the beginning of the 17th century, the Dutch and the Spanish successively invaded Taiwan island, the former gaining control over the island in 1642 by driving out the latter. Up until the Dutch were banished in 1662, the Dutch and the Spanish had built a number of castles, churches, and other European-style buildings on Taiwan.

Since the 16th century, the construction of churches was a major part of the incursion of European architecture into China. The Cathedral of San Paulo in Macao, the first Christian church in China, was built at the end of the 16th century. Today its remnants have become one of the most distinct landmarks in Macao. Using Macao as a launching point, European missionaries started to enter China from the 1580s. In 1605, Italian Jesuit Matteo Ricci (1552-1610) erected the first Catholic cathedral in Beijing, and he built another relatively large church in 1610.[1] Soon afterwards, more Catholic

[1] Li Haiqing, *Zhongguo Jianzhu xiandai zhuanxing*, P.24

churches appeared in China, such as one at Jiading嘉定, Shanghai, built in 1621; one at Sheshan蛇山, Wuchang, built in 1638; one at Xuanwumen宣武门, Beijing, built in 1650; and one at Fuyoujie Canchikou府佑街蚕池口, Beijing, built in 1692.[2] Accompanying the expansion of Russia, the Orthodox Church also came into China, building two churches in Beijing in the 1660s and 70s.[3]

Besides the churches, European-style buildings also appeared in some trade ports from the 16th century as Sino-European trade developed. The typical example is Guangzhou, a city in south China and the most important trade port at that time, where a large proportion of such buildings were constructed. As European merchants built their residences and businesses, European-style architecture began to well up in the so-called "Thirteen Hongs" foreign trade district of the city. The businesses of the French, the English, the Danish, and the Dutch were constructed in the manner that their respective owners were familiar with, and the city flourished with a heterogeneous mixture of styles not previously known in China.[4]

Figure 1-1 The Cathedral of San Paulo, Macao, end of the 16th century

[2] Ibid., P.25
[3] See, Ibid.
[4] Tong Jun , "Foreign Influence in Chinese Architecture", *Tong Jun wenji diyijuan*, P.96

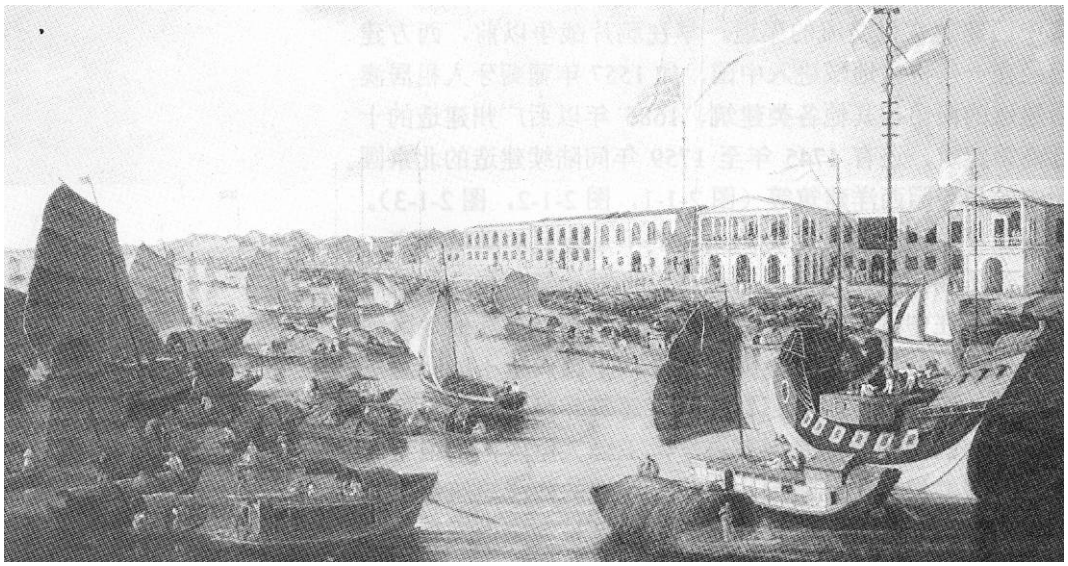

Figure 1-2 A painting of the "Thirteen Hongs"

In the 18th century, a group of remarkable European-style buildings emerged in Beijing – the Occident Buildings at Changchunyuan Garden, a portion of the Old Summer Palace (Yuanmingyuan), built during the 1740s and 50s. Inspired by occidental paintings, the Qing Emperor Qian Long ordered his painters, Italian Jesuit G. Castiglione (1688-1766), French Jesuit J. D. Attitel (1702-1768), and D.M. Benoist (1715-1774), to design the occidental garden buildings in a European style. Here Italian Baroque architecture, complete in every detail, was executed for imperial pleasure. Although these buildings were wantonly destroyed by the British-French forces in 1860, their ruins still give the viewer a good idea of their former resplendence.

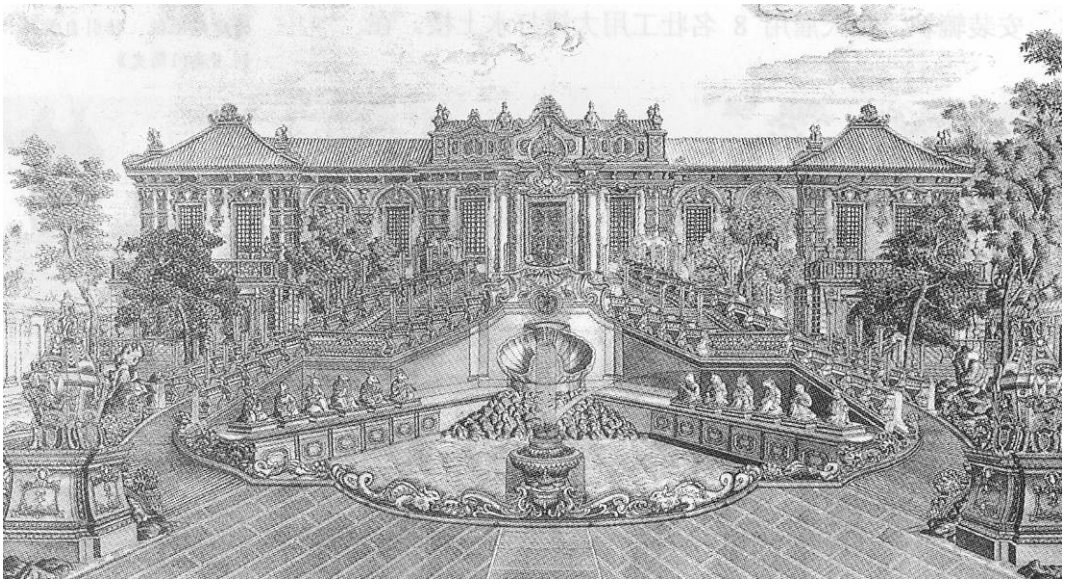

Figure 1-3 An etching of one of the Occident Buildings at Changchunyuan Garden

However, the incursion of foreign architecture and its influence before the middle of the 19th century had only a minor impact on Chinese architecture. Moreover, a dispute between the Vatican and the Qing Empire escalated during the end of the 17th century and the middle of the 18th century. Missionaries were subsequently forbidden in China, leading to a decline in church construction. At this time, the Qing Empire closed the trade ports that had been open since 1685 (except Guangzhou), and it became impossible for foreign architecture to be built in China. This situation did not fundamentally change until the Opium War.

In 1939, the British launched a war on China in order to protect the opium trade. China eventually lost this conflict, and the Qing Empire was forced to cede territory (Hong Kong) to the British and open trade ports for free trade and residence to foreigners. Thereafter, China suffered successive military defeats by the British-French allied army in 1860, by the Russians in 1871, by the French in 1885, by the Japanese in 1895, and by allied powers in 1900. The China that had thrived for ages was confronted with a process of collapse and decline of unprecedented magnitude.

The Treaty of Nanjing signed after the Opium War in 1842 prescribed not only the cession of Hong Kong, but also permitted British people to reside in Guangzhou, Fuzhou, Xiamen, Ningbo, and Shanghai, and allowed free trade for British businessmen in these “treaty ports.” The Treaty of Humen, signed one year later, stipulated that the British could lease land to construct their buildings, and that they could prosecute their criminals without being held to the jurisdiction of Chinese laws. In addition, it stated that the British could share any privileges gained by any other foreign country. The latter concession was noted in other treaties by Japan and other Western nations, who became allies with the aim of carving up China. In order to limit their activities, the Qing Empire requested foreigners to reside within certain parts of the treaty ports, which led to the emergence of foreign-only residential areas. During the first five years after the Opium War, only Shanghai, among the five treaty ports, had residential areas settled by foreign immigrants. As the immigrants drove out the Qing military by force in an 1884 conflict, these areas eventually became the so-called “leased territories” – the foreign settlements or concessions where the Qing Empire would no longer reign.

In 1858, when the British-French allied army occupied Tianjin during the Second Opium War, the British, French, Russians, and Americans forced the

Qing Empire to sign the Treaty of Tianjin, which allowed foreigners to set up embassies in Beijing and added ten cities, including Hankou, Nanjing, and Yingkou, as new open ports. The Convention of Beijing signed after the war in 1860 approved the Tianjin treaty and made Tianjin an additional treaty port. The foreign powers began to set up foreign settlements or concessions referring to the Shanghai model in the treaty ports, of which Shanghai, Tianjin and Hankou developed the most rapidly and gradually became the biggest and the most influential modern cities in China.

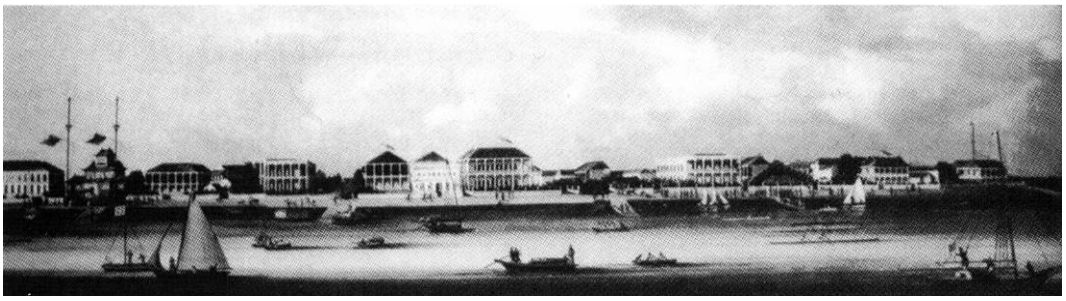

Figure 1-4 The Bund of Shanghai in 1849

Figure 1-5 The Bund of Shanghai in the 1860s

Figure 1-6 The Bund of Shanghai in the 1880s

As the foreign immigrants built their homes in the treaty ports, the “leased territories” became bases for the importation of foreign architecture. The earliest homes built were mostly the “veranda houses,” which were popular for colonists in tropical areas such as India and Southeast Asia. With open corridors along the outside and courtyard, this type of house could ensure cross-ventilation and shelter its inhabitants from sunlight and rain to accommodate outdoor activities. Such houses began to make their way into China early on, and most embassies, consulates, offices, and houses featured verandas. These buildings were normally designed by the immigrants themselves with some modifications by Chinese builders in order to adapt to local materials and building technologies. Overall, they were relatively simple and crude due to financial restrictions as well as the limits of the construction technologies applied to them. The other reason for the crude nature of the buildings may rest with the short-term intentions of the immigrants: most of them were there for exploration and did not plan to settle down for a long time.

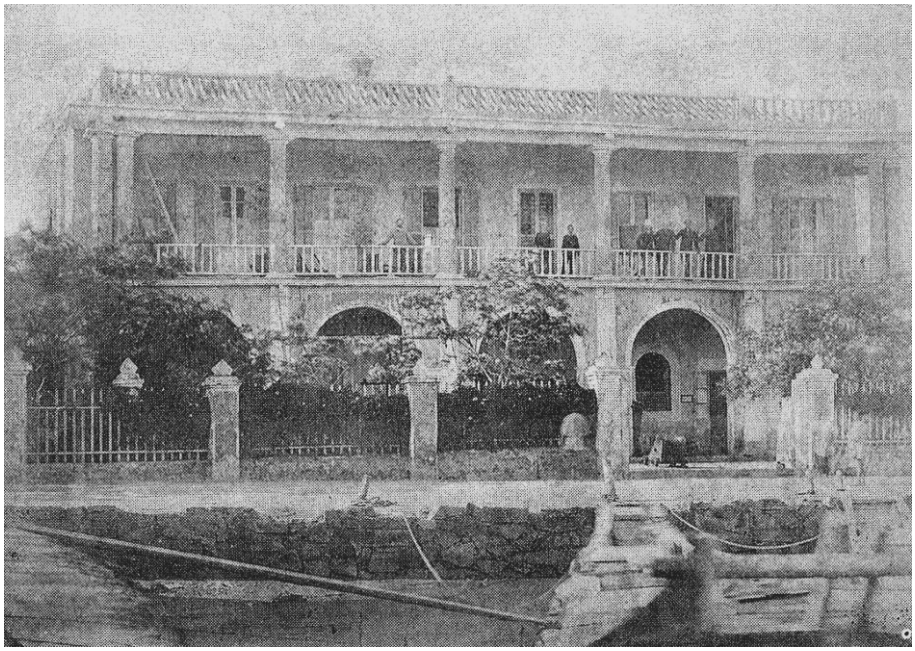

Figure 1-7 An old veranda house in Shanghai

The situation with missionary architecture was very different. After the Opium War, the Qing Empire was forced to lift the ban on missionaries. As opposed to houses and offices built in China after the Opium War, churches were constructed in more of a European style, perhaps since the churchmen seemed to be determined to undertake long-term missions. The churches built in Shanghai during this period, among which was Francico Xavier Church, were the first instances of this style. Francico Xavier Church was

founded in 1847 and inaugurated in 1853 as the largest and the most conspicuous church in China at the time. This baroque Spanish church was designed by the Jesuit Ferrand Jean (1817-1856), whose father was an outstanding Spanish artist and sculptor, in imitation of the Sant' Ignazio of Loyola in Roma. St. Joseph's Church and Holy Trinity Church are two other typical examples. The former was built from 1860 to 1861. Missionary Helot Louis, a non-professional architect who had been superintendent of the construction of Francico Xavier Church, designed the building in a late Romanesque style with Gothic influences, a style popular to northern France.[5] Holy Trinity Church was built from 1866 to 1869 and designed by a famous British architect Sir George Gillbert Scott (1811-1878), the designer of the Albert Memorial in London.[6] The red-bricked façade of Holy Trinity Church was in a Gothic Renaissance style with eclectic details. This building indicates that architecture began to be valued in church design, and professional architects began to play a greater role in designing classical European architecture in China.

Figure 1-8 Francico Xavier Church, Shanghai, 1847-1853, Ferrand Jean

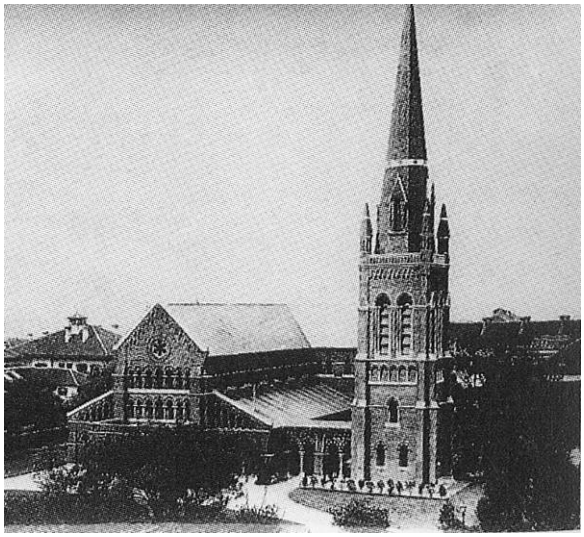

Figure 1-9 Holy Trinity Church, Shanghai, 1866-1869,1893, Sir G. G. Scott, and K. Kindner

Before 1900, churches in China were generally built on a small scale, except Sacred Heart Cathedral (1863-1888) in Guangzhou, a large Gothic church designed by a Frenchman, and Wanghailou Church (1869) in Tianjin. After 1900, with compensation for the Boxer Rebellion and looser restriction of

[5] Wu Jiang, *Shanghai bai nian jianzhu shi 1840-1949*, P. 56
[6] Ibid. P.59

missionary, church construction rapidly accelerated.[7] While old churches were repaired and extended, new churches increasingly appeared. Along with Beijing and the treaty ports, a number of cities, towns and even villages all over China witnessed the construction of missionary buildings, of which the quantity, the scale, and the quality were all highly improved.

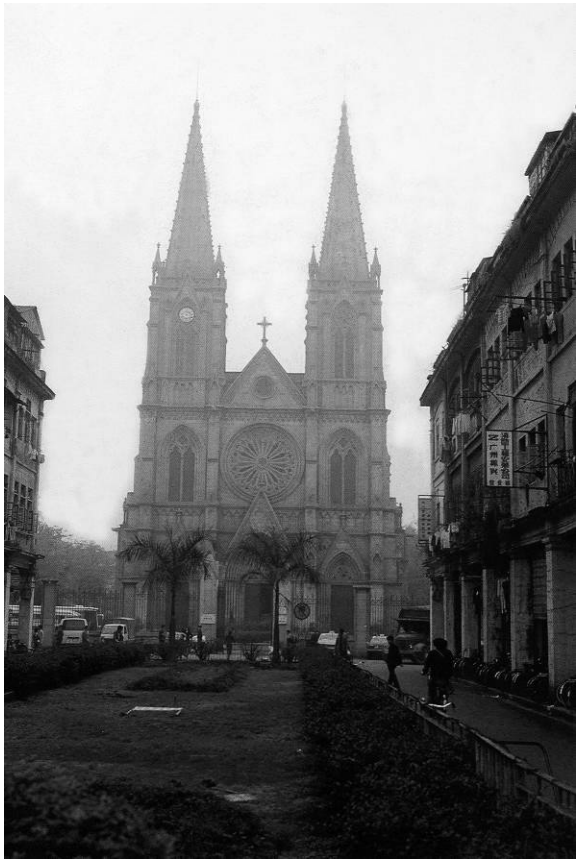

Figure 1-10 Sacred Heart Cathedral, Guangzhou, 1863-1888

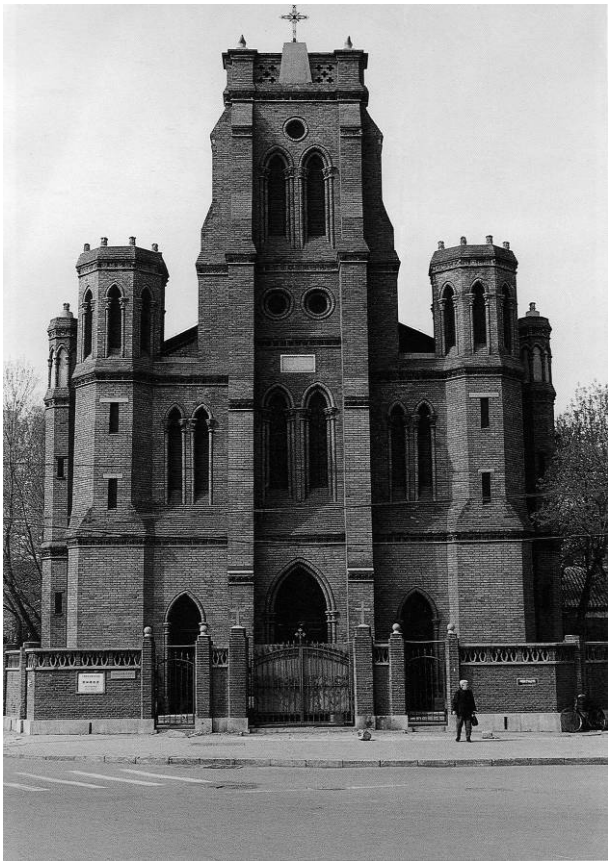

Figure 1-11 Wan Hai Lou Church, Tianjin, 1869, rebuilt in 1903

A similar situation existed for business buildings. Around the 1890s, western capitalist countries entered an era of imperialism, and China became one of their destinations of capital output, in addition to a captive market.[8] The Treaty of Shimonoseki, signed after the Chinese-Japanese War from 1894 to 1895, forced the Qing Empire to rescind the ban on machine imports and allow foreigners to set up factories in China. A number of foreign-owned enterprises were consequently established and held monopolies in many industrial fields. At the same time, foreign financial

[7] The Boxer Rebellion was an uprising against Western commercial and political influence in China during the final years of the 19th century. By August of 1900, over 230 foreigners, thousands of Chinese Christians, an unknown numbers of rebels, their sympathizers, and other Chinese had been killed in the revolt and its suppression.

[8] *Zhongguo jianzhu shi (di wu ban)*, P.302

capital infiltrated into China. From 1895 to 1913, thirteen foreign banks and 85 affiliated agencies were newly established. Before 1895, there had been eight and sixteen, respectively. From 1895 onwards, foreign powers also led a rush for the right to build railways in China. Until 1911, nearly 9,000 kilometers of railways had direct or indirect investment by westerners, of a total 9,618 kilometers of track.

Meanwhile, the number of trade ports drastically increased. After 1895, 53 more ports prescribed by various treaties were established, and the Qing Empire opened 35 more by its own volition. The territories of the foreign settlements were enlarged as well, and in old treaty ports such as Shanghai, Tianjin, and Hankou, more foreign settlements were newly constructed. Moreover, some important seaports such as Jiaozhou Bay, Guangzhou Bay, Lüda, Kowloon, and Weihai were leased to foreign powers, while Qingdao, Dalian, Harbin, Changchun became occupied by Germany, Russia, and Japan.[9] These leased territories and colonies became the important bases for importing western architecture into China.

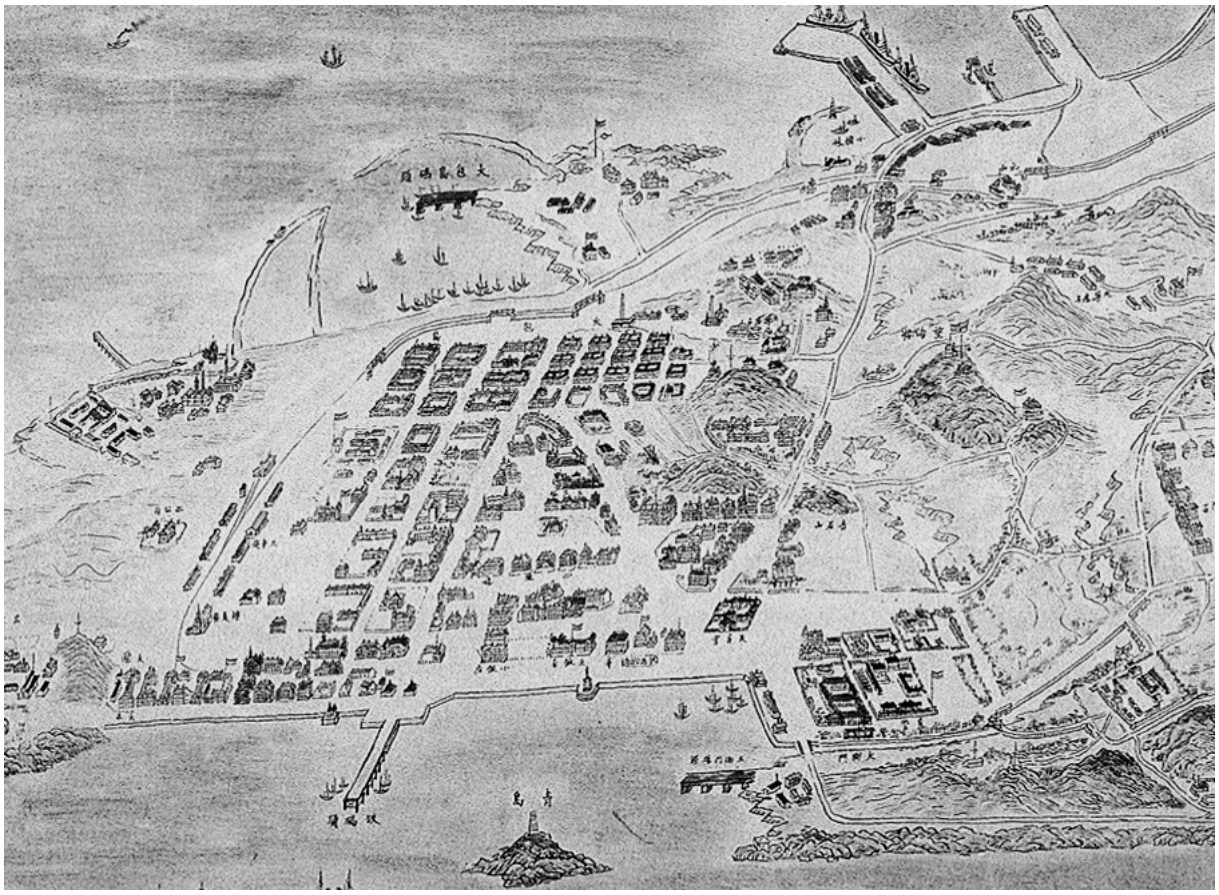

Figure 1-12　A painting of Qingdao

[9] Ibid., PP. 302-303

In these areas, architectural activity occurred with increasing frequency, and the foreign immigrants formed their own communities and built houses in accordance with their own architectural designs. For example, Qingdao became a city full of German-style buildings, and Harbin was imbued with a Russian style. In Shanghai, there were significant differences between the buildings in the International Settlement and those in the French Concession. In Tianjin, the difference between the British, Japanese and Russian settlements was perceptible. Even within one settlement, buildings built by settlers from different countries exhibited different characteristics and designs. At the same time, various architectural types such as industrial buildings, banks, and railway stations featured the styles of different foreign countries. As the buildings got larger and more complex, the design work was gradually transferred from construction firms to professional architects. This resulted in a marked improvement of the quality of architectural design.

Figure 1-13 A street in Harbin

From the late 19th century to the 1920s, Neo-Classicism and Eclecticism prevailed in western countries. Different styles were applied to corresponding types of buildings, such as Gothic style to churches, Classical style to banks and office buildings, Renaissance style to clubs, Baroque style to theaters, and Spanish style to houses. In some cases, various architectural

elements and components were mixed together, presenting an eclectic appearance. The same approaches could be seen in the architecture imported into China during this period. For example, the early Hong Kong and Shanghai Bank Corporation edifice in Shanghai was built in 1877 in a Renaissance style; the Russo-Chinese Bank in Shanghai (1899-1902) was built in a French Classical style; the late Hong Kong and Shanghai Bank Corporation building in Shanghai, built in 1923, and the Tianjin branch of the same bank, built in 1924, were both in a Neo-Classical style; and the Quanye Bazaar in Tianjin, built in 1928, was a typical example of eclectic style architecture. Although Neo-Classicism and Eclecticism were gradually replaced by Art-Deco and International Style in some large cities such as Shanghai, Nanjing, and Tianjin, from the 1930s, they still prevailed in most cities in China. Because the diffusion and development of western Neo-Classical and eclectic architecture in China was essentially synchronized with the course of modernization of Chinese cities, these styles formed the most prominent characteristics of the cities' centers and business districts, and they dropped a far-reaching impact on the development of China's architecture and cities.[10]

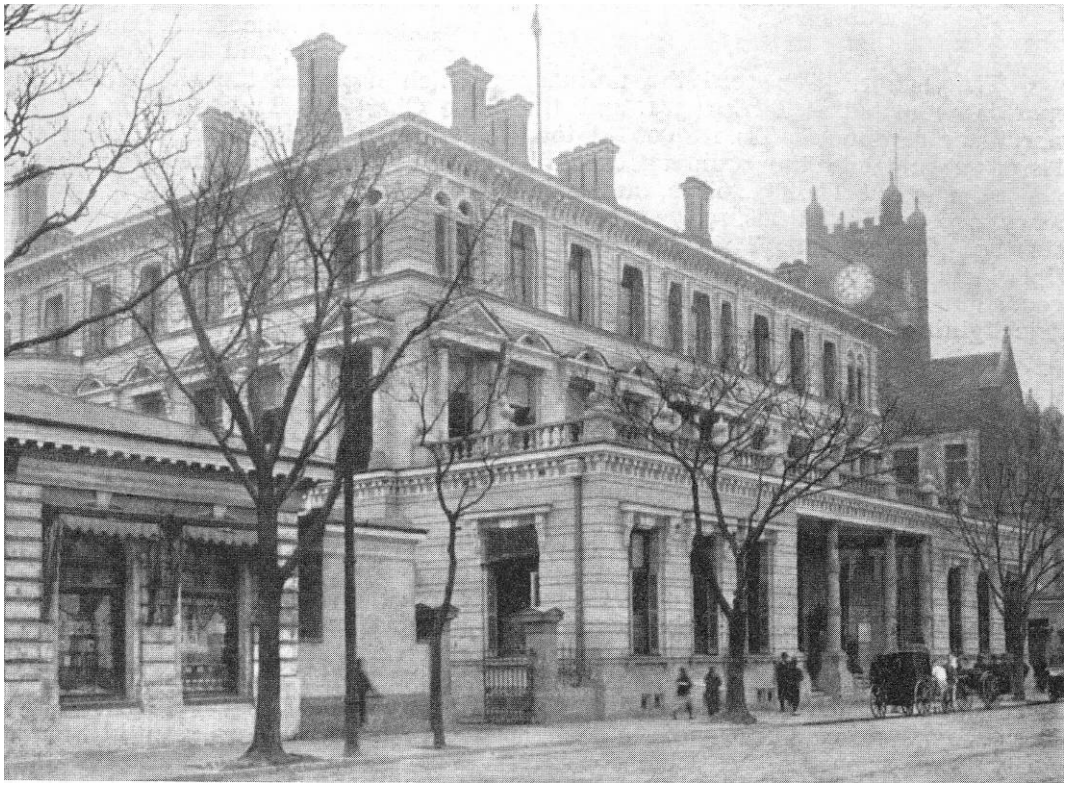

Figure 1-14 The early edifice of Hong Kong and Shanghai Bank Corp., Shanghai, 1873-1874

[10] Ibid., P.372

Figure 1-15 Quanye Bazaar, Tianjin, 1928, Hunke & Muller

Figure 1-16 Russo-Chinese Bank, Shanghai, 1899-1902, H. Becker

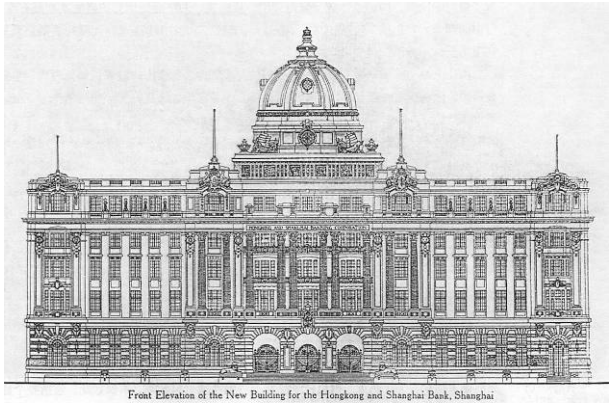

Figure 1-17 Hong Kong and Shanghai Bank Corp., Shanghai, 1923, G.L.Wilson

1.2 The Tendency of Westernization of Chinese-Owned Buildings

After the Opium War and the Second Opium War, some realistic officials in Qing Empire realized the inevitability of the “west wind.” These officials launched the Westernization Movement from the 1860s to the 1890s, undertaking a series of reforms in military, politics, economy, education and diplomacy. The movement began with “self-strengthening,” in which an effort was made to establish a modern military by purchasing western firearms and appointing foreign drill instructors to train new troops. The Qing Empire also founded several arms factories to produce firearms and battleships. As the movement developed, it focused on “richness-seeking,” in which a number of advanced industrial enterprises were built countrywide.

Although the Westernization Movement alleged traditional Chinese Confucian culture must remain at the foreground when learning western technologies, it brought vast development in economy, technology, culture, and education. More importantly, the closed state of China was broken through from the inside.

The movement also witnessed a transformation of Chinese architecture. During "self-strengthening," old Chinese buildings were employed mostly for primary industrial plants. For example, the Cannon Works in Shanghai set up in 1862 in an old temple. When it moved to Suzhou one year later, the plants were placed in the old buildings of a larger-scale mansion that had been owned by a former monarch of the Taiping Rebellion.[11]

The second example is the Jiangnan Arsenal, built in southern Shanghai in 1867. It occupied more than 600 Chinese acres[12] of land and consisted of sixteen factories respectively dedicated to machinery manufacturing, woodworking, shipbuilding, boiler construction, arms manufacturing, and so forth in nearly 2,000 plant buildings. Although the overall layout of the arsenal was in imitation of western factories, the most advanced factories in China, and even East Asia, at that time were still housed in traditional Chinese buildings.[13] Nevertheless, necessary alterations were required to adapt traditional Chinese architecture to these unprecedented functions.

The third example is Tianjin Machinery Works, established in 1867. Figure 1-19 is a photo taken in the 1870s, showing its hybrid nature: the administrative section looks like a traditional Chinese *yamun*, and the plant section quite similar to a western factory – due to the chimneys and dormers in the silhouette.[14] In the later period of the Westernization Movement, western styles began to be utilized for some Chinese official buildings. For example, the second Maritime Customs House in Shanghai, built from 1891 to 1893, was in a Gothic style typically employed for English town halls.

[11] The Taiping Rebellion (1850–64) was a large-scale rebellion against the Qing dynasty and the presence of foreigners in China. The rebellion ravaged 17 provinces, took approximately 20 million lives, and left the Qing government unable to regain an effective hold over the country.
[12] 1 hectare = 15 Chinese acres
[13] *Zhongguo jianzhu shi (di wu ban)* P. 343; Wu Jiang , *Shanghai bai nian jianzhu shi* 1840-1949, p. 27
[14] Li Haiqing, *Zhongguo Jianzhu xiandai zhuanxing*, P. 51. *Yamun* 衙门 means government office in feudal China.

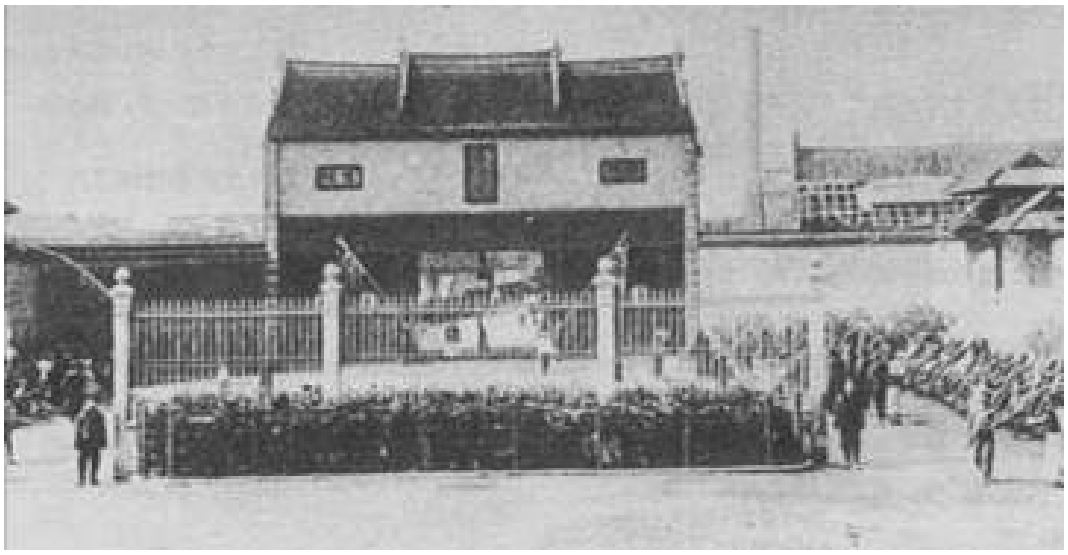

Figure 1-18 The entrance of Jiangnan Arsenal, Shanghai

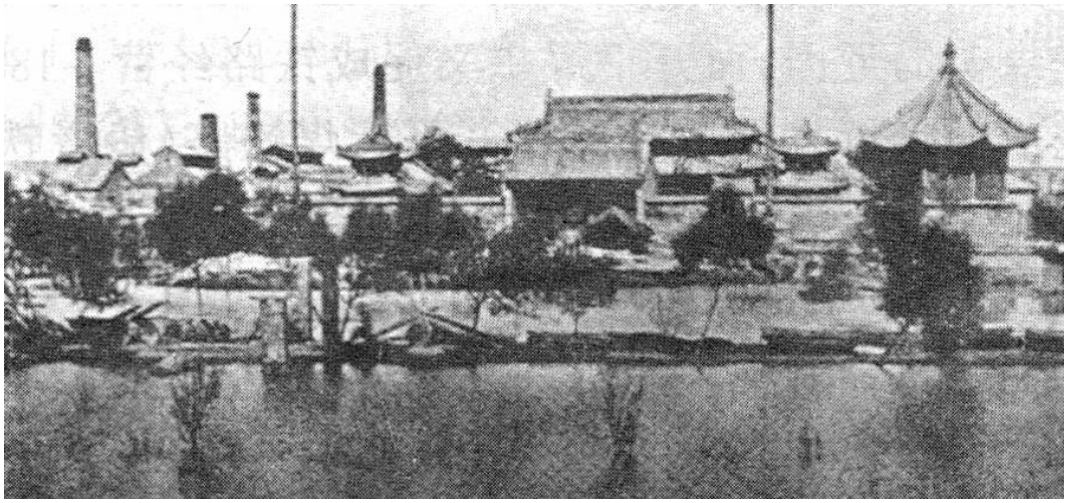

Figure 1-19 Tianjin Machinery Works

Figure 1-20 The First Maritime Customs House, Shanghai, 1857

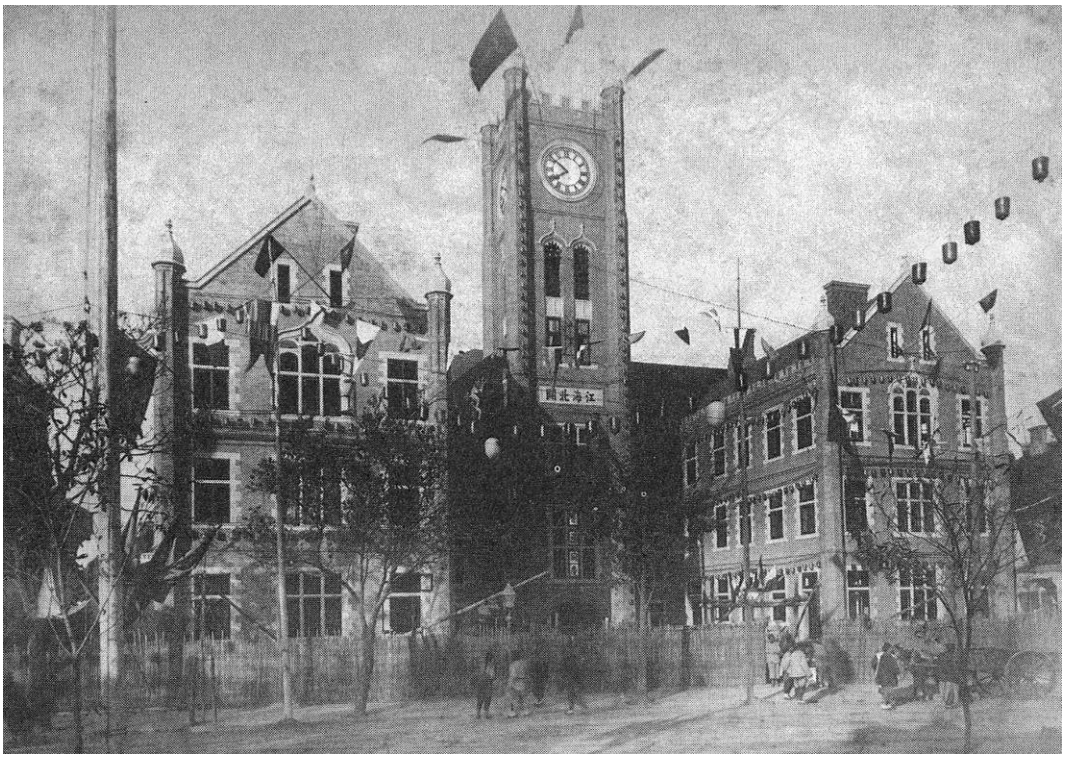

Figure 1-21 The second Maritime Customs House, Shanghai, 1891-1893, J. M. Cory

As a result of the Westernization Movement, foreign architects and engineers began to take important roles in the designing and the construction of some of the industries established. For example, E. P. Johnson, originally from England, was commissioned for the design of Hubei Iron Smeltery in Hanyang (now Wuhan), and H. Hobson was named chief superintendent of construction. Hobson was working together with a Chinese chief supervisor, Wang Yanling, a local county magistrate.[15]

In the period after the 1870s, especially after the fiasco of the Chinese-Japanese War in 1894, learning from the western countries became common among Chinese elites. Many private industries emerged and developed drastically during this time, fastening on the branches of textile, grain-processing, and mining activities. The buildings for these activities adopted mainly Western architectural styles and construction systems.[16]

In order to avoid collapse, the Qing Empire began to launch political reform in its last decade. A special institution for the reform was established in April

[15] Ibid. PP. 52-53
[16] Ibid. P. 53

of 1901, and subsequently promulgated a series of decrees. The reform affected most aspects of the dynastic system, including its bureaucracy, military, and education. It abolished the old-line imperial examination system for selecting officials and at the same time, encouraged investment in industry and commerce. The transformation of bureaucratic system gave birth to many new governmental institutions, and lead to new demands for official buildings. The change in educational systems resulted in the establishment of many official-run colleges. From 1904, an appeal for reforming the government to a constitutional monarchy system was raised by scholars and officials, leading to the decree of Dynasty Constitutional Preparations, disseminated by the Qing Empire in 1906. Consequently, provincial parliaments were set up and the buildings housing them were erected in quick succession, and in 1910, the National Parliament in Beijing, the building that served as the symbol of constitutional China, was planned to be built. Such building activities following the political reform lasted until the first years of the Republic of China, founded in 1911 when the Qing dynasty was overthrown by a revolution.

At the beginning of the 20th century, western-style architecture became very popular in buildings with official investment or supervision, while some of the buildings still took the form of the veranda houses. Among the western-style buildings, the Army Headquarters, built in 1906-1907, was the most prominent and largest official building of this time. Designed by Shen Qi, an official at Army Headquarters, and constructed by Chinese construction firms, it shows influence from western architecture in various aspects, including functional arrangement, spatial organization, form making, and structural design. It represents the highest level of design achieved by early Chinese architects and the highest level of technical achievement of Chinese construction industry at that time.[17] Jiangsu Parliament is a similar case, designed by Chinese architect Sun Zhixia in the form of a French Renaissance palace. Its design imitated a normal western parliament building, and established a central auditorium surrounded by two-story offices. The proportion and composition of its façade followed a western style, and its interior spaces were decorated with western embellishments as well as some traditional Chinese decorations.[18]

[17] *Ershi shiji Zhongguo jianzh*, P. 24
[18] See, Ibid. P.32

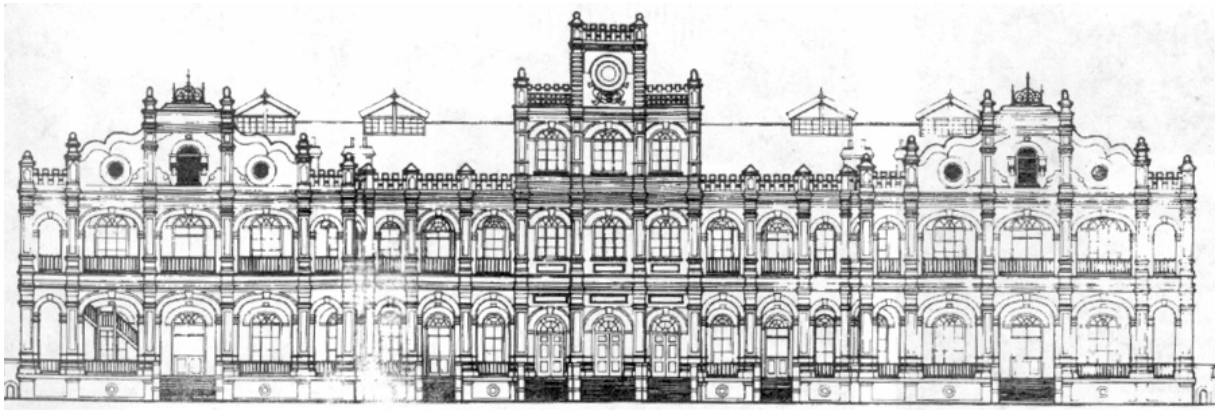

Figure 1-22 Army Headquarters, Beijing, 1906-1907, Shen Qi

Figure 1-23 Jiangsu Parliament, Nanjing, 1909, Sun Zhixia

Some western architects were very active in designing the official buildings. For example, German architect Curt Rothkegel designed the unrealized national parliament building in Beijing, which considered the high point of European influence on Chinese architecture. In the building, which had a purely European character, the seating order was identical to that in Berlin Reichstag, but the Chinese version was nearly twice size of the Berlin parliament.[19]

[19] See, Warner Hamburg, *Deutsche Architektur in China,* P. 18

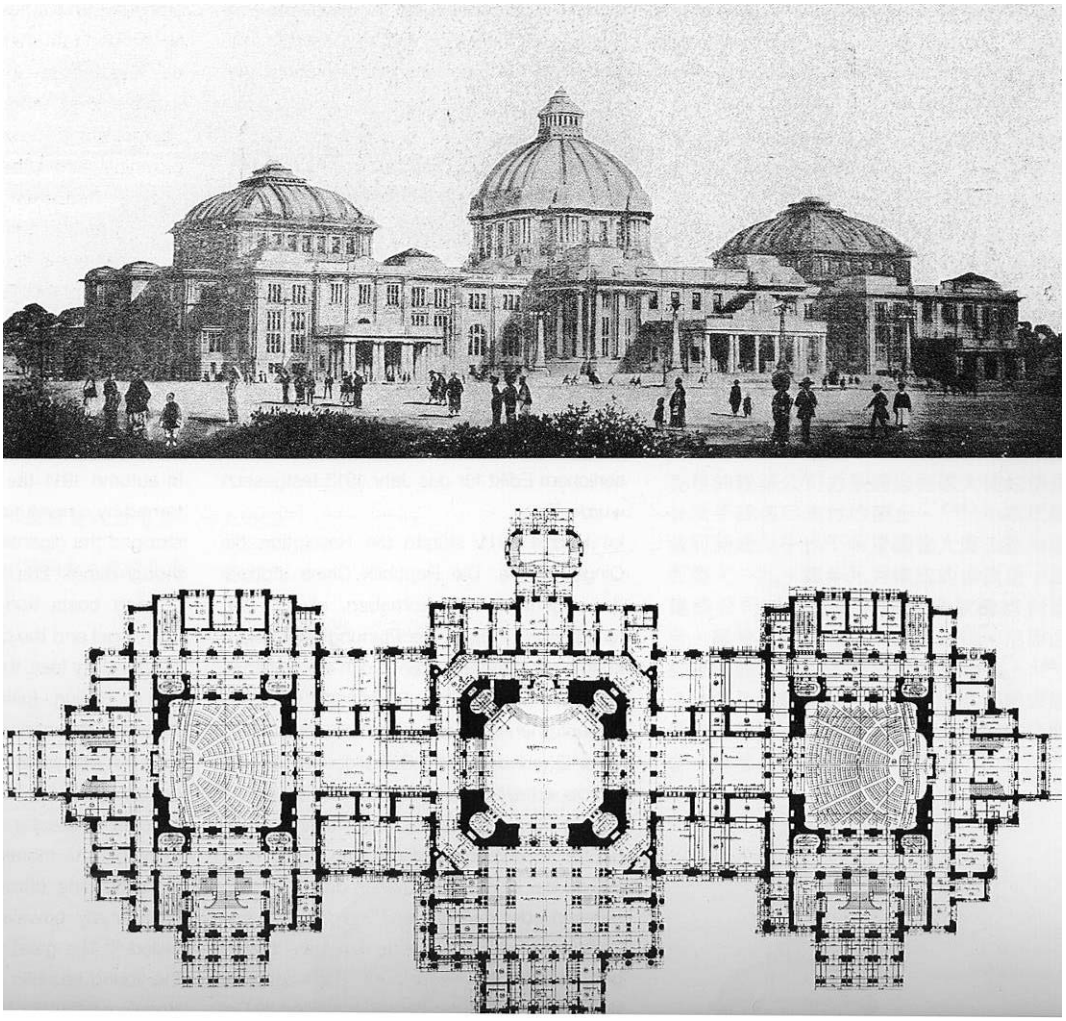

Figure 1-24 National parliament, Beijing, 1910, unrealized, C. Rothkegel

Foreign architects were also active on most campuses of the state-run schools and colleges. The Imperial University of Peking (the predecessor of Peking University), founded in 1898 after the Chinese-Japanese War, was the earliest state-run modern university in China. It was destroyed in the 1900 War incurred by the Boxer Rebellion and rebuilt in 1902. Thereafter, a European character began to be gradually featured on its campus. In 1909, Japanese architect Mamizu Hideo was commissioned for the design for the new campus of the university. Figure 1-25 shows the building of the Department of Confucianism, the finest edifice on the campus. Its late-Classicist architecture reflected British influence on Japanese architects at that time.[20] Another example can be found in the new classroom building of Beiyang University in Tianjin. Built in 1903, it was another early China's educational building constructed in a European style. Nanyang Public School in Shanghai, founded in 1896, was an early governmental school in China, designed by the president of the school, American Jesuit J. C.

[20] *Ershi shiji Zhongguo jianzhu*, P. 39

Ferguson. Before Ferguson laid out the campus, he took a special trip in Europe and investigated several universities. As a result, Nanyang Public School developed in a very similar way to a western university.[21]

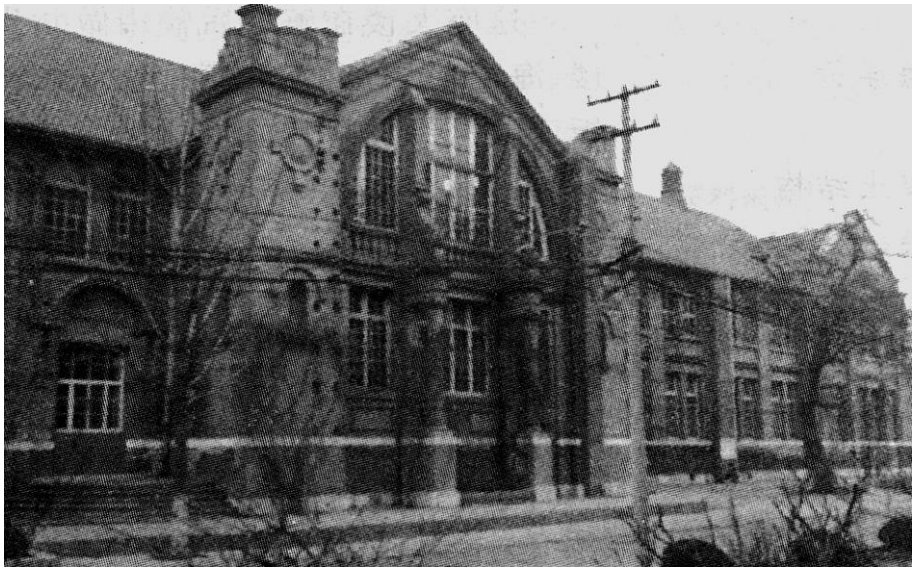

Figure 1-25 Department of Confucianism at Imperial University of Peking, 1909-1910, Mamizu Hideo

Figure 1-26 The Library at Nanyang Public School, 1896-1898, J. C. Ferguson

[21] Yang Bingde & Cai Meng, *Zhongguo jindai jianzhu shihua*, P.165

During 1914 to 1918, when the western powers concentrated on the First World War, Chinese national capitalists found the opportunity to quickly develop. The successful industrialists began to construct businesses such as banks and department stores – most of these buildings in a European style. The most representative examples include the Bank of China in Wuhu, the Sincere Department Store in Shanghai, the Chamber of Commerce in Nantong, the National Commercial Bank in Hangzhou, and many others.

Figure 1-27 Bank of China. Wuhu, 1917, Liu Shiying

Figure 1-28 The four largest Chinese-founded department stores at the end of the 1930s, the right building with a tower atop is Sincere Departmentt Store.

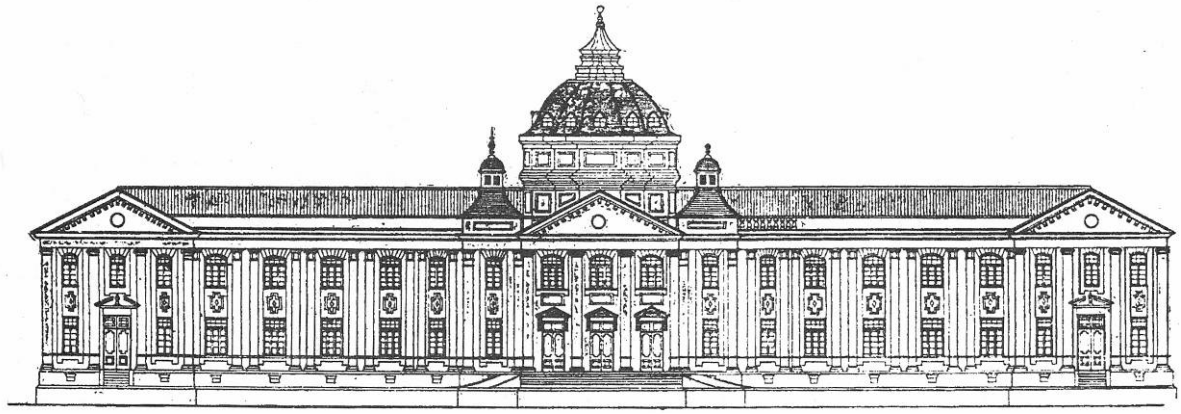

Figure 1-29 The Chamber of Commerce, Nantong 1920, Sun Zhixia

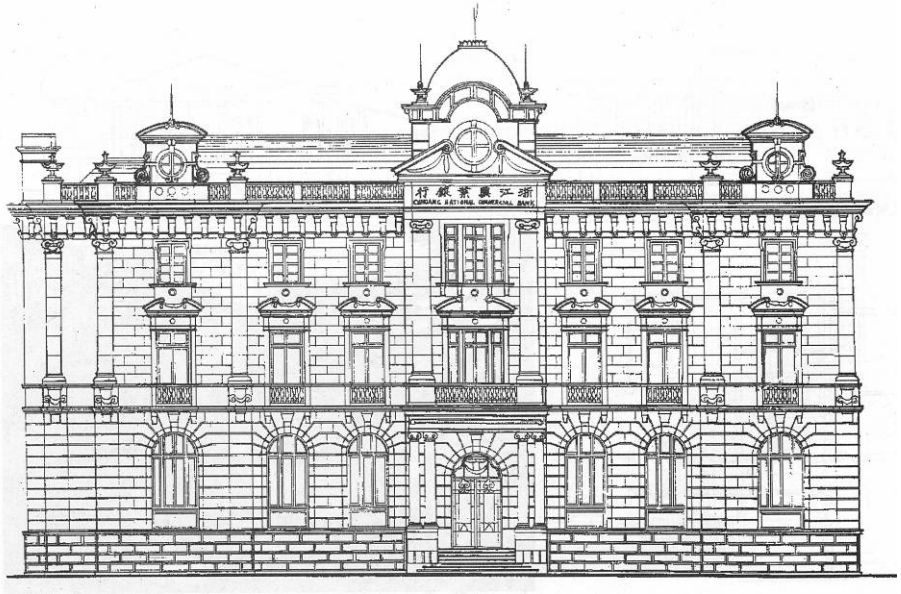

Figure 1-30 National Commercial Bank, Hangzhou, 1921, Shen Liyuan

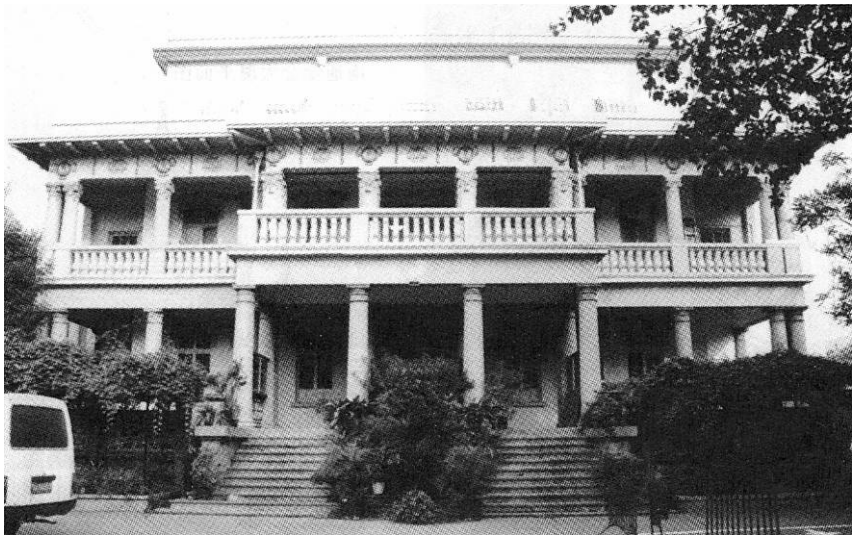

Figure 1-31 Duan Qirui's House, Tianjin, 1920

The tendency towards westernization was also reflected in vernacular buildings. Besides vernacular house design that incorporated western architectural embellishments and components, several new housing types emerged. The most famous one is *Shikumen* ("stone gate") housing that appeared in Shanghai from the 1870s to the 1910s. This housing type evolved from timber row bunkhouses that had been large constructed in the British Settlement during the 1850s and 60s, when many Chinese people crowded in to avoid the chaos caused by the Xiaodao Hui Rebellion and the Taiping Rebellion. In order to avoid fires, the original timber row bunkhouses developed into the brick and timber *Shikumen* houses, which combined arrangement of European row houses and plan of traditional Chinese courtyard houses into the house plan. After the Revolution of 1911, this housing type further evolved and the house plans became smaller to adapt to higher land prices and smaller household sizes.[22] *Shikumen* houses were mainly constructed in Shanghai by real estate investors, who then brought this housing type to other treaty ports such as Wuhan and Tianjin, as well as some cities near Shanghai.

In northern Chinese cities, such as Qindao, Shenyang, Changchun, and Harbin, a new type of big housing compound was developed. One of such compounds usually assembled a number of families in two- to three-story veranda houses surrounding a large courtyard. This layout contrasted with the traditional way of housing construction, which accommodated each family in an individual house. In addition, the compounds' façades normally imitated European architectural composition, while both western and Chinese decorations were applied in interiors, presenting a thoroughly hybrid character. In some cities in southern China, such as Guangzhou and Xiamen, a new kind of row house emerged. Corresponding to the high density of population in the urban areas, houses in these cities were constructed in the way that each house was very narrow in width but long in depth. Because the width was so narrow that it could only arrange rooms one by one along the depth, the space structure was similar to a bamboo tube and so that, this type got the appellation "bamboo tube house." In shopping areas, "bamboo tube house" was further developed into a new housing type, which accommodated commerce on the ground floors and residence on the upper floors. Such buildings normally protruded upper floors to shelter the ground below from rain, and some even to overhang pedestrians to become the so-called "riding houses."

[22] See *Zhongguo jianzhu shi (di wu ban)*, PP. 330-331 for the developing process of the Shikumen Houses

The western influence on vernacular houses was evident as well in some villages in south China, where many returned Chinese emigrants settled after working or running business in the western countries or western colonies. These people came back with experiences and memories of living abroad, and their newly built houses were typically in a hybrid style, combining a traditional Chinese house plan with a western or a combined western and Chinese design. This phenomenon was remarkable in Kaiping, a county in Guandong Province, where many blockhouses with a strong exotic style were constructed according to the remembered design of western buildings from firsthand experience or even, from post cards of western cities.

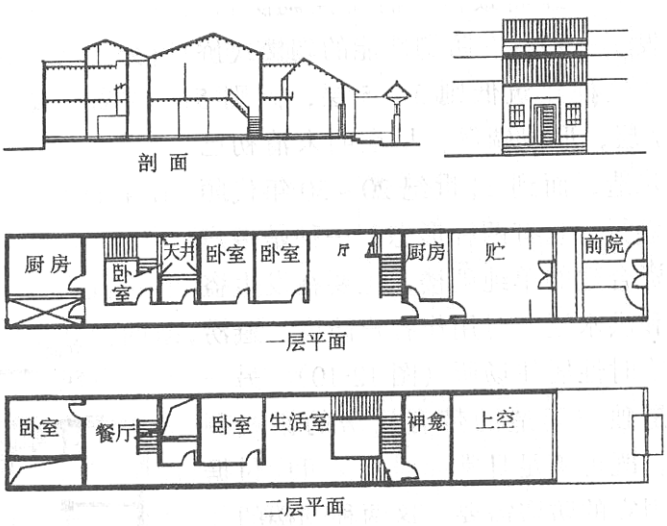

Figure 1-32 A typical "bamboo tube house"

Figure 1-33 A "riding houses" in south China

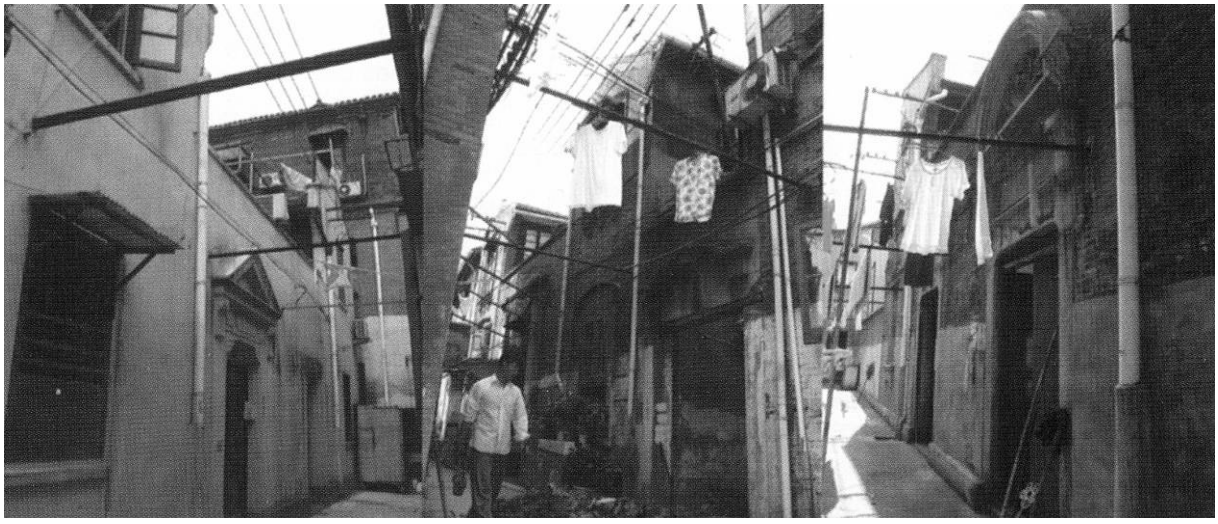

Figure 1-34 Shikumen houses in Shanghai

Figure 1-35 Houses in a village in Kaiping, Guangdong Prov.

1.3 The "Chinese Renaissance"

Although western-style buildings comprised a great deal of new construction in China, a new renaissance for Chinese architecture came forth, with the objective of transplanting the forms of traditional Chinese architecture to new buildings. This approach was first initiated in missionary architecture. After the Opium War, Christianity made new inroads into China. However, since the ingress this time was concomitant with bloody wars and plundering, the missionaries often encountered resistance of Chinese people, and sometimes even bloody conflicts known as "Missionary Cases." In 1900, the Boxer Rebellion erupted as a mass anti-church movement. During the rebellion, many churches were burned and a number of priests were killed, and missionary activities were severely frustrated. After the Boxer Rebellion, the Church decided to adjust its manner of missionary work and find inspiration from early priests such as Matteo Ricci, whose mission had been successful in China in the 17th century. A movement towards indigenization was launched at the beginning of the 20th century, and wearing Chinese clothes as well as using Chinese names in order to cater to Chinese people became very popular among the priests. The construction of a few churches also followed this tendency. One such example is the Beijing Anglican Church, which utilized a double Latin cross plan in a gray brick building, presenting a strong image of characteristic northern Chinese architecture. In general, however, most churches were still constructed in a western classical style.

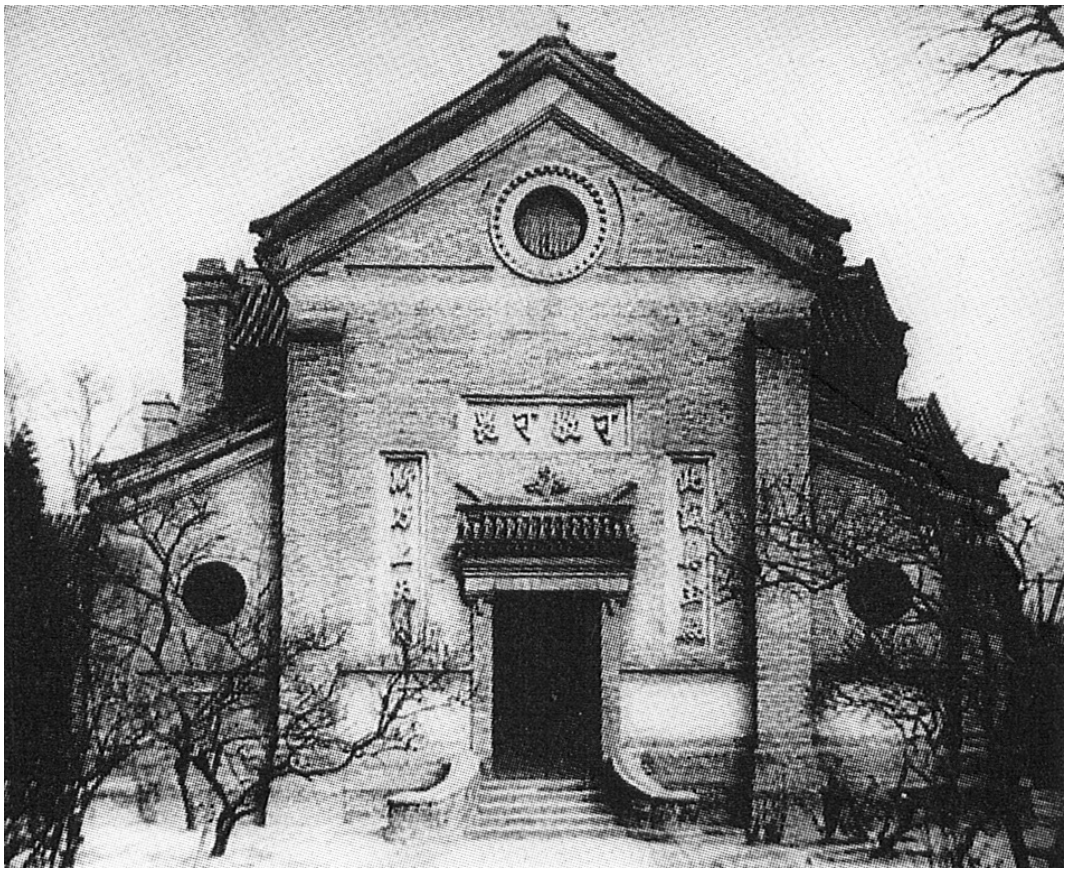

Figure 1-36 Anglican Church, Beijing, 1907

It was on the campuses of missionary schools and colleges that Chinese-style buildings became increasingly popular. Early on, western priests usually set up primary schools during their missions in China, and some of these schools were further developed as missionary colleges. At the beginning of the 20th century, the Qing Empire launched a reform, in which the old-line imperial examination system for selecting officials was abolished and many new schools were subsequently set up. Students began to crowd in new schools, and simultaneously, the number of the students who entered missionary schools increased enormously. This situation promoted the rapid growth of missionary schools and colleges in China from the beginning of the 20th century to the 1920s. Among these colleges, more than ten featured Chinese-style architecture, and played important roles in the growth of the "Chinese renaissance."

St John's University in Shanghai, founded by the American Episcopal Church, took the lead in building in a Chinese renaissance architectural style. Around 1900, a numbers of buildings of Chinese character were erected on its campus. The Schereschewsky Hall, erected in 1894, was the earliest

recorded educational building that mixed a Chinese style with western.[23] Otherwise keeping with western architectural conventions, this building was capped with a traditional Chinese roof, regarded as the most obvious Chinese architectural component of in the eyes of the western architects and priests. The same approach was adopted for subsequent buildings on the university's campus.

Figure 1-37 Schereschewsky Hall at St John's University, Shanghai, 1894

The campus of West China Union University in Chengdu, designed by British architect Fred Rowntree in 1912 and superintended by another British architect, Raymond Ricker, was another campus where the mixture of traditional Chinese double-eaved roofs and western architectural composition formed the basic character of the buildings. In Nanjing, the University of Nanking, designed by American firm Perkins Fellows & Hamilton Architects, was built around the same time when West China Union University was constructed. The early buildings on the campus included the East Building (Science Building), constructed in 1912; the North Building (Administration Building), in 1919; the West Building (West Science Building), in 1925; and a chapel around 1920, as well as several dormitory buildings. Rather than be treated as merely decoration on western buildings, the Chinese roofs atop the buildings at the University of Nanking were handled more delicately, giving the buildings more genuine

[23] Yang Bingde & Cai Meng, *Zhongguo jindai jianzhu shihua*, P. 146

characteristics of northern Chinese palaces. This tactic anticipated the tendency of missionary educational buildings to imitate northern Chinese palaces – a tactic employed by Shattuck & Hussy Architects at Peking Union Medical College constructed in 1921-25, and eloquently executed by Henry Murphy and Adelbert Gresnight, respectively, at Yenching University and the Catholic University of Peking.[24]

Figure 1-38 West China Union University, Chengdu, 1912-, F. Rowntree and R. Ricker

Figure 1-39 East Building and North Building at University of Nanking, Nanjing, 1912-1925, Perkins Fellows & Hamilton Architects

[24] *Zhongguo jianzhu shi (di wu ban).*, P. 375

Figure 1-40 "B" building at Peking Union Medical College, Beijing, 1921-25, Shattuck & Hussy Architects

Among foreign architects, American Henry K. Murphy was the most famous and influential in the "Chinese renaissance." Five years after his graduation from Yale University, Murphy came to China in 1914 for a project in Changsha commissioned by Yale-in-China (now known as the Yale-China Association). In this project, he commenced his attempts to design "adaptive Chinese architecture," probably using either photographs supplied by Yale or those of Beijing recently published by Japanese photographers for reference.[25] In June of the same year, Murphy went to Beijing after being commissioned to plan Tsinghua University and to

[25] See Cody, J. W., *Building in China: Henry K. Murphy's "Adaptive Architecture" 1914-1935*, P. 40

complete some other architectural design jobs – a trip that gave him the opportunity to visit some ancient Chinese buildings. During 1918 to 1920, Murphy was commissioned to design Fukien Christian University in Fuzhou, Ginling Girls' College in Nanjing, and Yenching University in Beijing. The latter two long-term jobs became his "most significant campus commissions and his two greatest triumphs," where the character of classical Chinese architecture was handled incisively and elegantly. [26]

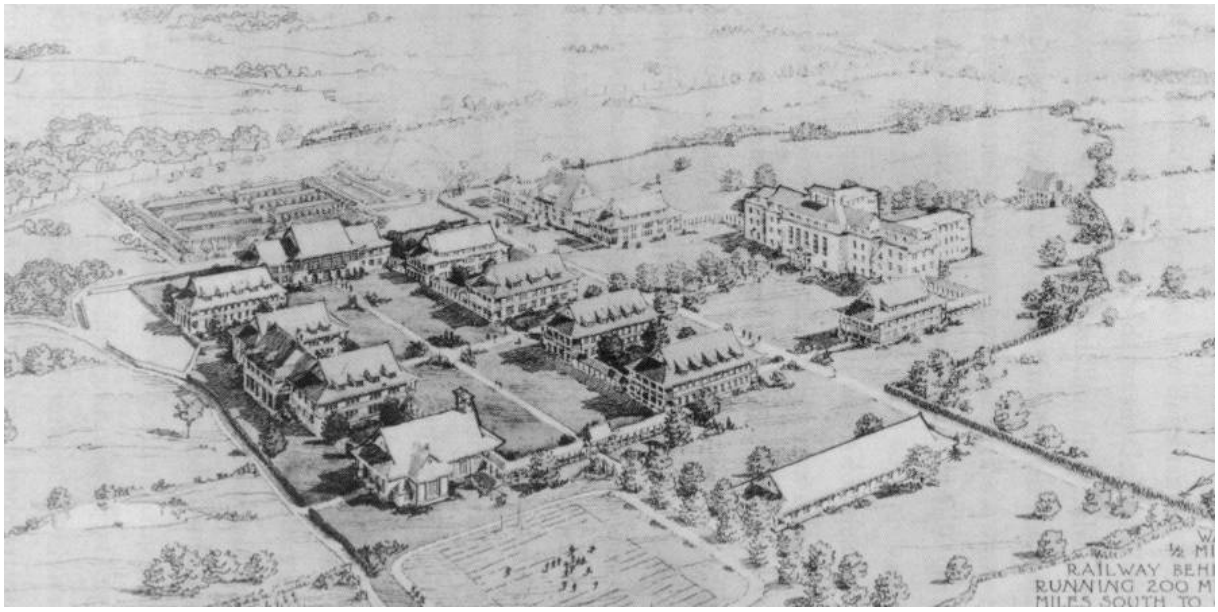

Figure 1-41 Plan for Yale-in-China, Changsha, 1913, H.K. Murphy

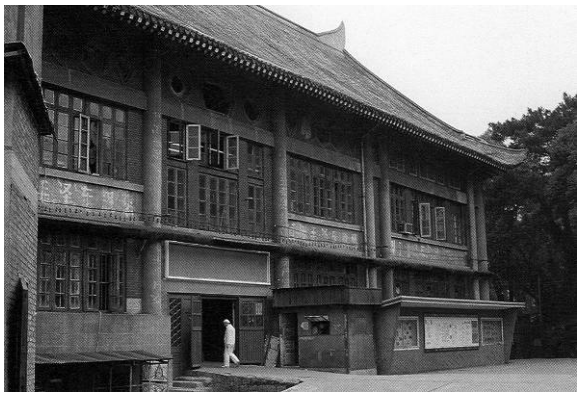

Figure 1-42 A Classroom Building at Fukien Christian University, Fuzhou, H.K. Murph

Figure 1-43 Ginling Girls' College, Nanjing, 1919-1924, H.K. Murph

[26] Ibid, P. 108

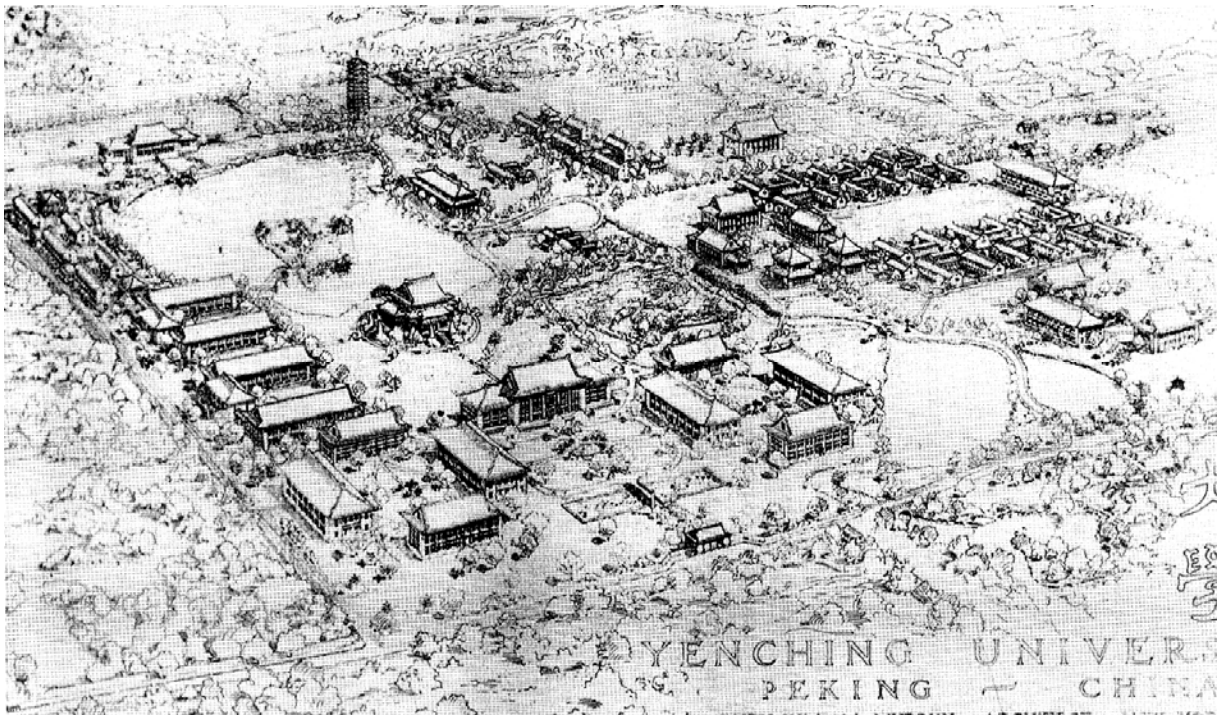

Figure 1-44 Perspective view of Yenching University, Beijing, 1926, H.K. Murphy

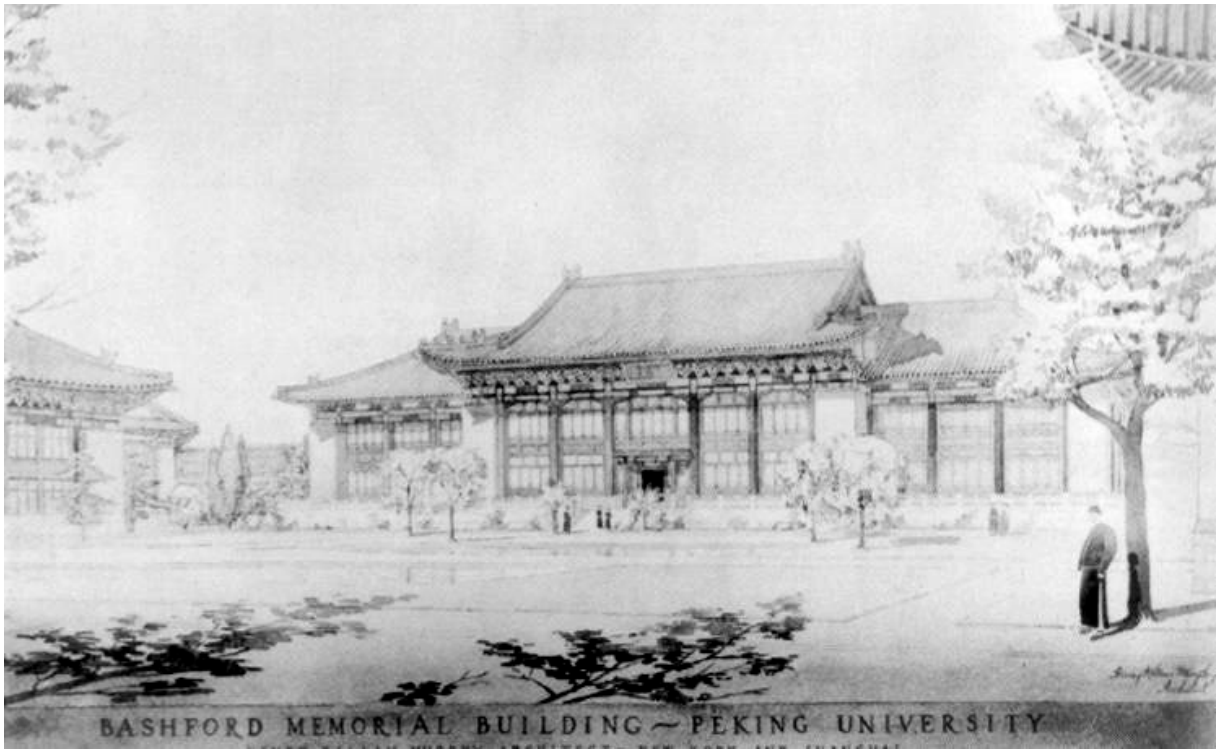

Figure 1-45 Basford Memorial Building, Yenching University, Beijing, 1926, H.K. Murphy

In 1927, the Nanjing Nationalist Government, led by Jiang Jieshi (Chiang Kai-shek) was established, and China entered a relatively peaceful, unified, and stable decade. The Nanjing Government vigorously promoted "traditional Chinese form," catalyzing an upsurge of pursuing national form in architectural design. Murphy was hired in October 1928 as the chief architectural adviser to the National Capital Reconstruction Planning Committee of the Nationalist Government, and he began to promote Chinese renaissance in new governmental buildings. Murphy's job was to build a Chinese capital out of the ancient city of Nanjing, while his dream was to make it Chinese.[27] His primary work was to help in making the Capital Plan of Nanjing and besides, he focused on the retention of the city wall and the design for the Government Center. He also guided the drafting of appropriately styled commercial districts. His realized projects included the Memorial Hall and the Memorial Tower for Revolutionary Martyrs, both located at Linggusi Temple in eastern Nanjing and of a genuine Chinese character.

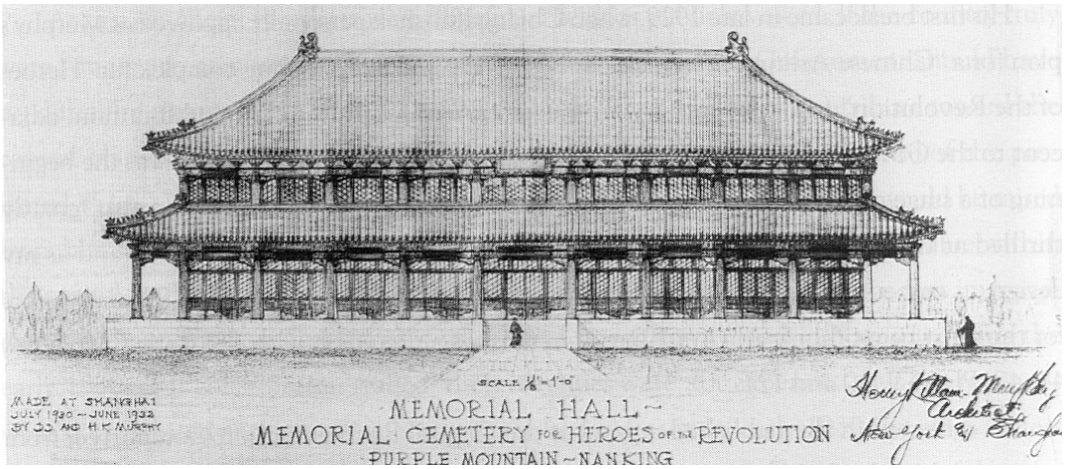

Figure 1-46 Memorial Hall for Revolutionary Martyrs, Nanjing, 1931-1933, H.K. Murphy

Murphy's quest for an adaptation of Chinese architecture was supported by the Nationalist Government and echoed by many Chinese architects, of whom several were either trained by Murphy or knew of his work. Those who worked for or with Murphy include Lü Yanzhi, Li Jinpei, Fan Wenzhao, Dong Dayou, Zhuang Jun, and Zhao Shen. Others, such as Liang Sicheng, Yang Tingbao, Tong Jun, Liu Dunzhen, Lin Keming, and Chen Zhi, were well aware of his work.[28] Following Murphy, these Chinese architects played an exceedingly important role in this trend.

[27] See Ibid., PP. 183-184
[28] Ibid., PP. 4-5

Figure 1-47 Sun Yat-sen's Mausoleum, Nanjing, 1925-1929, Lü Yanzhi

The competition to design Sun Yat-sen's Mausoleum in 1925 was a prologue of the upsurge of Chinese renaissance. The competition document prescribed traditional Chinese design must be applied while conventional timber-brick structure should be abandoned. Lü Yanzhi, who had worked for Murphy on the projects of Ginling Girls' College and Yenching University, won the first prize out of more than 40 proposals delivered by Chinese and foreign architects. The mausoleum was built during 1926 to 1929. In its plan, the architect introduced a French-style regular avenue to a typical layout of traditional Chinese royal mausoleums – a layout that controls a large area with several buildings along a central axis. Here, the relatively small and dispersive buildings were combined by a long path and long flights of footsteps to form a large scale whole, surrounded by a sheet of greenery. The memorial hall was the most important building of the mausoleum. Built with

concrete, its façade was mostly composed of traditional forms of Chinese architectural elements, including stone gate, stone arch, and grand roof, and the details were handled incisively. The other buildings, including a memorial arch, a mausoleum gate, and a tablet pavilion, were designed in a Qing style but simplified. Sun Yat-sen's Mausoleum was a milestone of China's architectural history, because it was recorded the first example that a Chinese architect won a nation-wide competition and solely took on design and planning for a large-scale monumental architecture. It was also an important jumping-off point, from which native Chinese architects began to play a major role in the exploration of Chinese renaissance architecture.[29]

Figure 1-48 Memorial Hall at Sun Yat-sen's Mausoleum

After the Sun Yat-sen's Mausoleum, a great deal of new buildings featured traditional Chinese style was built in China and resulted in the high tide of the "Chinese renaissance." Promoted by the Nationalist Government, such Chinese renaissance architecture prevailed during the 1920s and 30s, especially in the national capital Nanjing and the most important economic

[29] *Zhongguo jianzhu shi (di wu ban)*, P. 376

center Shanghai. In Nanjing, this batch of buildings included the Central Archives of the Nationalist Party, the Central Palaestra, the Central Hospital, Tan Yankai's Tomb, by Kwan,Chu and Yang Architects; the Ministry of Foreign Affairs, by Allied Architects; the National Grand Assembly Hall, by Xi Fuquan; the Scripture Hall at Sun Yat-sen's Mausoleum, by Lu Shusen; and the Central Museum in Nanjing, by Xu Jingzhi and Li Huibo.

In Shanghai, there were the Municipal Hall, the Shanghai Museum, Shanghai Library, Shanghai Palaestra, and Shanghai Gymnasium, by Dong Dayou; as well as the Bank of China, by Palmer & Turner Architects and Surveyors and Lu Qianshou. Other examples included the Sun Yat-sen Memorial Hall in Guangzhou by Lü Yanzhi and Li Jingpei and the second stage of Sun Yat-sen University in the same city by Lin Keming, as well as two buildings in Bejing – the Bank of Communications by Kwan,Chu and Yang Architects and the Jen-Li Company by Liang Sicheng and Lin Huiyin.

Figure 1-49 Sun Yat-sen Memorial Hall, Guangzhou, 1926-31, Lü Yanzhi and Li Jingpei

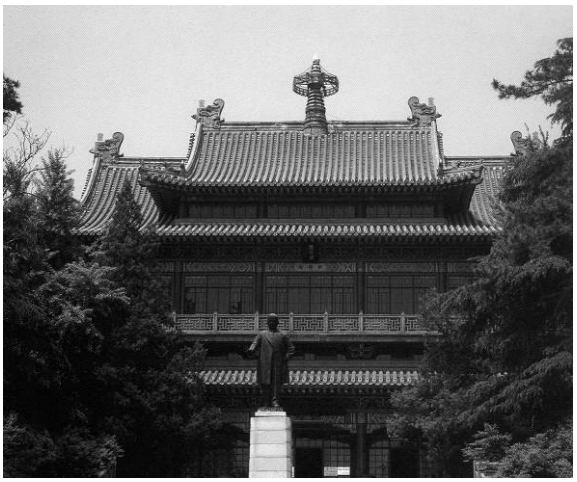

Figure 1-50 Scripture Hall at Sun Yat-sen's Mausoleum, Nanjing, 1935-36, Lu Shusen

Figure 1-51 Municipal Hall, Shanghai, 1931-33, Dong Dayou

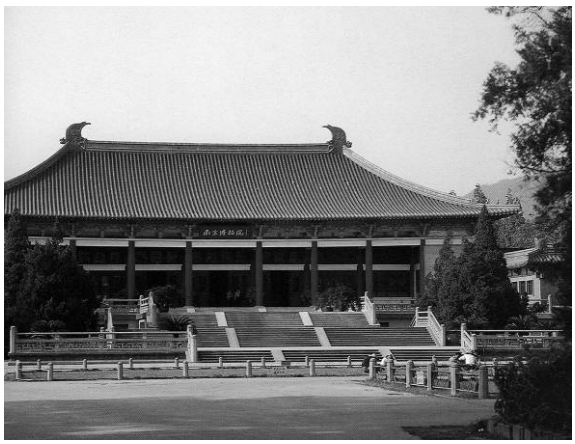

Figure 1-52 Central Museum, Nanjing 1935-50, Xu Jingzhi and Li Huibo

Figure 1-53 Shanghai Museum, 1933-35, Dong Dayou

Figure 1-54 Central Archives of the Nationalist Party, Nanjing, 1935, Kwan,Chu & Yang Architects

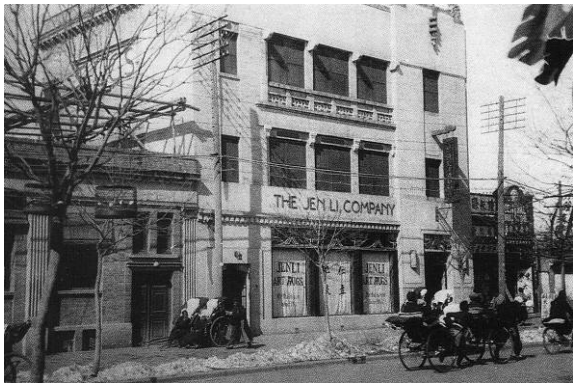

Figure 1-55 Jen-Li Company, Beijing, 1932 Liang Sicheng and Lin Huiyin

Figure 1-56 Shanghai Gymnasium, 1935, Dong Dayou

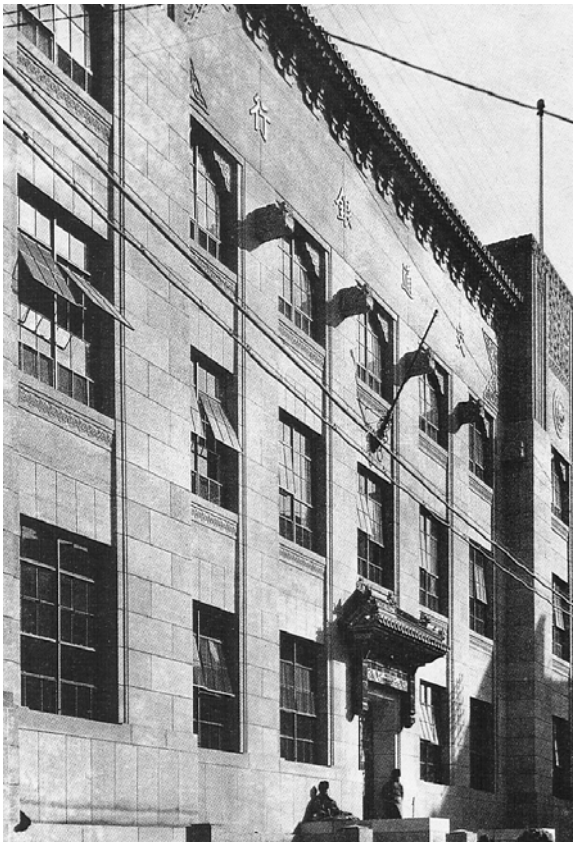

Figure 1-57 Bank Of Communications, Beijing, 1930-31, Kwan,Chu & Yang Architects

Figure 1-58 Shanghai Palaestra, 1935, Dong Dayou

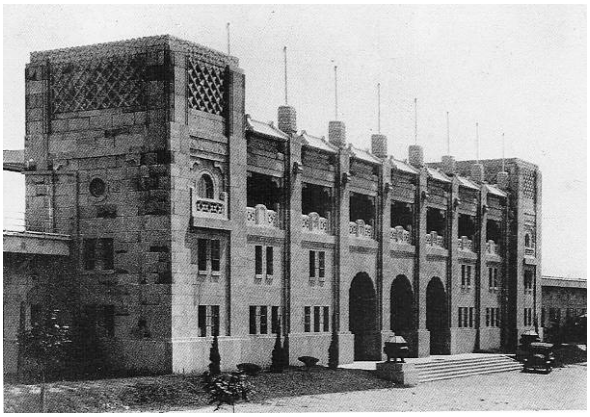

Figure 1-59 Central Palaestra, Nanjing 1931-33, Kwan,Chu & Yang Architects

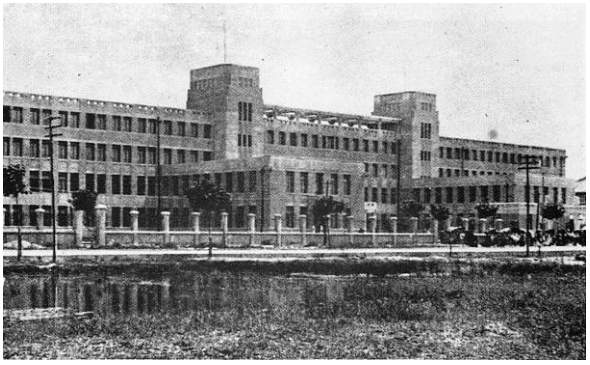

Figure 1-60 Central Hospital, Nanjing 1931-1933, Kwan,Chu & Yang Architects

Figure 1-61 Ministry of Foreign Affairs, Nanjing, 1932-35, Allied Architects

Figure 1-46 Bank of China, Shanghai, 1928-1937, Palmer & Turner Architects & Surveyors and Lu Qianshou

Among these Chinese renaissance buildings, distinctions between various approaches to a traditional Chinese style were observable. Accordingly, the renaissance buildings were classified into three types at that time.[30] The first type was called “palace style,” referring to the buildings fully in the form of classical Chinese grand architecture, from the proportions down to the details. The typical examples of this type included the Tan Yankai’s Tomb, the Municipal Hall of Shanghai, the Central Archives of the Nationalist Party, the Scripture Hall at Sun Yat-sen’s Mausoleum and the Central Museum.

The second type was called “mixed style.” It refers to the buildings mainly in the form of western classical or modern architecture, but each, wholly or partially, capped with traditional Chinese roofs. This approach was regarded as a melioration of the “palace style,” because it still strongly featured a Chinese style and at same time, relatively eased the expensiveness and inapplicability of the purely classical Chinese architecture. Therefore, this type of architecture was regarded as the most adaptive and representative Chinese renaissance architecture of the time.[31] The Shanghai Museum and the Shanghai Library were two representative examples. Actually, a building like the memorial hall at Sun Yat-sen’s Mausoleum, which featured a strong Beaux-Arts architectural composition, was usually classified as the “palace style,” because it, entirely covered the palace-like roof, looked more like a traditional Chinese architecture. There are many similar cases, such as the Sun Yat-sen Memorial Hall and the Second Stage of Sun Yat-sen University.

Other than the former two types, the third type didn’t adopt traditional Chinese roof, instead, it applied Chinese-style components such as cornice, base, and openings, to a western classical or modern façade to achieve the sense of being Chinese. The most representative case is the edifice of the Ministry of Foreign Affairs in Nanjing. With simplified *Dougong*[32] at the cornice as well as traditional emblazonments and carvings at the top floor and the entrance, the flat-roofed building still presents a characteristic Chinese architecture. Other representative examples include the Central Palaestra, the Central Hospital, and the National Grand Assembly Hall, all in Nanjing, as well as the Bank of Communications and the Jen-Li Company, both in Beijing. The edifice of the Bank of China in Shanghai is a special

[30] Ibid., P382
[31] Ibid., P384
[32] Dougong斗拱, a system of brackets inserted between the top of a column and a crossbeam. It is one of the characteristic features of traditional Chinese architecture.

case. Capped with a pyramidal roof and decorated with lattices at its windows, the seventeen-story edifice became a unique high-rise building standing at the riverfront bund.

In 1937, the War of Resistance to Japan (1937-1945) broke out, and the relatively peaceful and stable decade as well as the golden age for Chinese architects was over. The exploration of Chinese renaissance architecture had to cease. Although such pursuit still appeared after the war at some government buildings, it was no more comparative. It was not until the 1950s that China witnessed another tide of exploration of Chinese renaissance architecture in name of "national form and socialist content," as the new Communist government launched a large-scale economic construction in imitation of the Soviet model.

1.4 The Gradual Influence of Modern Architecture

Since the beginning of the 20th Century, the movements for exploring new architecture, which took place in Europe since the middle of the 19th Century, began to influence China's architecture. One of such earliest influences came from Art Nouveau, diffused from France to Russia and then brought by the Russian colonists to northeast China. Harbin Railway Station built during 1903 to 1904, and the office building of China-Eastern Railway built in 1904, are representative examples of this influence. Afterwards, Art Nouveau architecture continuously appeared in Harbin until the 1920s, forming a special architectural phenomenon. Another influence derived from Jugendstil, and its results can be easily found in German colonial areas such as Qingdao and Jinan. However, neither Art Nouveau nor Jugendstil dropped deep impact to China's architecture, because the cities such as Harbin and Qindao were not as much influential as the cities like Shanghai, Beijing or Nanjing. In addition, these new architectural tendencies didn't cause much attention and they were merely treated as new choices among various western architectural styles.[33]

[33] See, Ibid., P.386

Figure 1-63 Railway Station, Harbin, 1903-04

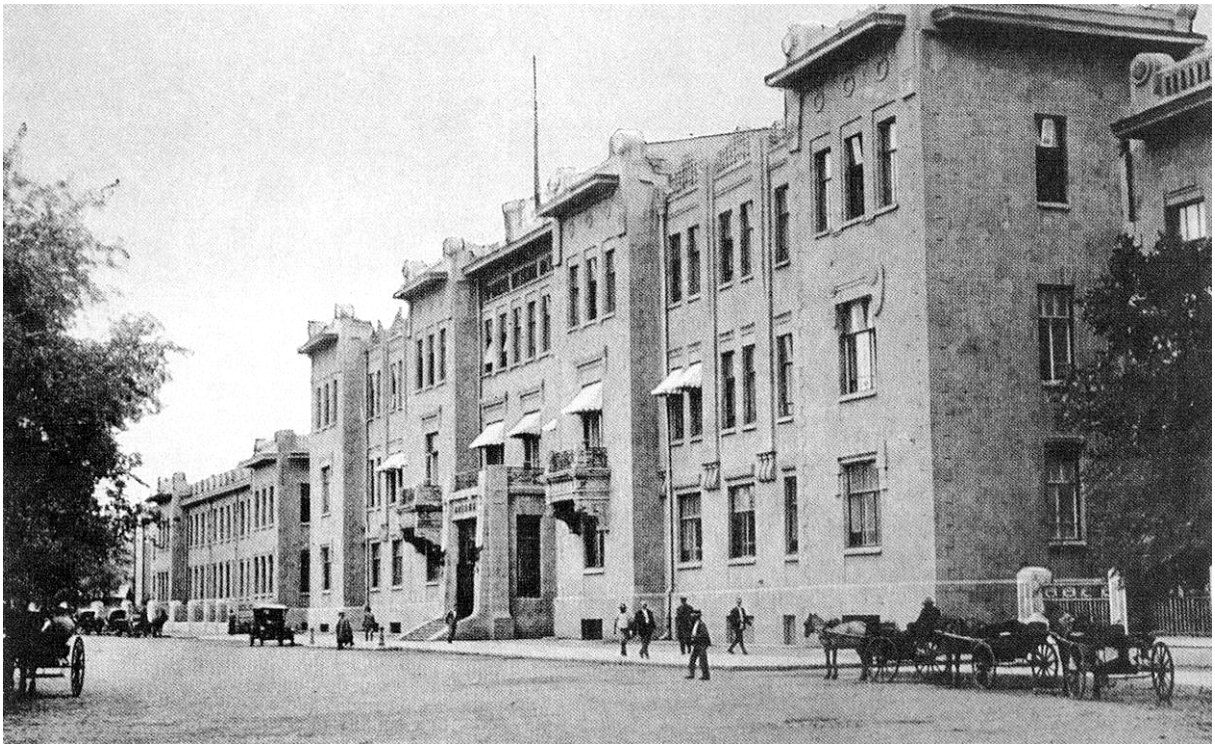

Figure 1-64 Office Building of China-Eastern Railway, Harbin, 1902-1906

In the 1920s, when Art-Deco was introduced into the United States, it soon became one of the most fashionable styles of commercial and high-rise buildings in the country. Shortly, it emerged in China, especially in Shanghai. Early buildings in this style in Shanghai included Sassoon House, Embankment Building, Metropole Hotel, and Halmilton House, all designed

by Palmer & Turner Architects and Surveyors; Broadway Mansions, by Shanghai Land Investment Co. Ltd.; the Grand Theater and Joint Saving Society Building, by Landislans Edward Hudec.

From the 1930s, Shanghai witnessed the emergence of modern architecture. The influence of International Style was evidently presented at Picardie Apartments, designed by Minutti & Co. Civil Engineers and Architects; Ecole Remi, I.S.S. Gasgoigne Apartments and Le Dauphiné Apartments, by Leonard, Veysseyre and Kruze; as well as Wu Tongwen's House, by L. E. Hudec. Same style also occurred in Tianjin, where the remarkable examples included Bo Hai Building Hotel & Offices and Leopold Building, both designed by Muller & Hunke. In Manchuria (Northeast China), some Japanese architects contributed to the development of modern architecture as well.

Figure 1-65 Sassoon House, Shanghai, 1926-1929, Palmer & Turner Architects & Surveyors

Figure 1-66 Metropole Hotel, Shanghai, 1930-1934, Palmer & Turner Architects & Surveyors

Figure 1-67 Broadway Mansions, Shanghai, 1930-34, Shanghai Land Investment

Figure 1-68 Joint Saving Society Building, Shanghai, 1931-1934, L. E. Hudec

Figure 1-69 Grand Theater, Shanghai, 1932-1933, L. E. Hudec

Figure 1-70 Le Dauphiné Apartments, Shanghai, 1935, Leonard, Veysseyre & Kruze

Figure 1-71 Embankment Building, 1930-1933, Palmer & Turner Architects & Surveyors

Figure 1-72 Picardie Apartments, Shanghai, 1935, Minutti & Co. Civil Engineers and Architects

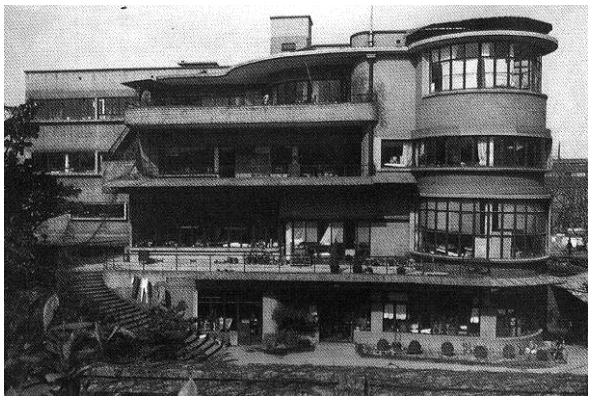

Figure 1-73 Wu Tongwen's House, Shanghai, 1935-37, L. E. Hudec

Figure 1-74 I.S.S. Gasgoigne Apartments, Shanghai, 1935, Leonard, Veysseyre & Kruze

Figure 1-75 Leopold Building, Tianjin, 1936-38, Muller & Hunke

Figure 1-76 Bo Hai Building Hotel & Offices, Tianjin, 1934-36, Muller & Hunke

The circles of Chinese architects began to introduce works and theories of modern architecture to China in the same decade. In 1933, the international exposition "a century of progress" was held in Chicago. Several Chinese architectural publications carefully reported the exposition, and they attracted particular attention to the exhibition halls, as well as the exhibits of architectural works from various countries. In April 1933, the translation of a speech that Le Corbusier delivered in Russia in 1930 was serially published in *shishixinbao.*[34] It was also published in the second, the third, and the fourth issue of Volume II of *Zhongguojianzhu* in 1934. This is regarded as the beginning of a formal introduction of the theories of Modern Movement in China.[35]

Afterwards, a number of papers aware of Modern Movement were published in the same journal, such as "A General Introduction of Modern Architecture" by He Lizhen in the eighth issue of Volume II, "Some Words to Chinese Architects" by the editor in the eleventh issue and the twelfth issue of Volume II, "The Styles of Architecture" by Zhuang Jun in the fifth issue of Volume III, and "Some Impressions of Traveling in Europe" by Fan Wenzhao in the 24th issue. Similar articles were also seen in other publications, such as "The Ethos of Contemporary American Architecture" by Yang Zheming, published in the first issue of Volume III of *Jianzhuyuekan* in January 1935. Moreover, a student architectural magazine – *Xinjianzhu* (*New Architecture*) – was initiated at Shiang Chyn University in Guangdong Province in 1936. It became the most right-hand journal in introducing and promoting modern architecture in China during the War of Resistance to Japan.

Chinese architects carried out practice of modern architecture since the 1930s as well. However, in their terminology, Art-Deco and International Style were all called "xiandai shi" (modern style).[36] They treated modern style as an elective style beside the others. In their modern-style buildings, the Art-Deco style ones occupied the majority.[37] The most active and the most influential Chinese architectural design firm in practicing modern style was Allied Architects, They exhibited their modern-style works at the First China's Architectural Exhibition in Shanghai in 1936. Most of their

[34] See Lai Delin, *Zhongguo jindai jianzhu shi yanjiu*, P3-43. The Le Corbusier's speech was titled "Jianzhu de xin shuguang" 建筑的新曙光 in Chinese.
[35] Li Haiqing, *Zhongguo Jianzhu xiandai zhuanxing*, P332.
[36] *Zhongguo jianzhu shi (di wu ban)*, P.388
[37] Ibid.

modern-style buildings were located in Shanghai, such as the Metropole Theater, the Hengli Bank, the Lyric Theater, the Heji Apartments, and the National Commercial Bank.

Figure 1-77 Metropole Theater, Shanghai, 1933, Allied Architects

Figure 1-78 Lyric Theater, Shanghai, 1934, Allied Architects

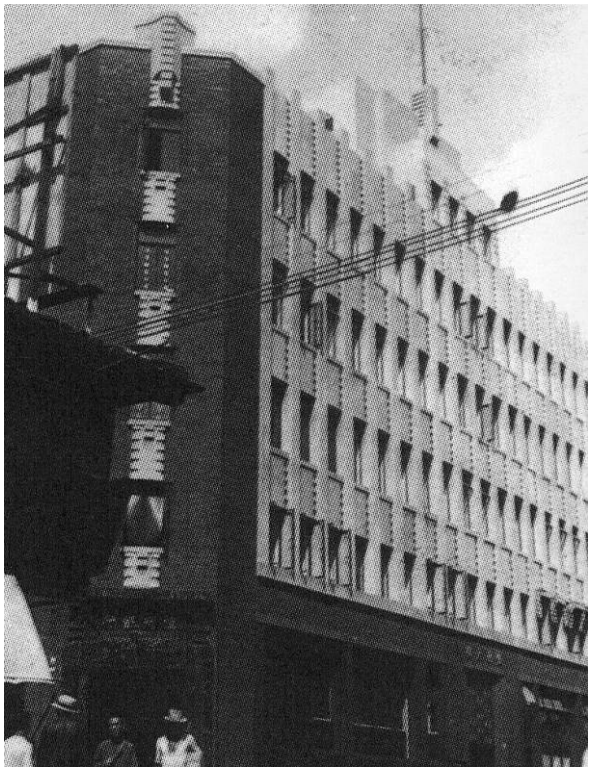

Figure 1-79 Hengli Bank, Shanghai, 1933, Allied Architects

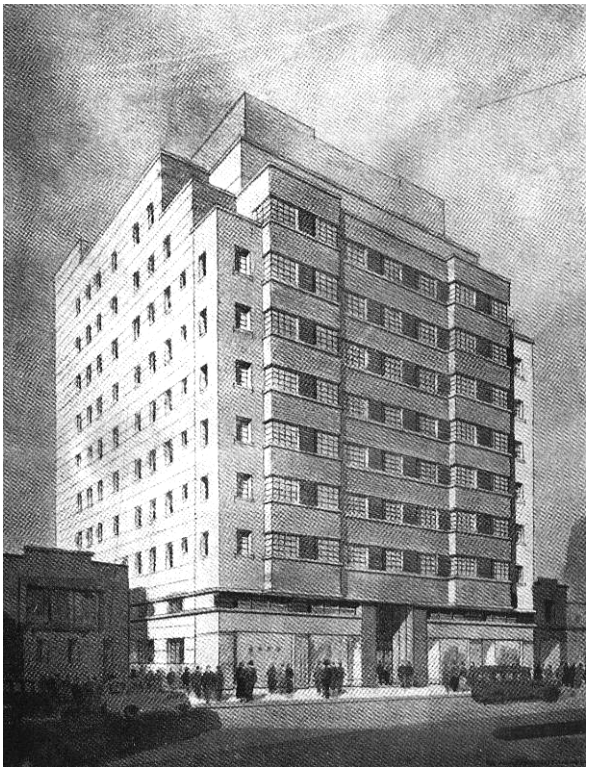

Figure 1-80 Design of an apartment building at Xizang Road, Shanghai, 1934, Allied Architects

Figure 1-81 Heji Apartments, Shanghai, 1934, Allied Architects

Figure 1-82 National Commercial Bank, Shanghai, 1935, Allied Architects

Other representative modern-style building designed by Chinese architects included the Hongqiao Sanitarium by Xi Fuquan, the Paramount Hall by Yang Xiliu, the Majestic Theater by Fan Wenzhao, and the Obstetrical Hospital by Zhuang Jun, all in Shanghai, as well as the Sin-Hua Trust & Savings Bank in Tianjin, by Shen Liyuan. Even Liang Sicheng, a scholar of traditional Chinese architecture, was involved in this tendency. During 1934 to 1935, he designed a schoolgirls' dormitory and the building of Department of Geology for Peking University, both featured a strong characteristic of modern architecture.

Figure 1-83 Obstetrical Hospital, Shanghai, 1935, Zhuang Jun

Figure 1-84 Hongqiao Sanitarium, Shanghai, 1934, Xi Fuquan

Figure 1-85 Sin-Hua Trust & Savings Bank, Tianjin, 1934-35, Shen Liyuan

Figure 1-86 Majestic Theater, 1941, Fan Wenzhao

Figure 1-87 Department of Geology at Peking University, 1934, Liang Sicheng and Lin Huiyin

Figure 1-88 dormitory for schoolgirls at Peking University, 1935, Liang Sicheng and Lin Huiyin

The exploration of modern architecture by Chinese architects was in parallel with their pursuit for Chinese renaissance, and their views on modern architecture were lopsided. Only a few of them comprehensively recognized modern architecture, while most regarded it as a new optional architectural style for their design. Most Chinese architects synchronously designed international style buildings, western classical style buildings and Chinese renaissance style ones, and many of them only cared exterior forms of modern style. Some of them regarded the evolution of architectural design as a circulation of styles, from simplicity to complexity and then back to simplicity, as Shi Linbing wrote in his paper published in the third issue, Volume II of *Zhongguojianzhu*: “The movement of International Style is

promoted because of , once again, the boringness of looking at complicated architecture"[38]. Another opinion treated modern architecture merely as a more economical method of construction. These views became the common understanding of modern architecture in Chinese architectural circles, and dropped a long-lasting impact on the architectural design in China. Nevertheless, the undertaking of "modern style" by Chinese architects in the 1930s formed an important part of the development of China's modern architecture. But the War of Resistance against Japan soon disturbed it. During the eight years from 1937 to 1945, very small amount of new buildings were constructed, even in the rear side of the war.

After the war, although "traditional Chinese form" was still adhered by the Nationalist Government as the policy for architectural design, it was difficult to execute it due to the economical hardness resulted from the War against Japan and the Civil War, launched in 1946. In addition, the merits of modern-style architecture in economy and utility were more recognized by Chinese architects. As a result, modern style featured the overwhelming majority of the limited amount of buildings. The representative examples of such works during this period include the AB Buildings in Nanjing, Shanghai Branch of Chekiang First Bank, designed by Allied Architects; the Central News Agency, and Yanhuiguan House, both in Nanjing, by Kwan, Chu and Yang Architects. This tendency lasted up to the first years of the Peoples Republic, and then it faded out when Soviet creed on architecture became imperative.

Figure 1-89 AB Buildings – Building A, Nanjing, 1945-1946, Allied Architect

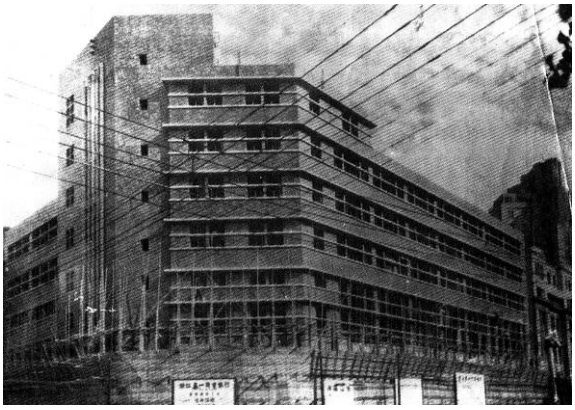

Figure 1-90 Shanghai Branch of Chekiang First Bank, 1947-1948, Allied Architect

[38] Translated from Ibid. P.388

Figure 1-91 Office Building of Central News Agency, Nanjing, 1948-1949, Kwan, Chu & Yang Architects

Figure 1-92 Yanhuiguan House, 1948, Kwan, Chu & Yang Architects

1.5 The Birth of Chinese Architects and Their Contributions

Up until the Opium War, traditional craftsman system of building construction in China had been lasting all through. Traditional Chinese architecture is timber structure, different from western architecture, which normally use stone/brick walls to bear load and support timber-trussed roofs. When early western buildings in China were built, the construction work was done by Chinese craftsmen who were experienced with the traditional Chinese system as well as local materials but, not familiar with western building structures. This became partly the reason of that the early western buildings were normally in low quality and usually short lived. As the real estate in the "leased territories" (particularly in Shanghai) drastically developed, Chinese construction firms had to face a strong impact of western architecture, as well as enormous market opportunities. Firstly, they must learn to mastery the unfamiliar construction methods, and at the same time, they must get familiar with the new way of management in order to adapt the new capitalist construction mode.

From the 1860s, a number of western construction firms arrived Shanghai to build some important projects. They also brought advanced western modes of construction and management, such as bidding system and contract system, to China. During 1895 to 1927, several powerful foreign construction firms, such as British-run Trollope & Coils Ltd. and French-run Shanghai Construction Company, operated successfully in Shanghai. They constructed a big part of the large buildings of the city, such as the edifice of Hong Kong and Shanghai Bank Corporation. Influenced by the foreign

firms, many Chinese craftsmen gave up traditional workshop system and plough into market competition. Shortly, they managed to master modern construction technologies and get great success in the market. For example, up to the 1920s and 30s, most of the high-rise buildings in Shanghai were already commissioned to Chinese construction firms.

As mentioned in the first section, architecture as a profession, which had not existed in Chinese tradition, emerged in China following the incursion of western architecture. Its concrete emergence in Shanghai took place in the 1860s, when the city witnessed a fast development of real estate. In the former time, western owners themselves had to draw blueprints for constructing their buildings in China, and a few of them were familiar with the profession of architecture. According to recordation, George Stracham, a foreign immigrant in Shanghai during 1849 to 1854, was a professional architect. He operated an architectural design firm in 1853/1854, but none of his works has been discovered.[39]

As construction activities became increasingly prosperous in foreign settlements in Shanghai, Tianjin, and Hankou in the 20th Century, the number of foreign architects who came to China increased simultaneously. According to statistics, there were more than 50 architectural design firms in Shanghai at that time.[40] These foreign architects were very active inside foreign settlements. They also extend their activities to the design of Chinese government buildings as well as other large-scale buildings outside foreign settlements. Among the western architects, the British formed the biggest proportion. Their works were witnessed in many big cities in China, as well as in Hong Kong and Southeast Asia. Many of them, such as J. W. Hart, G. J. Morrison, and T. W. Kingsmill, all were engineers, took on architectural design besides civil engineering. Morrison, for example, who took charge in design of Shanghai-Wusong Railway, subsequently started Morrison & Gratton Design Office with another architect to undertake architectural design commissions. His design office had become one of the most sweeping architectural design firms in Shanghai by the end of the 19th Century. Professional architects came to China as well, such as William Kindner, the only RIBA member in Shanghai in the 1860s. He was the superintendent of Holy Trinity Church as well as the architect of the early Hong Kong and Shanghai Bank Corporation and the office building of Dent

[39] Wu Jiang, *Shanghai bai nian jianzhu shi 1840-1949*, P. 44
[40] *Zhongguo jianzhu shi (di wu ban)*, P. 365

& Company, and became one of the most famous architects in Shanghai in the 1860s.[41]

As westernized buildings increasingly emerged in China, native Chinese engineers and architects also came into play. When the Westernization Movement was launched, as mentioned, the Qing Empire began to fetch in western education system. At the same time, it sent students abroad. For example, it sent thirty fourteen-year-old students to the U.S in August 1872 and three more groups in the following three years. When these students returned after graduation, they mostly hold posts as CIQ officials, navy officers, railway or mine engineers. Zhan Tianyou, who returned China from Yale University in 1881, contributed greatly to China's railway engineering and became the most well-known engineer in China. Encouraged by his achievement, more and more students went abroad to study engineering. According to statistics, the number of the students who studied in the United States during 1854 to 1953 rose up to 3,143, and of these students, 777 studied engineering, accounting for 24.72% of the total and occupying the first place among various specialties.[42] Among the engineering students, Yang Kuanlin, Mao Yisheng, Zhu Zhaoxue, and some others became nation-widely famous civil engineers afterwards.

Since the late Westernization Movement, some Chinese began to establish civil engineering education. One of such schools was set up in Tianjin in 1895, and included departments of law, mining, mechanical engineering and civil engineering at its high-grade school. According to available materials, this school was the first one of civil engineering education in China. By the founding of the Republic of China in 1911, many universities in China had established civil engineering specialty, such as Nanyang Public School, in 1897; the Imperial University of Peking, in 1904; Tangshan College of Railways and Mines, in 1906; and Shanxi University, in 1907; as well as many other official-run or civilian-run schools and colleges. Civil engineering education became increasingly prevailing, and it reached the flood tide in the 1920s. In 1931, there were all together 3,267 students studying at various technology colleges, and 1,246 of them studied civil engineering, occupying 38.2% and the biggest proportion in the total.[43]

[41] see Ibid. P. 45
[42] Li Haiqing, *Zhongguo Jianzhu xiandai zhuanxing*, P. 79
[43] See Ibid.

Comparatively, the birth of native Chinese architects came out relatively later. The first part of the architects consisted of technicians who had worked for foreign construction or design firms and had learnt architectural design through practice and self-education. One example is Zhou Huinan (1872～1931), who designed the entertainment center "Great World" in Shanghai in 1917. His "Zhou Huinan *Dayangjian*[44]" was one of the first architectural design firms run by Chinese in the 1910s. Some civil engineers also transferred to architects to form the second part of Chinese architects. For example, Sun Zhixia, who graduated from the survey specialty at Tongzhou Normal College in 1909, designed the French renaissance-style Jiangsu Parliament in the same year.[45]

Since the 1910s especially in the 1920s and 30s, a number of Chinese graduates trained by normalized western architecture education, returned to China. They comprised the third but the most significant part of native Chinese architects. Most of them established architectural design firms in big cities, especially in Shanghai. In this city, Lü Yanzhi, together with Guo Yangmo and Huang Xilin, founded Southeast Architecture Company in 1921 after his working for H. Murphy. Shortly, he opened his own architectural design office in the same year. In 1922, Liu Dunzhen, Liu Shiying, Zhu Shigui, and Wang Kesheng – four graduates of Tokyo Technological Institute (now known as Tokyo Institute of Technology) – established the Architectural Department of Huahai Company. In addition, Zhuang Jun, a graduate of University of Illinois, founded Zhuang Jun Architects in 1925. Afterwards, returned architectural graduates established a good many design firms in Shanghai, Tianjin, Nanjing, Wuhan and other big cities.

These architects, including the aforementioned three parts, are called "first generation" architects in China's architectural historical research. These "first generation" architects gradually grew in strength in architectural design market, which had been monopolized by foreign architects. As the previous two sections shows, during the 1920s and 30s, they were commissioned with a large amount of governmental buildings and Chinese-invested buildings, and became one of the most important forces behind China's architectural activities.

[44] *Dayangjian*打样间, the early Chinese term of design office
[45] See detailed introduction in Li Haiqing, *Zhongguo Jianzhu xiandai zhuanxing* , P. 130-135

Besides architectural practice, the “first generation” founded westernized architectural education in China. In 1923, Liu Shiying, Liu Dunzhen, Zhu Shigui, and Huang Zumiao established the country's first architectural department at Suzhou Engineering School, in imitation of a Japanese architectural educational system. As the Suzhou school united with other eight colleges in 1927 to form the Fourth National Sun Yat-Sen University (renamed Central University in 1928) in Nanjing, the department of architecture became the first and the most important architectural department of the country’s high education. Afterwards, many prominent Chinese architects and civil engineers participated in teaching at this university, bringing up a number of architectural elitists in China. In 1928, Liang Sicheng, Chen Zhi, Tong Jun and others established an architectural department at Northeastern University in Mukden, Manchuria (now Shenyang), following the educational system of the University of Pennsylvania. In the same year, another architectural department was founded at the Art School of Beiping University (later National Beiping Art School and now Central Institute of Fine Arts), by Yang Zhongzi, Wang Shen, Shen Liyuan, Hua Nangui and fellows. More architectural departments were established since the 1930s.[46]

These schools began to produce architectural graduates in the 1930s. Some of the graduates joined or established design firms or entered governmental administrations, such as Zhang Bo, Yan Xinghua , Zhang Kaiji, Dai Nianci, Xu Shangzhi, Liu Hongxing, and Tang Pu. Some others, including Xu Zhong, Wang Tan, Zhou Buyi, Wang Dingzeng, and Lin Leyi, went abroad for further study. All the above, as well as some architectural graduates returned from abroad in the 1940s – such as Huang Zuoshen, Feng Jizhong, and Zhao Dongri – made up of the biggest part of the so-called “second generation” of Chinese architects. After 1949, they became the most important force behind architectural activities.

The “first generation” architects also extended their contribution to the research of traditional Chinese architecture. During 1931 to 1932, Liang Sicheng and Liu Dunzhen successively joined the Society (later Institute) for Research in Chinese Architecture, which had been founded by a Qing empire scholar Zhu Qiqian. They carried out the work of investigating, measuring and researching a large amount of traditional Chinese architectural instances to discover the evolution of Chinese architecture and

[46] see *Zhongguo jianzhu shi (di wu ban)*, PP. 363-364

to comprehend the principles of Chinese timber construction. The institute revised and re-published *Yingzao Fashi*, a Song Dynasty (960-1279) official instruction of timber construction. It also published its Bulletin, bringing out a large number of papers concerning investigation of traditional Chinese architecture, restoration plan for historical buildings, new interpretation of Chinese architectural history, and historical data of Chinese architecture. These studies not only laid the foundations of Chinese architectural history, but also brought up many architectural historians.

Most of the “first generation” architects were educated in the United States, where and when the Beaux-Arts tradition was playing a leading role in architectural education and practice. Approximately twenty of them, including some of the most prominent Chinese architects and scholars, such as Yang Tingbao, Liang Sicheng, Tong Jun, and Chen Zhi, were trained at University of Pennsylvania by Paul P. Cret and his colleagues. Through these Chinese architects and scholars, the Beaux-Arts tradition made a deep and long lasting impact to China’s architectural design and education. It will be presented in the following chapters that emphasizing drawing and historical study, as well as architectural composition, would strongly featured post-1949 architectural design in China.

CHAPTER 2 • The "NATIONAL FORM" ARCHITECTURE: 1949-1955

2.1 The Incursion of "Socialist Realism"

On 1 October 1949, the People's Republic of China (PRC) was formally established, with its national capital at Beijing. With further victories over the Nationalist Party (KMT) and a peaceful solution of the Tibet problem, most parts of the country were re-unified at the beginning of the 1950s, under the reign of Mao Zedong and Chinese Communist Party (CCP). At that time, the new government established two fundamental policies – "new democracy" and "lean to one side" – for the "new China." According to the former, the PRC as a "new democratic state" was established upon "people's democratic dictatorship," in which the peasantry, the petty bourgeoisie, and the national bourgeoisie comprised the working class to be the ruling class, while the enemy was narrowly defined as "imperialism, feudalism and bureaucratic capitalism." Socialistic state economy, semi-socialistic cooperative economy, private capitalistic economy, individual economy, and state-private cooperative capitalistic economy comprised the "new democratic economy."

In fact, CCP's rudders of the "new democracy" in politics, economy and culture were early raised in 1940, when Mao Zedong published his famous "On the New Democracy." Besides other policies, the Mao's paper framed a basic cultural policy, stating the "new democratic" culture should be "national, scientific and popular." It stated that China's culture must have its own form and that "our new culture of today" should be "national form with new democratic content." This statement was reiterated in 1949 in the 41st Item of *Common Program*[1] and became a guideline for cultural activities as well as architecture design in the PRC.

The policy "lean to one side" was advanced in Mao Zedong's "On the People's Democratic Dictatorship," published in June 1949. It assured China's joining with the socialist bloc headed by the Soviet Union, and this

[1] Common Program共同纲领: the temporary constitution of People's Republic of China, promulgated in Sep. 1949, substituted by the Constitution Of The People'S Republic Of China in Sep. 1954

fundamental foreign policy dropped a profound impact on the PRC's politics, economy and culture. In February 1950, the "Chinese-Soviet Alliance Treaty" was signed, together with other agreements between the two governments. The alliance between China and the Soviet Union was then formally established, and the Soviet Union began to provide a large-scale economic aid to China.

Through various mass campaigns in rural and urban areas, the new regime strengthened its control on politics and economy, and in 1953, the PRC entered a new phase of socialist construction. Corresponding to China's first Five-Year Plan (1953-57), a large-scale economic construction in imitation of the Soviet model, the "new democracy" was substituted by the new policy "transition to socialism." In order to serve the ever-larger economic construction, the CCP government invited a great number of Soviet experts to China. According to some documents, the number of the Soviet experts who came to China during 1949 to 1960 exceeded 20,000.[2] These experts worked broadly in areas of economy, culture and military, as well as those concerning architecture, urban planning, and building construction.

As China carried out the economic construction with the focus on 156 Soviet-aided industrial projects, it built a great amount of industrial and other civil buildings.[3] Meanwhile, accompanying with growing exchanges between China and the Soviet Union, "socialist realism" as the principle for architectural activities in the Soviet Union, began to influence China's architecture. Around 1953, the notion "socialist realism," together with another one – "socialist content with national form" – as well as the slogan "Oppose Constructivism, Oppose Formalism," were brought by Soviet experts to China. These phrases actually described the points of Soviet architecture since the 1930s, and reflected its direction turning at that time.

During the first years after the Socialist Revolution of Russian, the complexity of artistic life spawned many groupings, associations and organizations of architects and painters. These groups generated ideas and concepts as they passed trough their formative stages.[4] Among these groups, the Association of New Architects (ASNOVA) and the Association of Contemporary Architects (OSA) played key roles in approaches of

[2] See Shen Zhihua, "Dui zai hua sulian zhuanjia wenti de lishi kaocha: jiben zhuangkuang ji zhengce bianhua," http://www.shenzhihua.net/zsgx/000088.htm
[3] See Note 5-7 for the 156 projects
[4] Ikonnikov A., *Russian Architecture of the Soviet Period*, P.98

innovative architecture. The members of the former described themselves as rationalists, seeing their chief task in organizing and rationalizing the perception of architecture. They assumed that spatial arrangement was the main problem of architecture; the aesthetics of new structure and materials, to which they also attached much significance, seemed of ancillary importance to them.[5] The Makhorka Tobacco Pavilion of All-Russia Agricultural Exhibition built in 1932 and the USSR Pavilion at the 1925 International Exhibition of Contemporary Art and Industry in Paris, both designed by K. Melnikov who stood close to the ASNOVA, were the representative examples of this approach.

The emergence of constructivism as an artistic trend also dates to the early 1920s. The OSA was formed lately as the organization of the constructivists in 1925, since when, the OSA became the largest and most influential among the innovative associations, extending its activities to many cities of Russia.[6] The early constructivists were attracted above all by the constructive functionality of new architecture, and by the imagery for its expression, while to the OSA group, the chief problems were those of organizing the new life, for which the techniques and the structure were to serve as the means. Constructivists held that a building's concept should proceed from inside outwards, regarded that architecture began with the functional forms of the organization of life and the building was the shell for those forms.[7]

One of the early remarkable instances of Constructivist works is V. Tatlin's design for the monument to the Third International in 1919-1920, and the other representative cases include Vesnin brothers' design for the Palace of Labour in Moscow, as well as the Apartment House for the People's Commissariat of Finance by M. Ginzburg, the Izvestia Newspaper Building by G. Barkhin, the Pravda Newspaper Building by P. Golosov, all in Moscow, and so on. Generally speaking, the constructivism and the "rationalism" were highly close to the functionalism of European modern architecture. They, together with similar approaches, shaped the major characteristic of Soviet architectural activities in the 1920s and the early 1930s. However, they were overwhelmed by traditionalism in the 1930s and met the demise in this decade.

[5] Ibid.
[6] See Ibid. P.99-100
[7] See Ibid. P.100

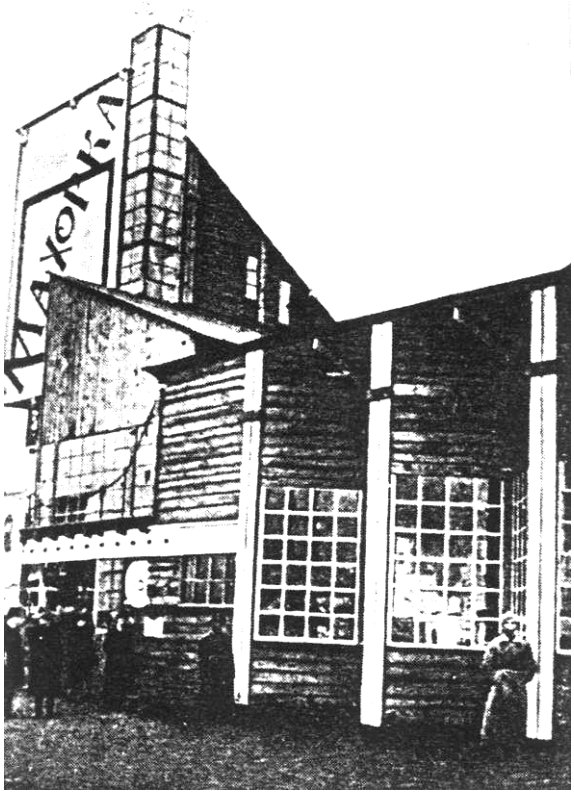

Figure 2-1 Makhorka Tobacco Pavilion of All-Russia Agricultural Exhibition, Moscow, 1932, K. Melnikov

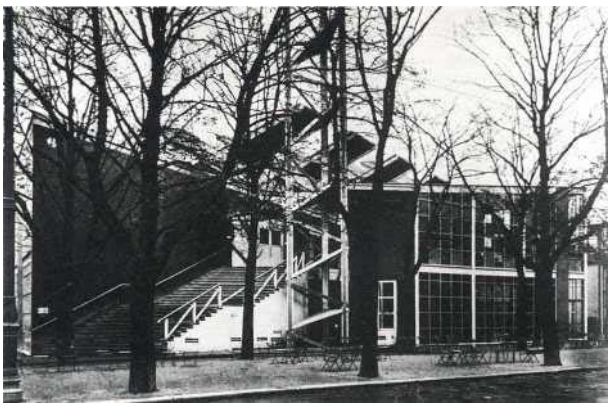

Figure 2-2 USSR Pavilion at the 1925 International Exhibition of Contemporary Art and Industry, Paris, K. Melnikov

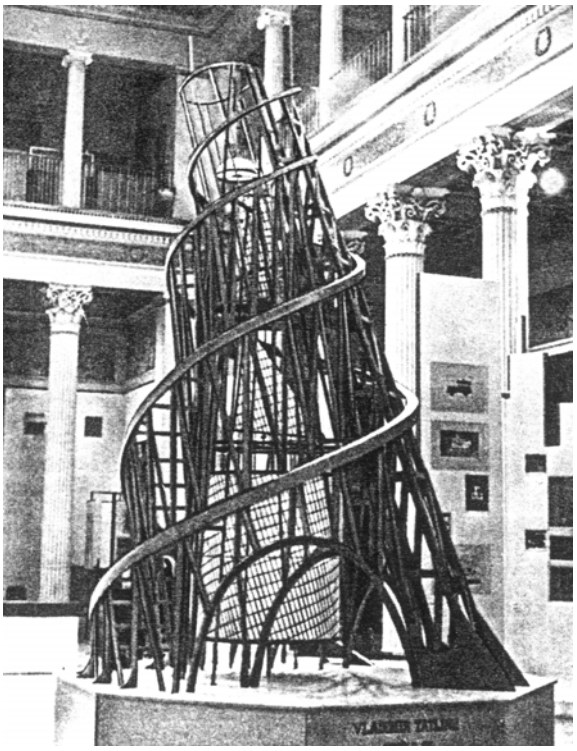

Figure 2-3 The monument to the Third International, 1919-1920, V. Tatlin

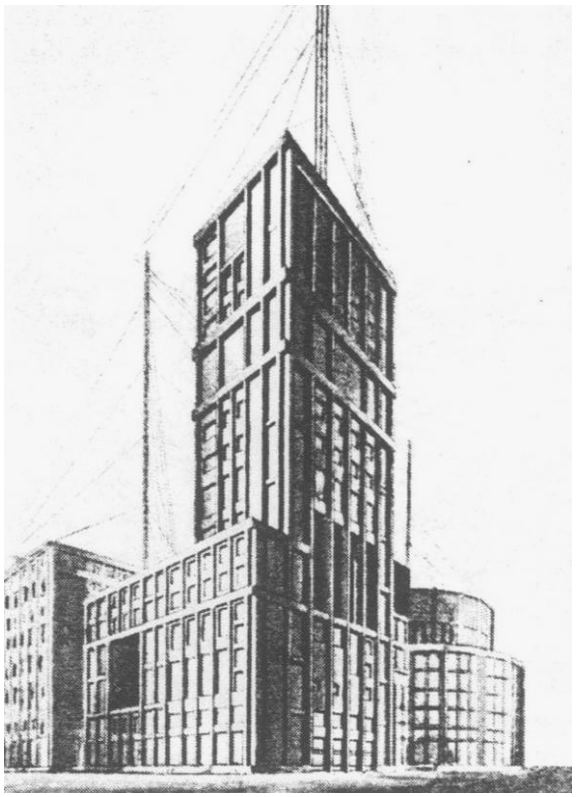

Figure 2-4 Palace of Labor, Moscow , 1923, Vesnin brothers

Figure 2-5 Apartment House for the People's Commissariat of Finance, Moscow, 1928-1930, M. Ginzburg

Figure 2-6 Izvestia Newspaper Building, Moscow, 1925-1927, G. Barkhin

Figure 2-7 Pravda Newspaper Building, Moscow, 1930-1935, P. Golosov

The competition for the Palace of the Soviets in Moscow held in four successive rounds between 1931 and 1934 was the symbolic event of the changing. In the competition, almost all the styles of the period, from the root-and-branch innovation and fantastic ideas of modernism to the slavish

imitation of classicism were reflected.[8] Eventually, B. Iofan's design, a combination of architecture and sculpture, was adopted as base concept, and the final version of this design approved in February 1934 was a 415-meter-high building with a 100-meter-tall figure of Lenin as the top.[9] As the model of emerging new style of universal significance, the project exerted a great impact on the entire development of Soviet architecture afterwards.[10] The period of architectural modernism in Russia, with its openness to outside influences, the welcome participation of foreign architects and free creative discussion, was brought to a close once the results of the final competition for the palace were published.

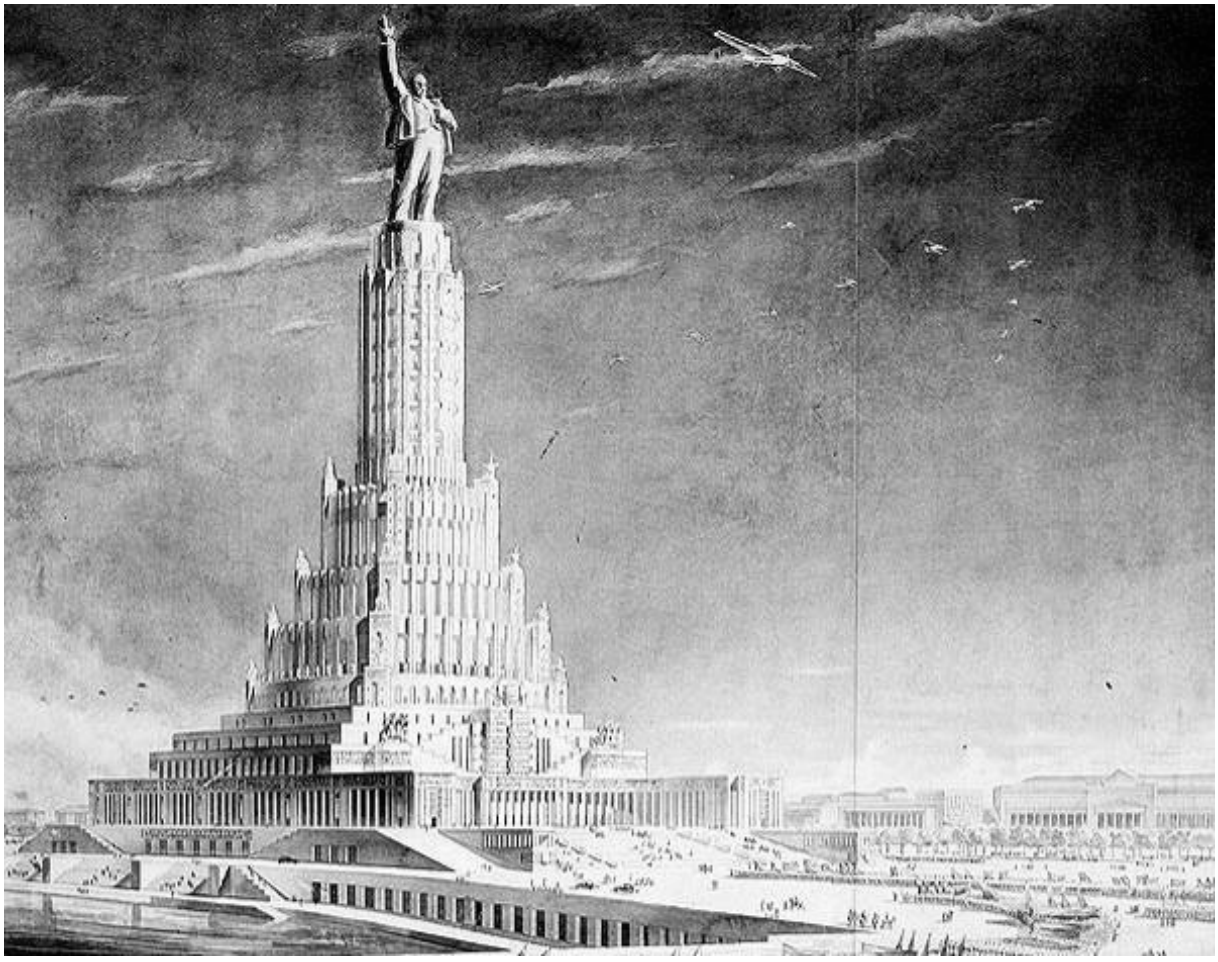

Figure 2-8 Palace of the Soviets, Moscow, B. Iofan, V.Shchuko, and V. Gelfreich

[8] Tarkhanov A. & Kavtaradze S. , *Stalinist Architecture*, PP.21-25
[9] See Ibid. P.33
[10] See Ikonnikov A., *Russian Architecture of the Soviet Period*, P.197

"Socialist realism," as the principle for Soviet art and literature, was formally established at the First Congress of the Soviet Writers' Union held in August 1934. The obligation to work in the "socialist realist style" rapidly spread to other branches, so to the architects. In actuality, since the exact meaning of "socialist realism" was ambiguous, it was difficult for architects to take it into practice. Nevertheless, "socialist realism" was seen as the opposite of bourgeois art, as stressed by the editorial of *Akhitektura SSSR* in its eighth issue in 1936:

> Socialist realism, as the dominant method of Soviet art, rejects mere naturalistic contemplation and the idealistic limitations of bourgeois art. Socialist realism is the free activity of people transforming their world according the scientific principles of Marxism-Leninism.[11]

By July 1932, all the independent groups and societies of architects in the Soviet Union had been abolished. In October 1933, the All-Russian Academy of Architecture was founded as the highest ranking academic, scientific and research institution for architects, and it made an authoritative contribution to the theoretical development of the new "classically inclined" style. In June 1937, the First All-Union Congress of architectural circles was held. The many speakers who appealed for a new mastery of the classical heritage had in mind mainly the traditional, restrained compositions based on the classical orders themselves, and the phrase "mastery of the heritage" took precedence over all others the press.[12]

Concluded as bourgeois art, the architecture of the constructivism, the "rationalism" and similar approaches had to fade out in practice. Even completed buildings, or those under construction, were stripped of Constructivist features and acquired the traditional traits of the grand classical style.[13] During the 1930s to the 1950s, a large amount of buildings featured tradition-oriented styles were witnessed all over the Soviet Union. "Socialist realistic" buildings continuously accumulated in Moscow, such as the Moscow Hotel by A. Shchusev, the Red Army Theater by K. Alabyan and V. Simirtsev, the Ukraine Hotel by A. Mordvinov, and Moscow State University by L. Rudnev, as well as many metro stations.

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[11] See Tarkhanov A. & Kavtaradze S. , *Stalinist Architecture*, P.49
[12] See Ibid., PP.50-54
[13] Ibid., P.60

Figure 2-9 Moscow State University, 1949-1953, L. Rudnev and etc.

Figure 2-10 Moscow Hotel, Moscow, 1930-35, A. Shchusev and etc.

Figure 2-11 Ukraine Hotel, Moscow, 1947-57, A. Mordvinov

Figure 2-11 Mayakovskaya Metro Station, Moscow, 1936, A. Dushkin

Figure 2-13 Red Army Theater, Moscow, 1934-1940, K. Alabyan and V. Simirtsev

Figure 2-12 Opera House, Yerevan, 1929-1936, A. Tamanian

Figure 2-13 Azerbaijan Pavilion, All-Union Agricultural Exhibition, Moscow, 1939, S.Dadashov and M. Useynov

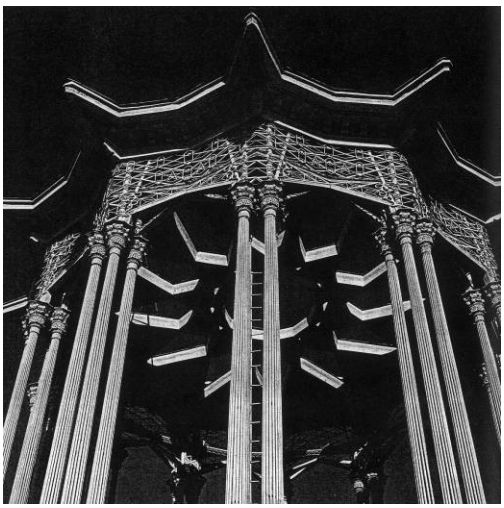

Figure 2-14 Uzbekistan Pavilion, All-Union Agricultural Exhibition, Moscow, 1954, S. Polupanov

In the direction of "socialist realist" architecture, an approach emphasizing "national heritages" emerged in some Soviet Republics. During 1923 to 1936, A. Tamanian, a famous architect of Armenia, designed a number of buildings featured Armenian style in the national capital Yerevan. His works, such as the Opera House in the city, were regarded as the representative cases of "national form" architecture. At the All-Union Agricultural Exhibition held in the suburb of Moscow in 1939, national architectural styles manifested on various national pavilions, most of which were fundamentally classical in style with addition of Byelorussian folk ornament,

Armenian arches, Georgian domes, and so on.[14] This approach was evident as well at the same exhibition in Moscow in 1954.

The phrase "socialist content with national form" referred to this approach. This notion originally came from Stalin, who delivered a speech at a meeting of students of the Communist University of the Toilers of the East in May 1925. Stalin asserted:

> We are building proletarian culture. That is absolutely true. But it is also true that proletarian culture, which is socialist in content, assumes different forms and modes of expression among the different peoples who are drawn into the building of socialism, depending upon differences in language, manner of life, and so forth. Proletarian in content, national in form -- such is the universal culture towards which socialism is proceeding. Proletarian culture does not abolish national culture, it gives it content. On the other hand, national culture does not abolish proletarian culture, it gives it form.[15]

To the PRC's literature and art circles, "socialist realism" was actually not very unfamiliar, because it had been acting as the guideline for the creative activities of literary and art leaded by CCP since the 1930s. In addition, Mao's statement on "new democratic culture" was actually the repetition of Stalin's notion of "proletarian in content, national in form." But to China's architecture, the Soviet principles didn't have any influence before CCP reined the country, and in the first years after the founding of the PRC, their influence was still very weak. However, when China undertook the first Five-Year Plan in imitation of the Soviet Union since 1953, the CCP government began to stress that entirely learning from the Soviet Union was a political must for all the people. Then these principles immediately became imperative for China's architectural activities.

Under the policy "lean to one side," the Soviet principles must be followed. However, because Chinese architects didn't get familiar with Soviet architecture, it was difficult for them to understand the meanings of the phrases and the slogans transferred by the Soviet experts. Neither the "constructivism," which was translated as *jiegou zhuyi* 结构主义 – a translation later used for structuralism –, nor the "rationalism," which

[14] Ibid., P.79
[15] See Ashepkov E A., *Suweiai Jianzhu shi*, P.45; Stalin J.V., "The Political Tasks of The University of the Peoples Of The East," Stalin J. V., *Works Vol. 7*, P.140

actually referred to the formalism, presented a clear image to Chinese architects. Moreover, "socialist realism," of which the concrete meaning had never been clearly defined, was particularly difficult to be interpreted in architectural practice. Nevertheless, "socialist content, national form," especially its latter part, was impressive to Chinese architects, as Lin Zhu narrated in her book *Jianzhushi Liang Sicheng* (*Architect Liang Sicheng*):

> When the first batch of the Soviet expert visited Beijing in 1950, they brought the architectural theory of the Soviet Union, namely, "national form, socialist content." They required new buildings in China must present Chinese national character. At the first meeting with Liang Sicheng, the chief member of the delegation raised the point of making "national form" and drew a big roof to illustrate his idea, even though he himself was no an architect. ... When Liang Sicheng visited Moscow in the early 1950s, … more than 40 authorities of the fields of architecture, art, and philosophy all, without exception, advocated "national form" architecture. [16]

An early systematical introduction on Soviet theories was made by Professor E. A. Ashepkov through his course *Soviet Architectural History* at Tsinghua University during April to June 1953. In the lectures, Ashepkov explained the historical development of Soviet architecture from the dominant point of view of the Soviet Union. He said:

> Formalists and Constructivists are absolutely hostile to the basis in reality and the thoughts of socialist architecture…. The basic features of socialist realism …… has been manifested as: lofty ideological contents, plenary popularity and democracy in architectural work, meticulous care to laboring people, simplicity, grandness and concinnity, superb skills in creatively renovating traditional heritages, and so on. … Stalin's definition of Soviet culture is "national form, socialist content." This definition brought forward that national art traditions must be creatively utilized in the process of creating architectural works of the Socialist era."[17]

Other Soviet experts also made efforts to explain their theories. As early as in 1952, A. S. Mukhin, the first Soviet expert in the area of architecture and urban planning in China[18], tried to make a clarification by the logic that the

[16] Translated from Lin Zhu, *Jianzhushi Liang Sicheng*, PP.128-129
[17] Translated from Ashepkov E A. *Suwei'ai Jianzhu shi*, PP.94,95,100
[18] Tao Zongzhen, "Xin zhongguo 'jianzhu fangzhen'de tichu yu qishi," *Nanfang jianzhu*, Iss. 5/2005, P.5

socialist economic foundation decides the ideology of superstruction. He explained: in the early time of its foundation, the Soviet Union was besieged by capitalist and imperialist countries, which, in the scope of architectural style, wanted to corrupt or influence the "architectural art" of the Soviet Union; therefore, Stalin raised the slogan "socialist content, national form" to architects and planners, asking them to assimilate nutriments from national historic legacies to create the works that would be loved by the masses and in return, arouse the patriotism of the masses.[19]

Although Soviet experts couldn't clearly interpret the theories to Chinese architects, Soviet architecture at that time concretely indicated the orientation. Through various conferences and publications, Chinese architects saw a large quantity of photos of Soviet classical-style buildings, in which Russian-style towers were extremely conspicuous. In addition, the Soviet-style buildings in China, designed by Soviet architects or guided by them, more articulately demonstrated the orientation of Soviet architecture.

Among such buildings, the CCCP Exhibition Hall in Beijing (now Beijing Exhibition Hall) was a typical example. It was designed by Russian architect Andreyev and his colleagues, in cooperation with Chinese architects Dai Nianci, Mao Ziyao and some others. Its design draft was delivered to China in July 1953, and its construction started in October and finished in September 1954, just before the fifth anniversary of the PRC.[20] The symmetric exhibition hall is in a typical Russian classical style. In the front, a semi-circular colonnade, comprised of eighteen arches to represent the amount of nations of the Soviet Union, embraces the fore square. In the middle axis, a 45-meter-high golden shining Russian gothic tower, capped with a star, sits at the building's top and dominates the overall silhouette.[21] In addition to a Russian style, the architects introduced some Chinese style elements on the buildings and transformed many of the building's components to Chinese-style ones. For example, the vault of the cinema hall was painted like the caisson ceiling of the Imperial Ancestral Temple in Beijing; the carved columns at the central entrance were made up with ceramic products to imitate the ornamental columns in front of the Tiananmen Gate.[22]

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[19] Zhang Bo, *Wo de jianzhu chuangzuo daolu*, P.71
[20] See Gong Deshun, Zou Denong & Dou Yide , *Zhongguo xiandai jianzhu shi gang*, P.48
[21] See *Ershi shiji zhongguo jianzhu*, P.217
[22] See *Ershi shiji Zhongguo jianzhu*, P.217

The exhibition hall occupied a land of 13.2 hectares and its total construction area approximated 23,000 square meters, including 12,700 square meters of the main building.[23] The amount of working drawings for the construction exceeded 1,000. It was a unique large-scale construction work since the founding of the PRC, a great challenge for Chinese construction workers to finish it according to a tight schedule, and, at same time, a great opportunity to learn. Many builders of the exhibition hall became backbones of their occupations after return with the experiences gained from this project. For Chinese architects, "it gave a clear explanation of how the Soviet architects had understood 'socialist content with national form.'"[24]

In Shanghai, as a sister project of the CCCP Exhibition Hall, the Sino-Soviet Friendship Edifice (now Shanghai Exhibition Center) designed by the same Russian architects demonstrated the same approach. So did the Measuring and Cutting Tool Works in Harbin. While in the living area of Harbin Linen Textile Factory, which was designed by an engineers' delegation from the Soviet Union, buildings were featured a strong Chinese characteristic by adopting Chinese roofs atop.[25] Such tactic is also presented in the living area of the First Automobile Works in Changchun. The latter was one of the most important Soviet-aided projects. Its construction started in July 1953 and became another learning base for Chinese designers at that time.

Figure 2-15 CCCP Exhibition Hall, Beijing, 1953-1954, Andreyev and etc.

[23] *Zhongguo jianzhu wushinian*, P.21
[24] Translated from Gong Deshun, Zou Denong & Dou Yide , *Zhongguo xiandai jianzhu shi gang*, P.48
[25] See *Ershi shiji Zhongguo jianzhu*, P.211

Figure 2-16 Sino-Soviet Friendship Edifice, Shanghai, 1954-1955, Andreyev and etc.

Figure 2-17 Office Building of Harbin Measuring and Cutting Tool Works, Harbin, 1954

Figure 2-18 Housing at the First Automobile Works, Changchun, 1953-1956

2.2 Liang Sicheng's Advocacy and Pursuit of National Form[26]

It was Liang Sicheng who took the most important role in advocating and promoting the "national form" in architectural area. According to his own retrospect, the reason of his advocacy of "big roof" in the 1950s lay in two aspects. The objective one was the policy "leaning to one side," and the subjective one was his predilection of traditional Chinese architecture.[27]

However, his enthusiasm would root in Chinese intellectuals' tradition of assisting Emperors, as well as his favor to the new regime. During the War of Resistance to Japan, Liang Sicheng was appointed as the Vice Chairman of the Chinese Commission for the preservation of Cultural Objects in War Area, which was established for listing, mapping and compiling photographs of the important temples, pagodas, museums and so on that were not to be destroyed. They distributed English-language guides to American airmen who were at that time still bombing Japanese bases in China's eastern provinces. Chinese versions of same guides were also distributed. One set of these reached Zhou Enlai and apparently caught his attention.[28] In December 1948, before Beijing surrendered, the People's Liberation Army (PLA) infiltrated the Tsinghua campus area. A PLA officer brought a map of the city and explained that Professor Liang was asked to

[26] It should be noticed that Liang Sicheng's work cannot be segregated from the collaboration between him and his wife Lin Huiyin.
[27] Lin Zhu, *Jianzhushi Liang Sicheng*, P.212
[28] Fairbank, W., *Liang and Lin: Partners in Exploring China's Architectural Past*, P. 137

designate areas where precious buildings and cultural relics must be preserved if artillery should be called into action.

Obviously, this event succeeded in initiating Liang Sicheng's favor to CCP. Afterwards, he "changed his insular and aloof attitude as a pure scholar and devoted to the socialist construction and the development of architectural education."[29] In a letter written in June 1949 to Tong Jun, a prominent Chinese architect and his former schoolmate at University of Pennsylvania as well as his colleague of founding the Department of Architecture at National Northeastern University, Liang Sicheng wrote: "From the first day of the Liberation, the PLA's discipline gave me an extreme impression. Afterwards, through various contacts with CCP, I witnessed their modest and realistic manner, which, heard and seen by myself, made me completely convinced and excited."[30] In the same letter, Liang Sicheng regarded that only CCP's policies could save China from the status of semi-feudal and semi-colony.[31] Same view was also expressed in the Preface of *Chengshi jihua dagang* (Chinese translation of *Athens Charter*), in which, Liang Sicheng and his wife Lin Huiyin compared CCP to a "great physician," who had basically cured China that "has been ill for 110 years." [32]

Well disposed towards the new CCP government, Liang Sicheng zealously participated in many activities. He became a special invited representative of the first CPPCC convention in December 1949, guided his Department of Architecture at Tsinghua University to accomplish the design for the reparation of Huairentang (the auditorium hall of the Central Government), and drew the first working drawing of the national flag. In 1950, together with his wife and some other faculty members from the architectural department, he established a team to make the eventually adopted design for the national emblem. In addition, he took up the post of Vice-Director of Beijing City Planning Commission founded in May 1949, and was one initiator of the Architectural Society of China (ASC).

With optimism of building a "new democratic China" and high respect to CCP – a mood at that time prevailed among Chinse intellectuals – Liang Sicheng began to study the policies framed by *Common Program* very early,

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[29] Tranlated from: Wu Liangyong, "Yidai zongshi, ming chui qingshi," *Liang Sicheng xiansheng danchen bashiwu zhounian jinian wenji*, P.224

[30] Translated from Liang Sicheng, A letter to Tong Jun, *Liang Sicheng quanji, Vol.5*, P. 42

[31] Ibid.

[32] Liang Sicheng & Lin Huiyin , "Chengshi jihua dagang xu," *Liang Sicheng quanji, Vol.5*, P. 116

and accordingly, "national, scientific and popular culture" became the guidance for his new exploration. In addition to Soviet expert's advocating, he became the most active advocate of the "national form" architecture.

In a speech delivered in January 1950, Liang Sicheng asserted: "Our architecture is, therefore, 'new democratic, namely, national, scientific and popular.'"[33] He brought forward that the order must be inversed in design process, to put popular demands at the first place, followed by scientific approaches, and national traits could only be discussed after the former two have been achieved. This speech didn't demonstrate how to design "national" architecture, but indicated two characteristics of traditional Chinese architecture: plan organized with courtyards and timber-frame structure. In the speech, Liang Sicheng criticized that past "Chinese renaissance" architecture was only "skin-deep and formalist architecture" and "most were frustrated, expect several barely satisfying attempts." He stated that the architects of these "Chinese renaissance" buildings hadn't "grasped essential characteristics of Chinese architecture."[34]

Thereafter, Liang Sicheng constantly reiterated and supplemented the views presented in the 1950 speech. In the 16th issue of *XinGuanCha* in 1952, he and Lin Huiyin published the paper "Zuguo de jianzhu chuantong yu dangqian de jianshe wenti" ("On Chinese Architectural Tradition and Current Construction"), cited some points of Mao's "On the New Democracy", and expected Chinese architects to "utilize the newest technologies and materials" to create "new democratic, or, our 'national and popular' architecture."[35] His essay "Sulian zhuanjia bangzhu women duanzheng le jianzhu sheji de sixiang" ("Soviet Experts Helped to Rectify our Thoughts of Architectural Design") published in *Renmin Ribao* December 22, 1952 clues that by that time he had started to reflect the Soviet "socialist realism" on architecture. In this article, he summarized Soviet socialist realism in five points: "caring for people," architecture as an art, the ideological nature of architecture and urban plan, integrity of urban buildings, and the nationality of architecture.

From February to May 1953, Liang Sicheng visited the Soviet Union as a member of a delegation of Chinese Academy of Science. In the 14th issue of *XinGuanCha* in 1953, he published "Minzu de xingshi, shehuizhuyi de

[33] Liang Sicheng, "Jianzhu de minzu xingshi," *Liang Sicheng quanji, Vol.5*, P. 58
[34] Ibid.
[35] *Liang Sicheng quanji, Vol.5*, P.142

neirong" ("National Form, Socialist Content") to introduce what he had seen and heard in the Soviet Union, and at same time, fervidly advocated "national form and socialist content." He wrote:

> What is "socialist content"? Before going to the Soviet Union, our understanding of it was blurry. But at the meeting with Mordvinov[36], the president of the Academy of Construction and Architecture of the Soviet Union, we understood it more clearly. He said: "Socialist content is caring for the happiness of laboring people, caring for their unceasingly growing needs of material and spirit, and to satisfy it in the design." …… At mines, collective farms and factories, we saw the government's cares to the people everywhere. The measures in design, the arrangements to advantage production and life and to improve culture, as well as all the manifestation of brightness, health and pleasure, are the 'socialist contents.'"[37]

About the "national form," he asserted that it was the most prominent characteristic of Soviet architecture and urban construction. But he pointed out that new buildings in Russia designed after 1935 all matched the tone of Russian Classicism but their national form was "not so distinctly noticeable."[38] He regarded it more clearly displaying the characteristic of Russian cities that some special Russian architectural components, such as golden towers, special-colored walls and columns, were applied on Soviet new buildings, and he felt that "national form" was "extremely apparent" in Ukraine, because its architecture looked different from Russian's.[39] In addition, while noticed Soviet stresses on economic aspects and its efforts concerning standardization, industrialization, and mechanization in building construction, he highly emphasized the aspect that the Soviets "don't ignore other aspects of caring for people just for economical value" and "they don't ignore artistic measures just for the request of design standardization."[40]

Obviously, this visit, especially the harmony presented by Soviet cities, deeply impressed Liang Sicheng, as he later summarized:

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[36] Arkady Mordvinov, the chief architect of the Ukraina Hotel in Moscow, and one of the leading Soviet architects of that time
[37] Translated from *Liang Sicheng Quan Ji, Vol. 5*, PP.169-170
[38] Ibid. PP.170-171
[39] Ibid, P.171
[40] Ibid. P.173

> There was another important reason that fully convinced me of the Soviet theory on "national form." That was the beauty of Moscow. The integrity out of holistic consideration, the beautiful buildings blocks with national character, and the well preserved architectural relics, plus the comparison with the chaos of Anglo-American cities, made me deeply realize the advantage of socialism. So I (began to) learn from the Soviet Union and advocate "national form."[41]

From 1950 to 1954, Liang Sicheng delivered a number of speeches and published a series of papers to explain the history and his concluded characteristics of classical Chinese architecture, in order to provide references for renovating old buildings and designing new buildings. More importantly, with these efforts, he intended to instruct Chinese architects to design genuine national form. In the aforementioned his 1950 speech, he already indicated courtyard-plan organization and timber-frame structure as characteristics of Chinese architecture. In "Woguo weida de jianzhu chuantong yu yichan" ("The Great Architectural Tradition and Legacies of Our Country") published in February 1951, he talked about timber frame structure again. In addition, he compared the traditional way of construction to "syntax" of language, in which various architectural components became "words." In "Gujian xulun" ("A Brief Introduction of Traditional Chinese Architecture"), a lecture around the beginning of 1953 to a training class to archaeological personnel, he further itemized the character of Chinese architectural system that was shaped up since 1400 B.C. into seven aspects: the basic composition comprised of three parts, namely, brick or stone base, timber house body, and sloping roof; frame system, using timber columns and beams to support roof; the special component *Dougong*[42], atop columns or at joints of columns and beams; the method of using multi-layered beams to determine the pitch and the curvature of a roof; painting columns in red and decorating the upper part of timber structure with colored patterns; columns and beams sticking out at their joints, and being carved to different forms; and lastly, colored glazed tiles and carvings on wood, stone and brick. Liang Sicheng compared these aspects to the "syntax" of Chinese architecture to emphasize their importance, as he said: "It is same for architecture and language that every nation has created its followed conventions, which have become the principles. … As long as they (the

[41] Translated from Lin Zhu, *Jianzhushi Liang Sichen*, PP.211-212
[42] See. Chapter 1, Note 32

buildings) are Chinese architecture, they must abide by certain syntax of Chinese architecture."[43]

In the initial issue of *Jianzhu xuebao* (*JZXB*, *Architectural Journal*), published in June 1954, Liang Sicheng published "Zhongguo jianzhu de tezheng" ("The Characteristics of Chinese Architecture"), which was actually the second chapter of his course *Brief History of Chinese Architecture* given at Tsinghua University. Because *JZXB* was nation-wide published, this paper exerted a great influence in the architectural circles. In this paper, Liang Sicheng summarized the characteristics of Chinese architecture more systematically. Besides the seven points in last paper, he added two items: courtyard-plan layout and roof, and he alleged Chinese style roof as "one of the most proud achievements of our nation's architecture"[44]. In this paper, Liang Sicheng more strongly emphasized these characteristics as the "syntax" of Chinese architecture, and the components including column, bean, rafter, door, window, tile, balustrade and *dougong* as the "words." Meanwhile, he brought forward his idea of "translatability" between different nations' architecture, suggesting that architecture of different nation or different time could be translated into Chinese architecture through applying the "words" and the "syntax". He concluded: "If we want to apply the fine tradition of our architecture to construct suitable buildings of our new China, we must get familiar to the 'syntax' and the 'words' of our own architecture, otherwise it's impossible for us to composite a Chinese 'article.'"[45] Furthermore, he suggested two old books – *Yingzao Fashi* (*Building Standard*) of the Song Dynasty and *Gongcheng Zuofa Zeli* (*Structural Regulations*) of the Qing Dynasty – to Chinese architects as reference for further studying the "syntax" and the "words."

In his memoirs, Zhang Bo, a prominent architect of the "second generation," recalled the demonstration that Liang Sicheng gave at the founding ceremony of the ASC, which clearly interpreted Liang Sicheng's idea of "translatability." He wrote:

> He sketched the outline of St. Peter's Basilica. Firstly, he altered the dome to the triple-eaved roofs of the Temple of Heaven. On the second step, he altered the four corner domes to square pavilions with

[43] Translated from *Liang Sicheng Quan Ji, Vol* 5, P.158
[44] Ibid, P.181
[45] Ibid. P.184

> multi-eaved pyramidal roofs. On the third step, (he) eradicated the traditional western way of pediment façade …… and instead, altered it to multi-eaved roofs with small pediment facing sides. On the fourth step, (he) altered the bottle-like balusters at the parapet above the portico to white marble balusters, with *Wangzhu* above and *Xumizuo* underneath, and even, altered the big steps to the way of arranging *Yudao* in the middle and walkways at sides. On the fifth step, he altered the cloister that nests the front piazza and the pavilion at the ends to the cloister at Summer Palace and square multi-eaved pavilions.[46]

In the speech at the founding ceremony of the ASC, Liang Sicheng compared the building standards and regulations in *Yingzao Fashi* and *Gongcheng Zuofa Zeli* to the "Five Orders" of European architecture, and stated: "Like certain restrictions of syntax to the usage of language, 'orders', 'standards', and 'regulations' have their restrictions to the usage of materials and components."[47] Same argument was presented as well in his speech "Zuguo de jianzhu" ("The Architecture of the Motherland"), stenographed and published as a book in 1954. He said:

> Sometimes syntax is something unreasonable (imperative). … As syntax, the handling of every part of a building has some definite compositional conventions. … "*Fashi"* is the "syntax" of architecture. It has been the manifestation loved by the masses. The image composed following it is the art that was favored, well known, comprehended and proud of by us Chinese. We must apply and develop it to express the thinking and the feeling of our nation. [48]

At the end of the book, two sketches by Liang Sicheng were enclosed to represent his "suggestion of a possibly adoptable method in the phase of starting to learn (how to) apply Chinese classical legacies and national traditions." Through the sketches, Liang Sicheng attempted to illustrate two statements. Firstly, no matter a building is big or small, high or low, it can be handled with a traditional form through the "syntax." Secondly, the first place to achieve national form rests with the outline of a building group or a single building, and the second one lies at the proportion and rhythm of the

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[46] Translated from Zhang Bo, *Wo de jianzhu chuangzuo daolu*, P.70. *Wangzhu* 望柱: a kind of Chinese-styled baluster; *Xumizuo*须弥座: a kind of base evolved from the base of Buddha figure, normally used at high-level traditional Chinese buildings; *Yudao* 御道: imperial path stone locating at the middle of the stairs in front of a palace

[47] Liang Sicheng, "Jianzhu yishu zhong shehui zhuyi xianshi zhuyi he minzu yichan de xuexi yu yunyong wenti," *Liang Sicheng quanji, Vol.*5, P.192

[48] Translated from Liang Sicheng, "Zuguo de jianzhu," *Liang Sicheng quanji, Vol.*5, PP. 201-204, P.229

parts such as walls and openings, while emblazonment is only a subordinate factor.

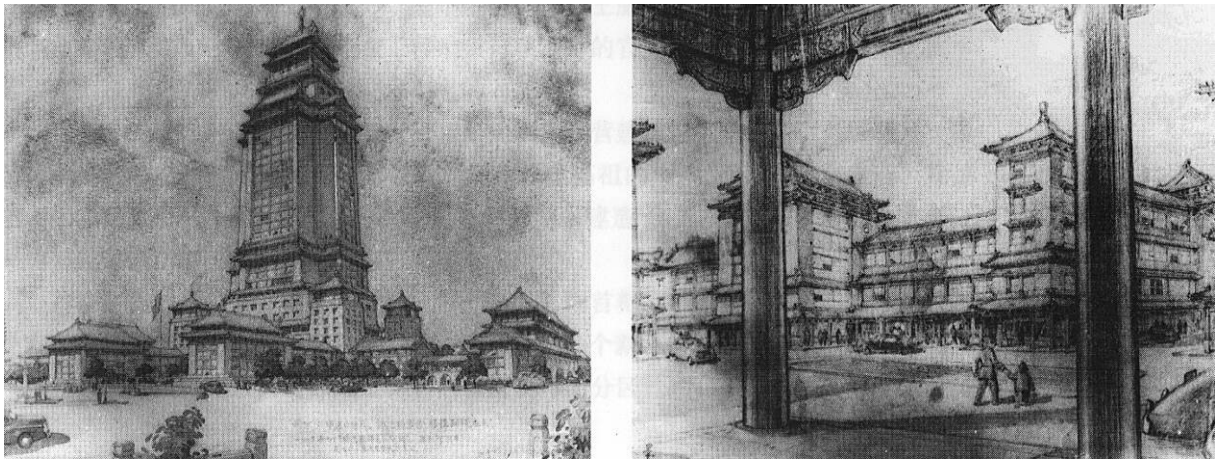

Figure 2-19 Liang Sicheng's imaginary illustrations of "national form"

Actually, Liang Sicheng's views presented in the 1950s can be traced back to the 1930s, when he started his research on traditional Chinese architecture. Like his contemporaneous intellectuals, Liang Sicheng had been very much imbued in the contradiction between desires of modernization and national rejuvenation. Maybe due to his family background, his belief of nationalism was very strong, and this had been the reason and the stanchion of his long-time research career in national Chinese architecture.[49] Many of his views were persistent, especially the willing of carrying forward the tradition of Chinese architecture into new buildings. In the paper "Weishenme yanjiu Zhongguo jianzhu" ("Why Research on Chinese Architecture"), published in 1945 in Iss.1, Vol. VII of the Bulletin of the Institute for Research in Chinese Architecture, he wrote:

> Undoubtedly, China will adopt a large quantity of modern western architectural materials and technologies. How to carry forward the characteristics of the accomplishments of our national architecture … will become the responsibility of modern architects. It is really the issue that how to accept new scientific materials and methods while still represent specific Chinese styles and meanings. [50]

In the same paper, Liang Sicheng praised the "palace style" architecture as the "torch" of renaissance of Chinese spirit, and he regarded their attempts

[49] Liang Sicheng's father Liang Qichao梁启超(lyäng chē-chou) was a famous leader of the "hundred days' reform" in 1898, whose writings had a great influence on the constitutional movement in China.
[50] Translated from *Liang Sicheng Quan Ji, Vol.* 3, P.378

as being "boundlessly meaningful," [51] although he admitted that "the structure of palace-style architecture was not in accordance with the ideal of modern science and art" and that "it was not suitable to China's economic situation." In general, Liang Sicheng was not satisfied with the "Chinese renaissance" architecture, especially those designed by foreign architects. In "Jianzhu sheji cankao tuji xu" (the preface of *Collection of Drawings for Architectural Design Reference*), a paper published in 1935, he regarded that the common mistake of missionary colleges rested with the "lack of basic understanding on the structure of Chinese architecture" and that "they all paid attention to formal imitation, ignored the similarities and differences between the structures of Chinese architecture and foreign architecture."[52] He also made a comment on Sun Yat-sen's Mausoleum, saying that the architect "was lack of the knowledge of whatever the layout, the frame or the details of Chinese tradition, thus it leaded to various obvious mistakes when dealing with the proportion."[53] Such opinions were reiterated in the 1950s, though this time he admitted that Yenching University was better than other missionary schools and that there were still some "barely satisfactory" works among the Chinese renaissance architecture designed by Chinese architects in the 1930s.[54]

One purpose of Liang Sicheng's research on traditional Chinese architecture was to collect and sort out concerned data and to understand the principles of Chinese architecture, in order to instruct the design of Chinese-style buildings. As early as in March 1932 – about half year after Liang Sicheng and his wife Lin Huiyin entering the Society (Institute) for Research in Chinese Architecture – Lin Huiyin published a paper "Lun Zhongguo jianzhu zhi jige tezheng" ("On the Characteristics of Chinese Architecture") in Issue 4, Volume III of the Society's Bulletin. In the paper, she summed up five aspects of the character of Chinese architecture, including frame-structure system, *Dougong*, columns and fine joints between columns, base, and plan layout, and revealed the appreciation of the timber-frame structure. "Our principle of frame system happened to be the same as the principle of modern 'concrete frame' or 'steel frame,'" Lin Huiying wrote, "In the future, (we need) only change the building materials and needn't radically alter the main structural parts. At the same time, (we can) newly

[51] Ibid. P.379
[52] *Liang Sicheng quanji, Vol 6*, P.235
[53] Ibid.
[54] See Liang Sicheng, "Jianzhu de minzu xingshi," *Liang Sicheng Quanji Vol. 5*, P. 57,P.58; Liang Sicheng, "Zhongguo jianzhushi," *Liang Sicheng quanji Vol. 5*, P.236

develop it along with the development of material. The new architecture of supreme satisfaction will occur."[55] Similar idea was presented in her "*Qingshi yingzao zeli* di yi zhang: xulun" (*Structural Regulations of Qing Dynasty*, Chapter 1: Introduction), published in 1934, as well in Liang Sicheng's book *Zhongguo jianzhu shi* (*A History of Chinese Architecture*) written during 1942 to 1944 but not published until 1998, of which the first section of the first chapter was titled "The Characteristics of Chinese Architecture."

Liang Sicheng's 1950s' conclusion on the character of Chinese architecture didn't essentially go beyond what he and his wife had concluded in the 1930s and 40s, as shown above, and his emphasis on learning from the two old Chinese architectural books can also been found in his early paper "Zhongguo jianzhu zhi liang bu 'wenfa keben'" ("Two 'Textbooks of Syntax' of Chinese Architecture"), published in the Issue 2, Volume VII of the Bulletin of the Institute for Research in Chinese Architecture in 1945. The drastic change is his attitude to modern architecture, from a positive one in the 1930s and 40s to a negative one in the 1950s.

As mentioned in Chapter One, Liang Sicheng was involved in the activities concerning modern architecture in the 1930s, and designed two modern-style buildings for Peking University during 1931 to 1932. From 1945, he shifted from historical research to architectural education, and became the dean of the newly established Department of Architecture at Tsinghua University. In March, he wrote a letter to the university president Mei Yiqi, pointing out that the Ecole des Beaux-Arts educational model, which had been adopted in most universities in China for decades, attached too much emphasis to form and was not pragmatic, and he suggested adopting the Bauhaus model instead.[56] In order to ameliorate the education of his department, Liang Sicheng went to visit the United States in October 1946. During his trip, he was recommended by the Chinese government to take part in the advisory team for the design of the United Nation building in April 1947. In the United States, he contacted a number of famous modernist architects in the country, including Le Corbusier, F. L. Wright, W. Gropius and E. Saarinen, and visited a good many architectural works of last twenty years.[57] When he returned in September 1947, a new curriculum emerged at

[55] *Lin Huiyin wenji –jianzhujuan*, P.15
[56] *Liang Sicheng quanji Vol 5*, P.2
[57] Lin Zhu, *Jianzhushi Liang Sicheng*, PP.211-212

his department. It substituted the training of the "Five Orders" in the basic design course with the new one of "abstract composition."

After the founding of the PRC however, Liang Sicheng began to criticize modern-style architecture, based to the theory of class struggle. In the Preface of *Chengshi jihua dagang* (Chinese translation of *Athens Charter*), published in July 1951, the translators Liang Sicheng and Lin Huiyin wrote:

> After the Liberation, through incessant studies and especially the patriotism and internationalism education of last year, we have cordially criticized (our) past faults. We affirmatively realized that the so-called "international style" is essentially the concrete manifestation of cosmopolitism, and realized its bourgeois nature. We realized it basically can not be segregated from the degenerate and idealistic bourgeois art; it is mechanical materialism, reactionary, and basically can not be consistent with the "national, scientific and popular" cultural policy of the PRC. We introduce here the charter while object CIAM theories on architectural form, just in order to reject the dross and assimilate the essence.[58]

In another paper, they stated: "all today's Chinese architects, without exception, have learned from foreign countries, directly or indirectly." They went on to assert: "The senior ones have learned from Greece, Roma, or the Renaissance, while the junior ones have learned from the shape configuration of capitalist art theories, namely, the 'modernism' or 'international style' factions of 'functionalism'. We have been drunk with the former and the latter poisons for tens years. We have been accomplices of imperialist and capitalist cultural invaders."[59] Liang Sicheng also fired at modernist architecture in papers and speeches. For example, by quoting words of some Soviets and those of some architects from East Germany, he criticized Le Corbusier's Centrosoyuz Administrative Building as "a scar of Moscow" and buildings erected in West Germany after World War II as "glass boxes that prevails in the United States" "without any shred of German nation's style."[60]

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[58] Translated from *Liang Sicheng quanji Vol. 5*, P.117

[59] Lin Huiyin & Liang Sicheng, "Sulian weiguo zhanzheng beihui diqu zhi chongjian yizhe de tihui," *Liang Sicheng quanJi, Vol 5*, PP.120-121

[60] See Liang Sicheng, "Minzu de xingshi, shehuizhuyi de neirong," *Liang Sicheng quanJi, Vol 5*, P.169, and Liang Sicheng, "Zuguo de jianzhu," *Liang Sicheng quanJi, Vol 5*, P.200

In general, Liang Sicheng's view on "national form" was not consentaneous in the architectural circles in the early 1950s, as Wang Jiqi narrated in his recollection of the founding of the ASC: "Some propositions in comrade Liang Sicheng's report were disputed at the first symposium of architectural and literary circles held during the founding of the ASC, and they were opposed as 'irrelevant comparisons.' Moreover, there were different understandings and arguments on the national form of the 'national form, socialist content'."[61] Very few materials concerning the arguments are found today. Nevertheless, we can catch sight of one view of other architects at that time through Dai Nianci's twelve essays written during 1949 to 1951.

Dai Nianci, a graduate of the Central University relocated in Chongqing during the War of Resistance to Japan, is a prominent architect of the "second generation." He made a name for himself by wining a 1945 competition for the Triumphal Arch in Shanghai. Recommend by Liang Sicheng, he moved to Beijing from Shanghai in 1949 to join the Construction Office for Central Committee Departments and held the post of design director. During 1947 to 1949, Dai Nianci read some articles by Lu Xun, a leading writer of the New Culture Movement, as well as works by Frank Lloyd Wright. These two unconnected people exerted a great influence on him. After 1949, he began to study Mao Zedong's works such as "On the New Democracy" and "Speech at Yan'an Symposium on Literature and Art" and yielded the thinking of creating the "new world" of China's architecture through undertaking the new thoughts and theories.[62]

At the point of following CCP's doctrines, Dai Nianci's view was no different from Liang Sicheng's. However, he regarded that the new China's architecture should be the architecture based on "truth," as he wrote:

> Buildings are to be inhabited by people. … The essence of architecture rests not only with the tri-dimensional form of beauty, but mostly with the inhabitable and utilizable spaces. … The beauty of architecture is the beauty of the inhabitable spaces. What we should try to hold in architectural design is space. Architects shouldn't forget this essence and make only effects on appearances.[63]

[61] Wang Jiqi, "Huiyi Shanghai jianzhu yishu zuotanhui," *JZXB*, 4/1980, P.2
[62] See Dai Nianci, "Dui shiyi pian jiu wenzhang de bubai," *JZS, Iss. 41*, P.1
[63] Translated from Dai Nianci, "Lun xin Zhongguo de xin jianzhu," *JZS, Iss. 41*, P. 4

Far from Liang Sicheng's view, Dai Nianci opposed the way of creating "national" architecture through mechanically applying traditional architectural formulary. In the essay "Minzu xingge ne, haishi minzu fengge" ("National Character, or National Style?"), he attempted to differentiate "character" and "style" to clarify his idea. He wrote:

> In an era, because of the distinctness of the objective conditions in politics, economy and society, the features of architecture of the time are formed. This is the "character" of the time. Because of the distinctness of nationality and the objective conditions in geography and history, a nation shapes its form of architecture. This is the "character" of the nation. … When the style, which is the "architectural character" of the time and the place, is solidified to become certain "order," this kind of "order" becomes stiff and unchangeable, and it's no more integrated with the live objective world, moreover, it is indigent.[64]

Dai Nianci thought that the roof curve, *Dougong*, colored painting, and so on are characteristics of Chinese architecture formed in the objective environment of the past but they only represent the "national character" of old China. Therefore, he opposed to build palace-style Chinese architecture because "it can not represent our present China, although it embodies the character of Chinese architecture." [65] He even compared "Chinese renaissance" buildings to "lies", because he thought they disguised concrete buildings with the appearance of timber structure.[66] Moreover, he stated that there shouldn't be a *Jieziyuan huapu*[67] for new China's architecture and architecture should tell "veracity." He wrote: "One day, when we indeed speak veracity and when we speak completely correctly, our works will of necessity be those of 'national form.'" [68]

Among the twelve essays, some were prepared for an architectural journal that Liang Sicheng was planning to run and some were written to consult with Liang Sicheng. (None of these essays was published until the 1990s when they were published as historical materials.) All these essays were delivered to Liang Sicheng and Lin Huiyin. From remarks by the latter, we

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[64] *JZS, Iss. 41*, P.7
[65] Ibid
[66] Dai Nianci,"Huang," *JZS, Iss. 41*, P. 13
[67] *Jiezyuan huapu*芥子园画谱 is a famous copybook of Chinese painting.
[68] See Dai Nianci, "Bianzao "Jieziyuan huapu," *JZS, Iss. 41*, P. 12 & "*Shuo 'laoshihua'"*, *JZS, Iss. 41*, P.13

can evidently find that Liang Sicheng and Lin Huiyin didn't agree with Dia Nianci's opinions, especially the views on how to create national form architecture.[69] The primary difference between Liang Sicheng and Dai Nianci's opinions was on whether applying traditional architectural "vocabulary" to compose the "article" of national form.

At all events, Liang Sicheng, who was highly respected in both of the architectural circles and the CCP government, energetically promoted his idea on "national form." In design practice, he insisted on the importance of applying traditional form to new buildings. As early as in 1950, when he guided the Construction Office for Central Committee Departments, he personally sketched the form for the newly constructed dormitory buildings in Zhongnanhai[70], with the attempt of making the multi-story brick structures as close as possible to Chinese tradition in every aspect, such as the constructions of the roofs and the fenestration. He stressed that multi-story building was new in Chinese architectural system and therefore its form needed a "decision in principle."[71] Holding the post of Vice-Director of Beijing City Planning Commission, he prescribed that architects of various governmental department buildings should design "according to national form."[72] As Wang Jiqi recollected, at that time in Beijing, "a design was hard to avoid being unapproved if it was not in accordance with the feature of 'three-section proportion."[73]

2.3 The Modern Style Architecture and Its Demise

In the first years of the PRC, a large-scale reconstruction was yet to be launched. There were only sporadic buildings constructed all over China. Following the trends after the War of Resistance to Japan, modern style was still dominant in architectural activities. The representative modern-style buildings in the early 1950s included South Chinese Local Products Exhibition Halls in Guangzhou, the Library at South China Institute of Technology, Beijing Children's Hospital, the Hospital of Wuhan Medical

[69] See Tao Zongzhen, "Lishi de huigu," *Dangdai Zhongguo jianzhu dashi --Dai Nianci*, PP.271-278
[70] Zhongnanhai中南海, the place where the headquarters of the central government located
[71] Liang Sicheng, A letter to Zhu De on the new houses at Zhongnanhai, *Liang Sicheng quanji, Vol.5*, P.83
[72] Liang Sicheng, A letter to Premier Zhou Enlai on the planning of Chang'an Avenue, Liang Sicheng quanji, *Vol.5*, P.123
[73] Wang Jiqi, "Huiyi Shanghai jianzhu yishu zuotanhui," *JZXB, Iss.4/1980*, P.2

College, Caoyang New Settlement in Shanghai, the Yuying Primary School in Beijing, the Peace Hotel in Beijing, and so on.

In 1950, the compound of South Chinese Local Products Exhibition was built. It consisted of twelve halls to respectively exhibit products of forest, aquatic, fruit, vegetable and so forth, designed by Lin Keming, Huang Yuanqiang, Xia Changshi, Tan Tiansong, Guo Shangde and others. All the small-scale, light-looking and well-functioning structures were constructed in a low standard with cheap materials, but formed an attractive place for local cultural activities.

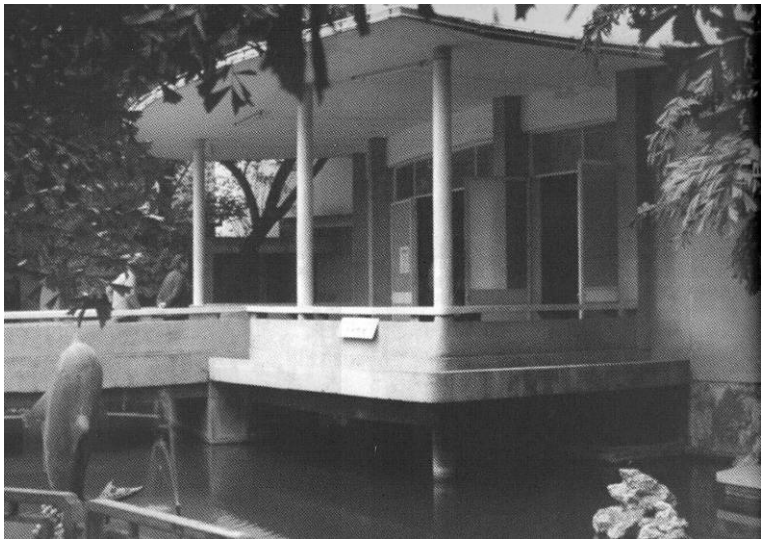

Figure 2-22 Aquatic Hall, South Chinese Local Products Exhibition, Guangzhou, 1951, Xia Changshi

Figure 2-23 Forestry Hall, South Chinese Local Products Exhibition, Guangzhou, 1951, Tan Tiansong

In the same city in 1950, Xia Changshi took charge of the re-design of the Library at South China Institute of Technology, which had been designed before the War of Resistance to Japan as a "palace-style" reinforced concrete structure and had been constructed to the first floor before the interruption by the war. Xia Changshi abandoned the original design and modified the building to a more open and economical modern structure to suit the local climate and the current economic situation. Besides this work and the mentioned Aquatic Hall at South Chinese Local Products Exhibition, his outstanding works in the early 1950s includes several buildings at Sun Yat-sen University of Medical Sciences in Guangzhou. By manipulating sunshade components at façades and roofs, he endowed these buildings with a strong tropical characteristic (see Section 3.5).

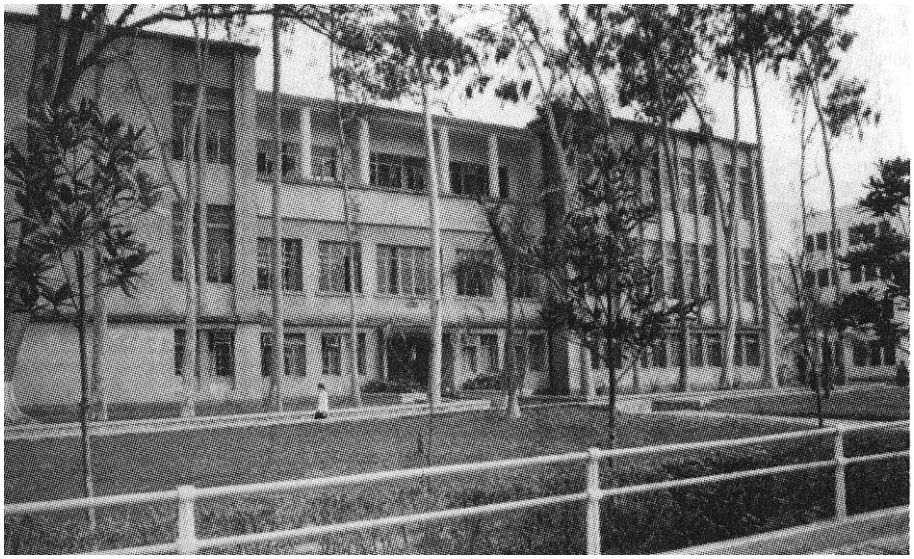

Figure 2-24 Library at Huanan Institute of Technology, Guangzhou, 1951-1954, Xia Cangshi

Figure 2-25 Beijing Children's Hospital, Beijing, 1952-1955, Hua Lanhong

Beijing Children's Hospital was designed and built from 1952 to1954, with Hua Lanhong and Fu Yitong as the chief architects. It was Beijing's largest specialized hospital for children at that time. The architectural design strictly conformed to the unique requirements of a children's hospital: the outpatient hall housed a section for complete preliminary examinations, and every special section was accommodated an independent unit with double walkways and a two-time waiting zone. In addition to the plan, its appearance was very laconic. Little ornamentation was adopted, except that at the flat roofs, curved eaves were used to hint the feature of Chinese architecture.[74]

The Hospital of Wuhan Medical College (now Tongji Hospital) was designed by Feng Jizhong in the spring of 1952 and opened in May 1955. The architect adopted a multi-legged plan to separately house four nurse units and smoothly connect them with the auxiliary parts. At the entrance, a curved wall with a cross-shaped fenestration was designed to indicate the building's function. Here, the simple façades and the free-shaped slab covering the terrace emit the strong feeling of a modern hospital[75].

Figure 2-26 Hospital of Wuhan Medical College, Wuhan, 1952-1955, Feng Jizhong

Caoyang New Settlement was located at the northeast suburb of Shanghai. It was planned and designed in 1951, with Wang Dingzeng as the chief

[74] See *Ershi shiji zhongguo jianzhu*, PP.215-216
[75] Zou Denong, *Zhongguo xiandai jianzhu shi*, P.107

architect, in collaboration with Jin Jingchang, Zhou Jingjiang and others. Its construction was started in 1951 and the first phase was completed in 1953. The planning of the settlement adopted the notion of "neighborhood unit," although its population scale was bigger than one such unit. Most of the public buildings at the settlement, including some shops, a post office, a bank, and a cultural center, were placed at the center of 94.6-hektare area and 0.6-kilemetre radio, while some small shops and food markets were located along edges. Primary schools and kindergartens were averagely distributed in individual areas, in order to ensure short distances for children and at same time, prevent residential blocks from noises.[76] The planning of the settlement gave full consideration to the land features: spreading out along the stream, a free layout was used to create a beautiful and pleasant living environment. Most buildings were two- or three-story high, and the outlook of the slope-roofed apartment buildings was very modest, without any ornaments on the façades. The settlement was ranged into the type of Garden City due to its low height and low density, although the residences that it comprised were apartment buildings rather than one-family houses, and, in addition, the architects didn't have the intention to build a garden city.[77]

Figure 2-27 Overall plan of Caoyang New Settlement

[76] Wang Dingzeng, "Shanghai Caoyangxincun zhuzhai qu guihua sheji," *JZXB*, *Iss.2/1956*, P.2
[77] Ibid. P.4

Figure 2-28 Caoyang New Settlement , Shanghai , 1951-1953, Wang Dingzeng and etc.

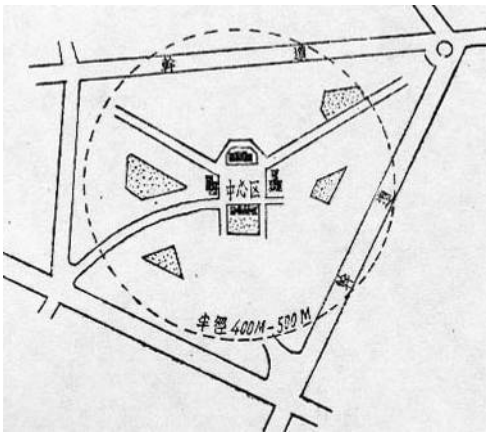

Figure 2-29 The diagram of Caoyang New Settlement as a "neighborhood unit"

The Yuying Primary School in Beijing was designed by the mentioned Dai Nianci, who was another active architect since the beginning of the 1950s. As mentioned in last section, he had been strongly `influenced by Frank Lloyd Wright. At the Yuying Primary School, means of Wright's "Prairie House," such as gently slope roof, overhanging eave, decorative lattice at doors and windows, gable wall fenestration, horizontal wall division and fenestration, as well as hexagonal decoration on eaves, were extensively adopted. Such approach was presented as well at his other buildings designed during the early 1950s, such as six houses and one office building of the Construction Office for Central Committee Departments.

Figure 2-30 Yuying Primary School , Beijing, 1950-1951, Dai Nianci

Among modern-style architectural works in the early 1950s, the Peace Hotel in Beijing, which at that time was the highest structure in the national capital, was the most famous one. It was designed since 1951 by Yang Tingbao, one of the most prominent and productive architects of the "first generation," and was erected in 1953. This work reached the apogee of the eclecticist master's attempts of modern-style architecture. In order to keep four

existing trees, a well, and a courtyard house, the barely stripped building was asymmetrically planned and rather diagonal composed in the site. In addition, as the solution of the problems in circulation and parking in the tight site, a crossing opening was adopted to connect the fore street and the back street and allow vehicles to park in the backyard of the building.[78] In September 1978, Yang Tingbao explained the reason why he applied modern style in this architecture as it being "easy for construction, and fast enough to suit the needs."[79]

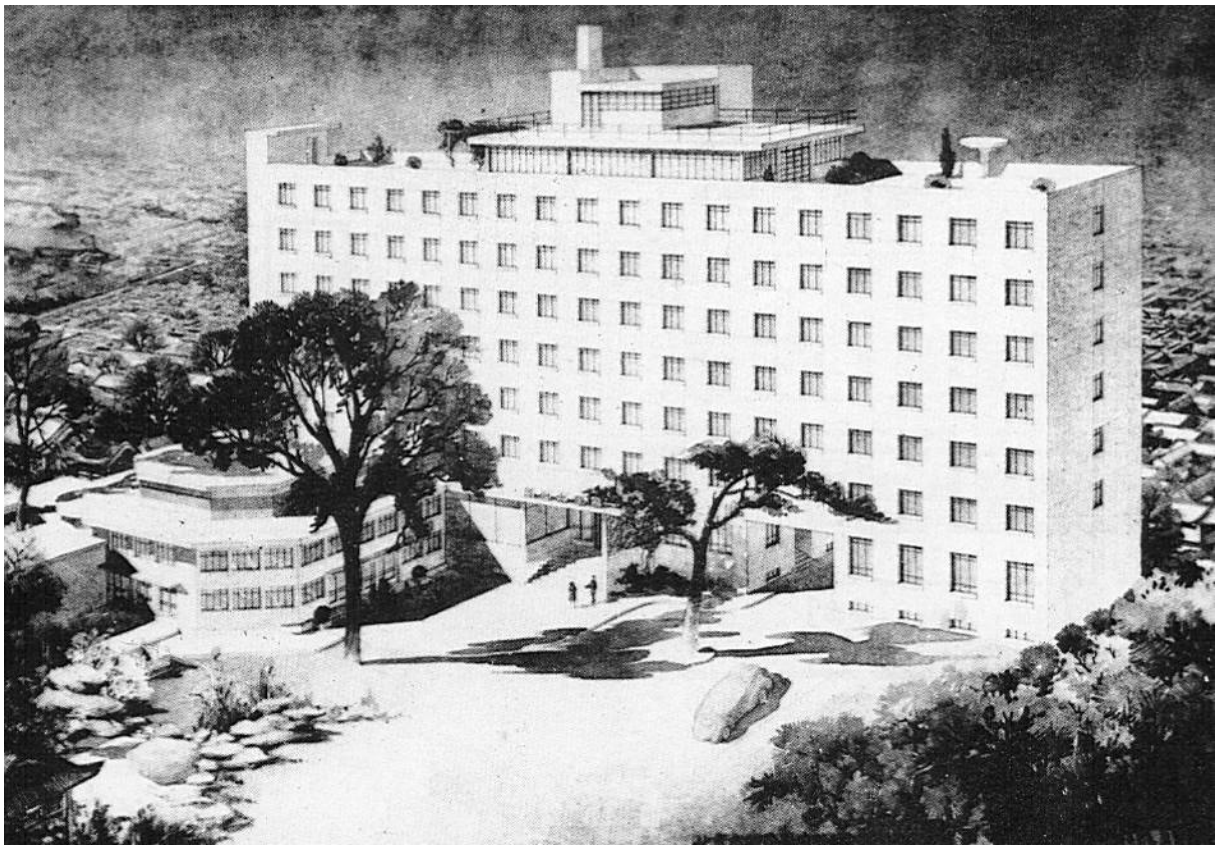

Figure 2-31 Peace Hotel, Beijing, 1951-1953, Yang Tingbao

Besides the above examples, there were still a good many other modern-style buildings constructed during 1949 to 1953, such as the Hospital of Qingdao Textile Bureau, the Department of Engineering at Hunan University in Changsha, and the Wenyuan Lou at Tongji University in Shanghai, as well as many nameless structures.

[78] About the Peace Hotel, see *Ershi shiji Zhongguo jianzh*, P. 213 & *Zhongguo jianzhu wushinian*: *1949-1999*, P.12 & P. 8.

[79] Yang Tingbao, "Ershiliu nian hou –chong fang heping binguan," JZS, Iss. 1 (1979.8), P. 35. According to the paper, the construction took only 50 days.

Figure 2-32 Hospital of Qingdao Textile Bureau, 1952

Figure 2-33 Wenyuan Lou at Tongji University, Shanghai, 1953-1954, Huang Yulin and Ha Xiongwen

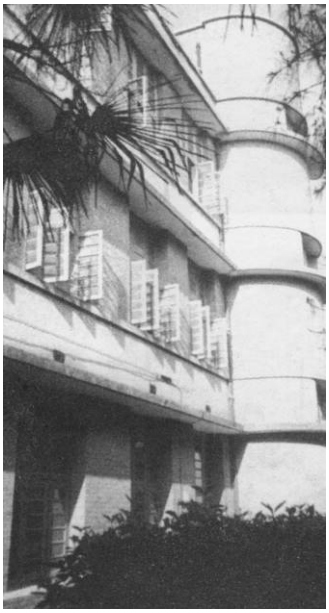

Figure 2-34 Department of Engineering at Hunan University, Changsha, 1949-1953, Liu Shiying

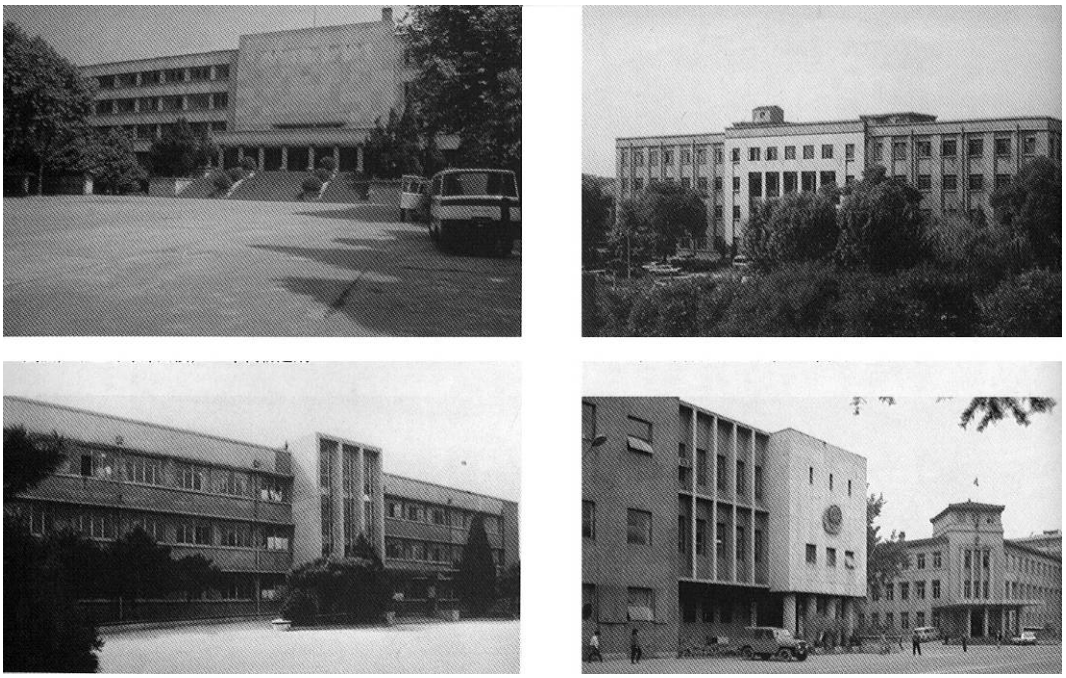

Figure 2-35 Some office buildings in the early 1950s, respectively in Wuhan, Taiyuan, Beijing and Fushun

At the beginning of the 1950s, China was in the phase of economic recovery. A highly centralized authority was yet to be established and Soviet ideological creeds on architecture had not taken a coercive role. In this situation, the tendency in favor of modern-style architecture since the 1930s could last. So many modern-style buildings were built because they were cheap and "suitable for the needs." However, the situation changed very soon. As China launched the first Five-Year Plan in 1953, many Soviet-aided projects were constructed all over the country, and simultaneously, a great number of Soviet experts came. In order to ensure the accomplishment of the First Five-Year Plan, the CCP government tightened the political control and stressed the request of learning from the Soviet Union, and design work was put into the category of class struggle. On October 14, 1953, *Renmin ribao* (*People's Daily*) issued the editorial "Wei queli zhengque de sheji sixiang er douzheng" ("Struggling for Establishing Correct Thoughts of Design"), which measured off the design thoughts into socialist design ideology and the opposite capitalist one. It asserted:

> Capitalist design ideology is isolationism, shortsighted, and without the sense of responsibility to the state or the collectives. … When the designers design enterprises of socialist character, they, conscientiously or unconscientiously, still follow the bourgeois view of design. … So far as deeply in some designers' minds, they are still infatuated in capitalist countries' technologies, regarding that various

> Anglo-American technical and design norms are impossible to be broken through, nor their experiences. While in face of advanced Soviet design experiences and technologies, they adopted an attitude of hesitation or even resistance. … The design (ideology) is correct or not is the question of stand, viewpoint and method. In order to heighten design level, improve quality and overcome mistakes, (we) must criticize and eliminate capitalist design ideology and learn socialist design ideology, especially learn from Soviet expects.[80]

As Soviet experts came to China with their architectural creeds, they clearly indicated that most of the latest architectural works in China after 1949 were "constructivist," which was the opposition of Soviet architecture. The Peace Hotel, which had been regarded as a great achievement of the PRC[81], was clearly criticized as "constructivist architecture." In June 1953, two representatives of the preparatory ASC attended the First Convention of Polish Architects' Association in Warsaw, which was actually a rally involving almost all the members of the socialist camp. The convention's theme was to advocate "socialist content, national form" against constructivism. When the Chinese delegates arrived in Moscow on their way back to China, a journalist told them that the Peace Hotel was commented as constructivist architecture at another conference in Czechoslovakia when its photos were shown.[82] Such criticism was repeated by Soviet experts such as Mukhin and Andreyev, the latter the designer of the CCCP Exhibition Hall in Beijing.[83] Zhang Bo, in his memoirs, mentioned the criticism by Mukhin: "He (Mukhin) said, the Peace Hotel and the office buildings newly built in the west suburb of Beijing all are boxes and big-glass-windowed constructivist works. He regarded that we had been deeply poisoned by capitalism."[84] Had not prevented by Premier Zhou's comment as "it solved the problem," a movement of criticism on Yang Tingbao and his Peace Hotel would have vociferously taken place[85], like the later criticism on Liang Sicheng in 1954.

In December 1954, *JZXB* published a "people's letter", which, transferred from *Renmin Ribao*, drastically attacked the South Chinese Local Products

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[80] Translated from Gong Deshun, Zou Denong & Dou Yide, *Zhongguo xiandai jianzhu shi gang*, P. 42
[81] See Fu Jiaqin (1952), "Heping Binguan de dansheng," *Xin Guancha*, *Vol.17/1952*
[82] Wang Jiqi, "Huiyi Shanghai jianzhu yishu zuotanhui," *JZXB, 4/1980*, P. 1
[83] Gong Deshun, Zou Denong & Dou Yide, *Zhongguo xiandai jianzhu shi gang*, PP.49-50
[84] Zhang Bo, *Wo de jianzhu chuangzuo daolu*, P. 71
[85] Yang Tingbao, "Ershiliu nian hou –chong fang heping binguan," JZS, Iss. 1; *Yang Tingbao jianzhu lunshu yu zuopin xuanji*, P.154

Exhibition. The letter's author said he was very surprised to discover that some newspapers and periodicals had published many photos of the exhibition buildings despite they were "not beautiful" and "even disgusting, cubic, constructivist or of other decadent factions." He criticized the architects of the exhibition halls for having adopted "American or Hong Kong style 'square boxes', 'pigeon sheds' and 'streamlines' instead of Chinese "ting tai lou ge."[86] Published in *JZXB*, a semi-official periodical, this tart letter brought an imaginable pressure to Chinese architects.

Some other works were criticized as well. For example, the Chaoyang Settlement was accused as being "absolutely a garden city in a capitalistic country." [87] Even Beijing Wangfujing Department Store, a building composed mainly in western architectural proportion by Yang Tingbao, was concluded as being constructivist, because "it only adopted some *Dougong* forms at its windows as 'national form.'" [88] In this situation, some modern-style designs were cancelled or modified. For example, the Xinqiao Hotel in Beijing, sketched by Bai Demao and further designed by Zhang Yuquan since 1952 in modern style with an irregular plan, had to be cancelled and redesigned despite the working drawings were finished, just because a Soviet expert regarded it too modern.[89] Although Wang Jiqi commented in 1980 that the criticism on modern architecture at the beginning of the 1950s was merely a "gentle wind" because no CCP leaders launched any movement against constructivism[90], in reality however, the tendency in favor of modern architecture immediately stopped in 1953. The first convention of the ASC held in September this year symbolized the end of a relatively free period for architectural design. Thereafter, the knot of "national form" began to entangle Chinese architects.

2.4 The Upsurge and Downfall of "Big Roof"

Besides the practice of modern-style architecture, the approach of Chinese renaissance architecture was continued during the early years of the PRC.

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[86] See. *JZXB*, Iss.2/1954, P. 122-124; Ting Tai Lou Ge 亭台楼阁, -various kinds of traditional Chinese architecture.
[87] See Zou Denong, *Zhongguo xiandai jianzhu shi*, P.152
[88] Wang Ying, "icheng he fazhan minzu jianzhu de youxiu chuantong," *JZXB, Iss.1/1954*, P.32
[89] Zhang Bo, *Wo de jianzhu chuangzuo daolu*, P.75
[90] Wang Jiqi, "Huiyi Shanghai jianzhu yishu zuotanhui," *JZXB, Iss.4/1980*, P.1

One of the representative examples is Southwest People's Grand Hall in Chongqing. Because of the appreciation of the chief of Southwest Region[91] and the project's high budget, Zhang Jiade's proposal, which was the only one in Chinese classical style, defeated other three modern-style schemes in competition. On the realized structure, as shown in Figure 2-36, Qing-(Dynasty)-style roofs accumulate. Atop the central circular auditorium, there is an imitation of the Temple of Heaven[92], and atop the central entrance, a small mimic of the Tiananmen Gate. Traditional roofs also cover the skirt part, and Chinese pavilions stand on its corners. The original scheme even contained a group of bridges in imitation of *Jinshuiqiao* of the Forbidden City.[93] With such manipulation at the cost of acoustic problems and spatial waste, the building on a hill, reached along the 99 steps, achieved a splendid look.

Figure 2-20 Southwest People's Grand Hall, Chongqing, 1951-54, Zhang Jiade

Except such scattered examples, "national form" architecture – in the terminology of Soviet theories – was not largely witnessed until 1953. In this and the following year, "big roof" architecture, namely the building covered with palace-style roof – became the most popular. According to a material, the total floor area of "big roof" structures in Beijing reached

[91] China was compartmentalized into six "Great Economic Regions": Northeast, North China, Northwest, East China, Centre-south and Southwest. The regional government was called off in 1954.
[92] Temple of Heaven 天坛, a famous Chinese architecture in Beijing. It has a tri-eaved circular roof atop a circular plan.
[93] Jinshuiqiao金水桥, the five bridges in front of the Forbidden City in Beijing.

51,000 square meters in 1952, and it increased to 169,000 square meters in 1953 and 220,000 square meters in 1954.[94]

Of the "big roof" architecture, the Friendship Hotel in Beijing is a typical instance. Its architect Zhang Bo was educated in Northeast University and Central University by Liang Sicheng and other "first generation" Chinese architects. He worked for Kwan, Chu and Yang Architects from July 1934 to March 1951, and respected Yang Tingbao as another influential tutor besides Liang Sicheng. In the 1950s, Liang Sicheng's views on "national form" exerted a great influence on his architectural design. As he indicated, Liang's ideas of "syntax" and "translatability" became the guidance of his design work in the second half of his career.[95] As early as in 1952, when he designed the Friendship Hospital in Beijing, he already combined traditional Chinese symbols to a later Renaissance style proportion.[96] In his later works, such as the Asian Students' Sanatorium (now Afro-Asian Sanatorium) in Beijing, Beijing Institute of Technology and Beijing School of Russian Language, traditional Chinese roof became a key architectural element, so did in the Friendship Hotel.

Figure 2-37 Asian Students' Sanatorium, Beijing, 1953-1954, Zhang Bo

[94] Li Fuchun , "Lixing jieyue, wei wancheng shehuizhuyi jianshe er fendou," *JZ, Iss.7/1955*, P.9
[95] Zhang Bo, *Wo de jianzhu chuangzuo daolu*, P.67
[96] Ibid., P.73.

At the beginning of 1953, in order to receive Soviet experts, the Foreign Expert Bureau of the State Council needed to build the Friendship Hotel in urgency, and thus the design of the Xinqiao Hotel, which construction just started, was reused in the design of the new hotel. In his scheme for the Xinqiao Hotel, Zhang Bo brought forward an unrealized idea for carrying out a nation form, and in the design for the Friendship Hotel, he raised question again. This time the client representatives and the architect reached agreement on applying Chinese tradition form to create an exotic touch for Soviet experts.[97] Based on a typical European classical composition like the east façade of the Louvre in Paris, the architect carried out a "translation." Firstly, he transformed the pediment to multi-eaved gable-and-hip roofs, and the balusters to truncated roofs. Secondly, he put Chinese pavilions at the ends above the building and used pergolas to connect them to the central roofs. Thirdly, he replaced hackneyed decorations familiar on Chinese-style components, such as figures of animals or gods, with those of birds or cloud curlicues.[98] Here, Liang Sicheng's idea of "translatability" was reified.

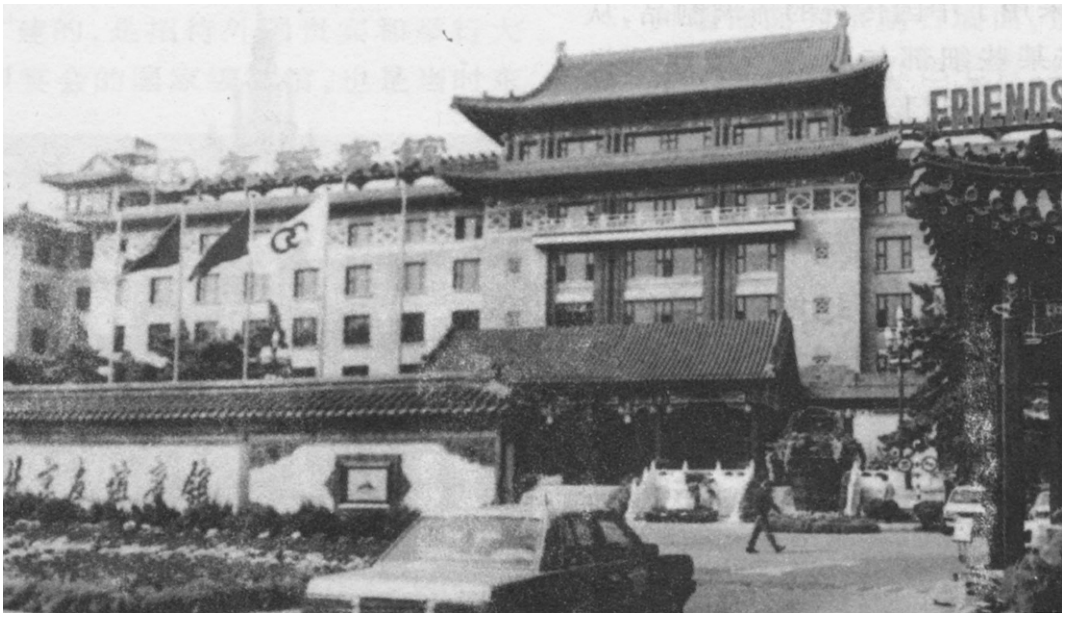

Figure 2-38 Friendship Hotel, Beijing, 1953-1954, Zhang Bo

The Friendship Hotel was published with detailed drawings in the first issue of *JZXB* in 1954. The journal's second issue published drawings and introductions of other three representative "big roof" buildings: the Sanlihe Office Complex[99] designed by Zhang Kaiji, the Di'anmen Dwelling and the

[97] Ibid., P.97
[98] *Ershi shiji Zhongguo jianzhu*, P.218
[99] Sanlihe Office Complex was also called "Si Bu Yi Hui" -the Buildings for "Four Ministries and One Commission". Actually, "Si Bu Yi Hui" was the realized part of planned Sanlihe Office Complex.

Beihai Office Building by Chen Deng'ao, all being constructed in Beijing. Very similar to the Friendship Hotel, these buildings' conspicuous character mostly rested with the roofs, reinforced by the Chinese-style components and symbols.

Figure 2-21 Di'anmen Dwelling, Beijing, 1953-1954, Chen Deng'ao

Figure 2-22 West Building of Beijing Hotel, Beijing, 1953-1954, Dai Nianci

Since 1953, Dai Nianci also participated in the exploration of "national form"; his main means was the application of traditional Chinese architectural components other than the roof. Earlier, his works strongly featured Frank Lloyd Wright's "Prairie House" were acutely criticized by Lin Huiyin as "a miserable image, unacceptable Chinese national form."[100] When he cooperated with Andreyev in the project of the CCCP Exhibition Hall in this year, the Russian architect suggested him to make some modifications in his design of the West Building of Beijing Hotel to embody features of Chinese architecture. As a result, four Chinese pavilions were added at the roof corners and a traditional *pailou*[101] was introduced at the entrance.

In 1953 and 1954, the fever of building "big roof" architecture soon spread from Beijing to all over China. In Changchun, Wang Fuchen designed the Geological Palace, featured green-glazed roof, red columns, white balustrade and beige walls. In Tianjin, Xu Zhong designed the Ninth Classroom Building at Tianjin University, a yellow-brown brick structure crowned with gray tile roofs. In Nanjing, Yang Tingbao designed the Southeast Building at Nanjing University and the Classroom Building at East China Aeronautical College; in Lanzhou, Yang Shiliu, the Classroom Building Complex at Northwest Nationality University; and in Changcha, Liu Shiying, the Library and the Auditorium at Hunan University. In Chongqing, Xu Shangzhi added a traditional Chinese roof at the top middle of Chongqing Hotel.[102] More "big roof" buildings include the Office Building of Harbin City Government, the Office Building of Xi'an Construction Commission, and Shandong Opera House in Jinan.

In regions of ethnic minorities, such as Xinjiang, Ninxia and Inner Mongolia, local traditional roofs were largely adopted to new buildings. Genghis Khan's Mausoleum, built in 1954 and 1955 and located at 185-kilometer south of Baotou, Inner Mongolia, is a representative case. Its three giant halls, which respectively houses the coffin of the Khan, that of his wife, and those of his son and generals, hint the form of Mongolian yurt, while their crowned golden dooms are combined with normal Chinese roofs.

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[100] *Dangdai Zhongguo jianzhu dashi --Dai Nianci* , P.276

[101] pailou 牌楼, a kind of Chinese archway built normally for celebration or memory.

[102] Zou Denong, *Zhongguo xiandai jianzhu shi*, P.165

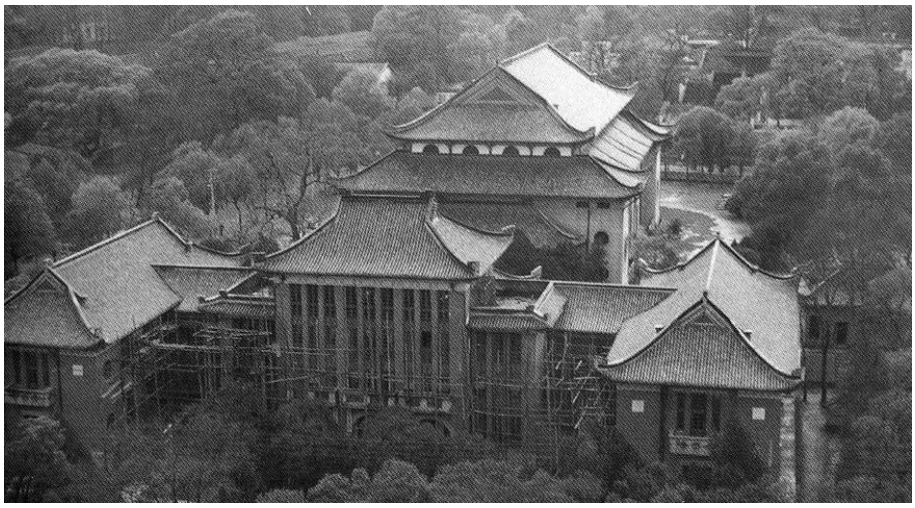

Figure 2-23 Library and Auditorium at Hunan University, Changcha, 1954-1955, Liu Shiying

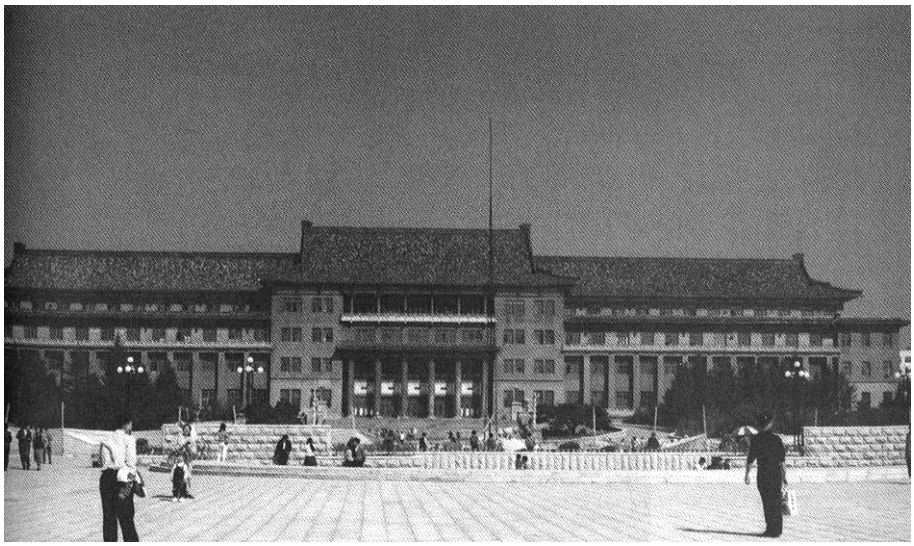

Figure 2-24 Geological Palace, Changchun, 1953-1954, Wang Fuchen

Figure 2-25 Classroom Building at East China Aeronautical College, Nanjing, 1953, Yang Tingbao

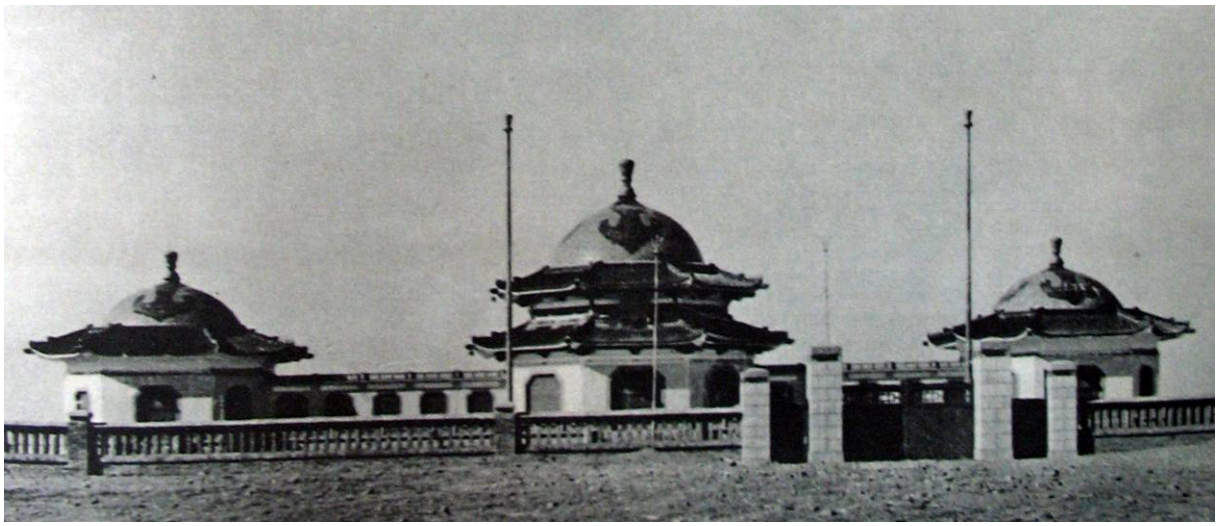

Figure 2-26 Genghis Khan's Mausoleum, Baotou, 1954-1955

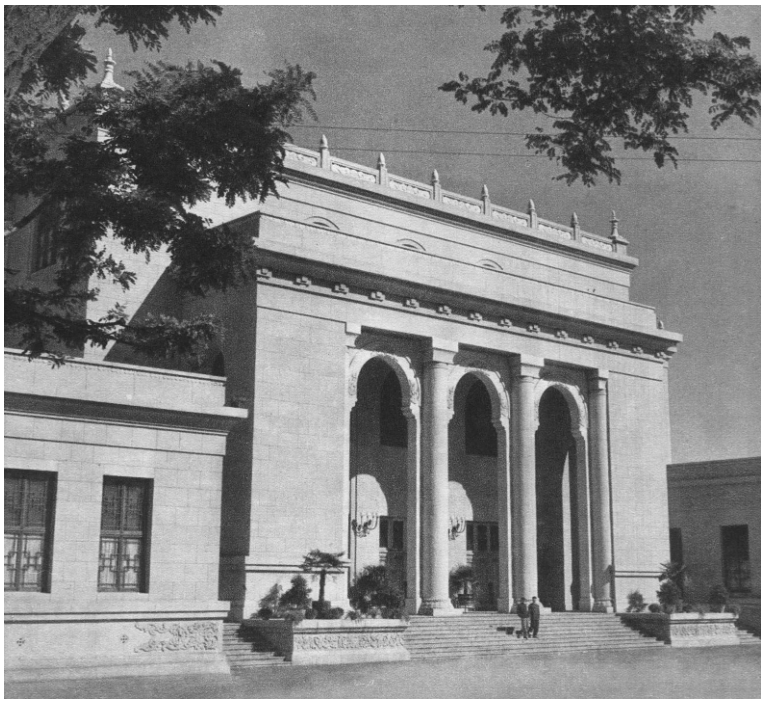

Figure 2-27 CPPCC Hall, Beijing, 1954-1955, Zhao Dongri

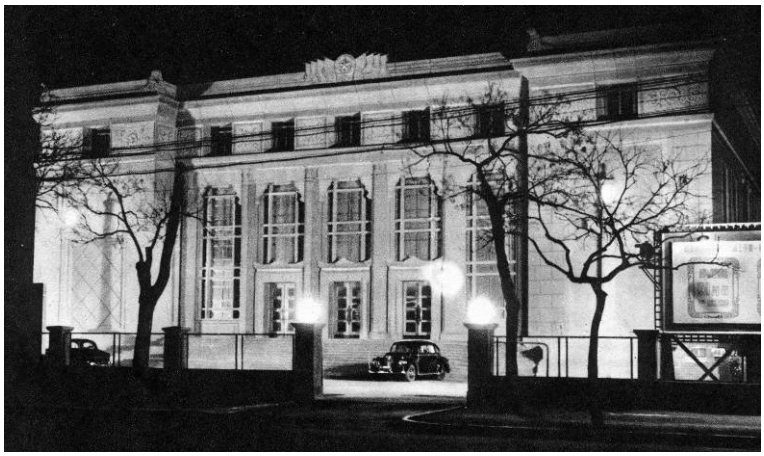

Figure 2-28 Capital Theater, Beijing, 1953-1955, Lin Leyi

Besides applying "big roofs," "translating" components on western classical façades into Chinese-style ones was another popular approach of national form. This is typically presented by the CPPCC Hall in Beijing designed by Zhao Dongri. The composition of the building is fully in a western classical style, while the majority of the details have been "translated" into Chinese-style: the building base is a *xumizuo*, the columns imitate Chinese timber columns with lotus-shaped bases underneath, the triglyph is decorated with *dougong*, and the balusters at the parapet are replaced with *Wangzhu*.[103] Liang Sicheng's idea of "translatability" seems feasible in this case; however, the primary image of the building was still a European architecture. The design tactic of the CPPCC Hall was also manifested at many other buildings in 1953 and 1954, such as the Capital Theater designed by Lin Leyi and the Wangfujing Department Store by Yang Tingbao, both in Beijing.

Figure 2-29 Wangfujing Department Store, Beijing, 1951-1954, Yang Tingbao

Generally speaking, the approaches of "national form" architecture in the 1950s didn't go far beyond that of "Chinese renaissance" in the 1930s, although tactics became more genuine. All the methodologies and manipulations had been anticipated by "Chinese renaissance" architecture. Even the later built Office Building of the Ministry of Building Engineering by Gong Deshun (see next chapter), where truncated roofs were used to

[103] *Ershi shiji Zhongguo jianzhu*, P.224

decorate the flat roof to achieve "national form," would remind of the Ministry of Foreign Affairs in Nanjing designed by the Allied Architects in the 1930s. Liang Sicheng, the key advocate of "national form," was not very satisfied with the archaized architectural works that emerged during this period; however, he was very much enthusiastic, as he stated: "Our new architecture is still in the process of creation and exploration …. So that it's difficult or even impossible to understand it very well and to immediately make out the works in a high level." He regarded that such efforts "are the rise of Chinese spirit" and "indeed have boundless significance", therefore, he was convinced that "in a few years," "my truth will succeed."[104]

Meanwhile, the anxiousness on the economic problem of "big roof" architecture, which had risen in Chinese architectural circles in the 1930s, also came forth, as Zhang Kaiji wrote in his introduction of the Sanlihe Office Complex: "The design work is the important link of capital construction. … Fundamentally wrong in case our designs were, the great deal of manpower and material resources would be wasted duo to our mistakes."[105]

Just when "big roof" became increasingly prevailing all over China, a sudden criticism on it came down, triggered by the nation-wide Soviets' conference on architecture and construction convened in Moscow in November 1954. This meeting was a part of Nikita Khrushchev's efforts of revising Stalin's policies. Its basic theme was to promote industrialized construction, but the most striking result was a criticism on the artistic tendency in Soviet architecture over the preceding period. At the meeting, Khrushchev severely criticized the Academy of Construction and Architecture as well as the Architects Association of the Soviet Union. He accused the trend of aestheticism for it had created an oppressive atmosphere and suppressed and eliminated criticisms. This meeting laid the groundwork for a modification of the general direction of architecture to rationalist approach against historicist and decorative architecture in the Soviet Union. Headed by Vice-Minister of the Ministry of Building Engineering (MBE) Zhou Rongxin, a Chinese delegation attended the meeting. It cannot be over-estimated how the conference did shock Chinese architectural circles, which just had been energetically carrying out the exploration of "national form" following Soviet theories. Nevertheless, a

[104] Lin Zhu, *Jianzhushi Liang Sicheng*, P.131
[105] Zhang Kaiji, 'Sanlihe Bangong Dalou sheji jieshao', *JZXB, Iss.2/1954*, P.103

campaign of "Anti-Waste" was to be shortly launched in China, and the "big roof" architecture was to be clamorously criticized.

Actually, CCP leaders had already noticed the economical problem of building construction before the Soviet conference, as Premier Zhou Enlai warned in his "Report on the Work of the Government" addressed in September 1954:

> Another important problem in industrial fields is the enormous wastes, arising from the negligence on saving funds and controlling financial costs of many departments and enterprises. …… Many capital construction projects have no proper construction standards to observe and many cities, state organs, schools and enterprises often unscrupulously spend the limited state funds to construct buildings, which are not urgently needed or too luxurious.[106]

The criticism on economic wastes in building construction was carried out following the Soviet conference. On January 20, 1955, the MBE issued a directive, requiring the architectural circles to study the documents of the conference. Later in February, it convened a conference, assembling more than 370 people from various architectural design institutions and construction companies. One of the main topics of this meeting was to back-check and to criticize the cases of waste in building construction. In this direction, many chiefs of design institutions made self-criticisms, and the wastes caused by "big roof" architecture and luxurious ornaments were accused. In his report, Shen Bo, a vice president of Beijing Design Institute, pointed out that because of adding "big roofs" and ornaments, the Friendship Hotel was nearly 10 billion *yuan* more expensive than the Xinqiao Hotel, although the design of the former originally copied that of the latter.[107] He also indicated that the roofs of the Sanlihe Office Complex had wasted 3.1 billion *yuan*, and those of the Asian Students' Sanatorium, 1.9 billion *yuan*.[108] Wang Huabin, a chief architect of Shanghai Design Institute, indicated at the meeting that the cost of No. 652 Factory had increased 4% for ornaments and wasted approximately 10 billion *yuan* in order to achieve national form. He calculated that if these money had been used to build apartments, it would be enough for one thousand people to

[106] See *Zhongguo jianzhu wushinian*:*1949-1999*, P.27
[107] Old RMB. 10,000 *yuan* old RMB=1 *yuan* new RMB, the latter started circulate on Mar. 1, 1955.
[108] Ibid., P.38

dwell in.[109] In the concluding speech, the MBE Minister Liu Xiufeng pointed out that according to preliminary statistics, the money spent on the "big roofs" in Beijing reached more than 50 billion *yuan*.[110] Such kind of data and calculations became frequent in papers published afterwards.

Moreover, this meeting concluded "big roof" architecture as "bourgeois tendencies of formalism and revivalism," as Liu Xiufeng stated in the concluding speech:

> In the aspect of design, the main current shortcoming is a wrong trend under development in design ideology, namely, breaking away from the essential principles of utility and economy, taking only or taking too much account of artistic form, pursuing palace-like big roofs as well as luxurious and illusive decorations. Shielded by the so-called "national form," a revivalist approach is taken. The formalist and revivalist trends have resulted in enormous wastes in our country, and they must be corrected.[111]

In addition, he pointed out that these trends were "the concrete expressions of bourgeois idealism in architecture" and they "violated Marx-Leninism and the fundamental policies of our party on architectural cause."[112]

Following the conference, *Renmin ribao* published the editorial "Fandui Jianzhu zhong de langfei xianxiang" ("Oppose the Phenomena of Waste in Building Construction") on March 28, 1955, firing at various aspects of wasting, such as enlargements of construction scales, raises of building standards, and wastes in construction processes, as well as "formalist and revivalist thoughts" in architectural design. It criticized architects for they didn't like making standard design but preferred designing individual, large, and luxurious structures.

More fiercely, a movement to criticize Liang Sicheng was almost launched in the model of thought movement that CCP usually applied in political struggles. In May 1955, several governmental departments, including the propaganda branch of Beijing Party Committee, established a special office to prepare the criticism. The office summarized Liang Sicheng's "mistakes"

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[109] Ibid. P. 40
[110] Liu Xiufeng, final speech at the Working Conference of Design and Construction, JZ, Iss.3/1955, P. 6
[111] Translated from Ibid., P.3
[112] Ibid., P.6

into seven aspects and prepared 96 criticizing papers.[113] Thank to the intervention by some top CCP leaders, none of these articles except one was eventually published, and prepared correlative broadcastings were cancelled. Otherwise, the architectural circles would have been confronted with a more stormy movement, which would be equivalent in the degree of intensity to a cruel ideological struggle during that time.

Nevertheless, the criticism on Liang Sicheng and the "big roof" architecture was still volcanic. A series of articles, most of which were written by people from architectural circles, were published in *Renmin ribao*, including "Wo zai lingdao sheji gongzuo zhong de cuowu" ("My Mistakes in Leading the Design Work") by the president of Beijing Industrial Architectural Design Institute Wang Jiqi, "Huaerbushi de Xijiao Binguan" ("The Flashy West Suburb Hotel[114] "), "Liang zhuang Haohua de sushe dalou" ("Two Luxurious Residential Buildings[115]"), and "Cong jieyue de guandian kan 'si bu yi hui' de bangong dalou" ("Review the Office Building for 'Four Ministries and One Commission[116]' in View of Economy"). Such articles were presented in other periodicals as, such as in *Jianzhi*(*JZ*) and *Xuexi*, the former a magazine run by the MBE and the latter by the Publicity Department.[117] At the same time, *JZXB* was criticized for its advocating "formalism" and "revivalism" in the issues in 1954, and its first issue of 1955 was cancelled in despite of that it had been already edited. It was not until August that *JZXB* was re-published; the re-edited first issue of this year gathered a number of papers talking about anti-waste and criticizing Liang Sicheng.

As a conclusion, Liang Sicheng's ideas on architecture were censured as being "formalistic" and "revivalist," and his ideology was attributed "idealistic" and "metaphysical." Ironically, as Zou Denong commented, Liang Sichengt's tragedy was that he utilized the concept of class struggle to popularize his ideas of "national form" but eventually, he was severely criticized by the same concept.[118] Under the great pressure, Liang Sicheng made a self-criticism at a meeting of CPPCC in February 1956. While accepted the criticism on him, he admitted that the idea "CCP leads politics, while expects lead technologies" was wrong and the architectural circles

[113] *Zhongguo jianzhu wushinian*:*1949-1999*, P.28
[114] i.e. Friendship Hotel
[115] Di'anmen Dwelling
[116] i.e. Sanlihe Office Complex
[117] The paper published in *Xuexi* is the aforementioned only published one out of 96 articles.
[118] Zou Denong, "Bange shiji de licheng," *Zhongguo jianzhu wushinian: 1949-1999*, P.28

must accepted "CCP's leadership in technology" as well.[119] His ideas on "national form," bearing the label "big roof," had to be broken off. In practice, very similar to the situation that modern-style architecture faced earlier, many designs were modified, and some big roofs were cut off. The most symbolic one is "Sibuyihui" Office Complex in Beijing, which was under construction during the Anti-Waste Movement. With the cancellation of the roof, the bald central part of the complex's main building looks very strange among the capped ones. To Zhang Kaiji, the architect of the complex, this calamitous building became the most regretted work of his career.[120]

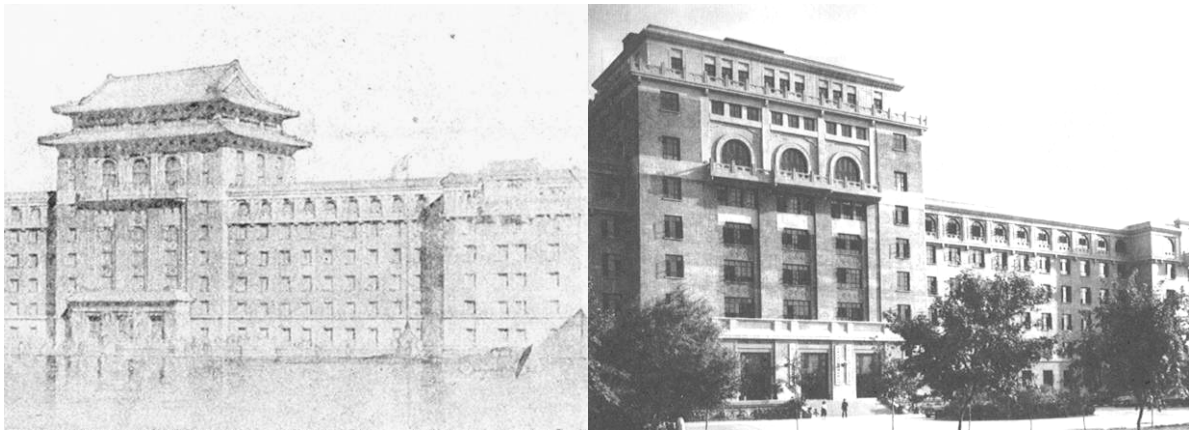

Figure 2-48 Main Building of the "Sibuyihui" Office Complex, Beijing, 1952-1955, Zhangkaiji

In general, the impact of the Anti-Waste Movement was very great. The positive aspect of it was that it rectified the architectural design from aesthetical approaches to more rationalist ones. However, it never released modern architecture from durance. Thereafter, "big roof" became a new taboo, juxtaposing with the so-called "box-like architecture" in architectural practice. Although the Anti-Waste Movement was basically limited within the architectural and construction circles, its mode was very similar to those of nation-wide thought campaigns. The class struggle mode in the movement fundamentally dispelled creative desires of architects. Thereafter, copy rather than innovation became usual in design practice.

[119] Liang Sicheng, "yongyuan yibu ye bu zai likai women de dang," *Liang Sicheng quanji, Vol.5*, P.269
[120] Zhang Kaiji, "Cong 'si bu yi hui' tan qi," *Jianzhu bai jia huiyi lu*, P.34

CHAPTER 3 • DEVELOPMENT IN A DILEMMA: 1955-1965

3.1 The Explorations after the Anti-Waste Movement

The Anti-Waste Movement in 1955 pushed the architectural design in China on horns of dilemma. Without relief from "constructivism," Chinese architects confronted a new taboo of "revivalism". If former criticism on the Peace Hotel had confused the architects, the blame by the Anti-Waste Movement heavily depressed them. As Dai Nianci expressed in a paper in 1957, from the movement, they got into the "phase of turbulence and exploration in design thoughts." [1] Some papers were published in architectural periodicals in the effort to clarify basic architectural problems, such as the distinction of the "content" and the "form" according to Marxist doctrines. But without breaking through ideological constraints and taboos, these discussions and arguments couldn't do any good to practical activities.

In practice, the architects scrupulously avoided designing "big roof" architecture or "box-like" architecture. The combination of western classical proportion and Chinese motifs became one of the most popular options again, because such kind of architecture had not been criticized in the Anti-Waste Movement. Beijing Planetarium designed by Zhang Kaiji is a typical example of this approach. The design of the planetarium was commissioned in October 1954, the time when "national form" was sweeping. In the beginning, it was planned to build the planetarium near the Temple of Heaven, and in the early phase of schematic design, it was proposed to adopt Chinese multi-eaved roofs instead of semi-sphere dome normally atop an astronomy hall. When the planetarium was erected in 1957, near the Zoo and the CCCP Exhibition Hall in western Beijing, no Chinese-style roof was presented, and the conspicuous feature of this building came from a bared hemispherical dome, dominating the silhouette. The building is in a symmetry plan layout, and its façade is a modernized classical composition with some Chinese patterns such as cloud veins on it. Same approach was manifested as well at Guangzhou Gymnasium, which was designed by Lin Keming and his colleagues since 1956 and erected in 1958.

[1] Dai Niaci, 'Yige shehuikexue xueyuan de guihua he sheji' , *JZXB, Iss.1/1957,* P.14

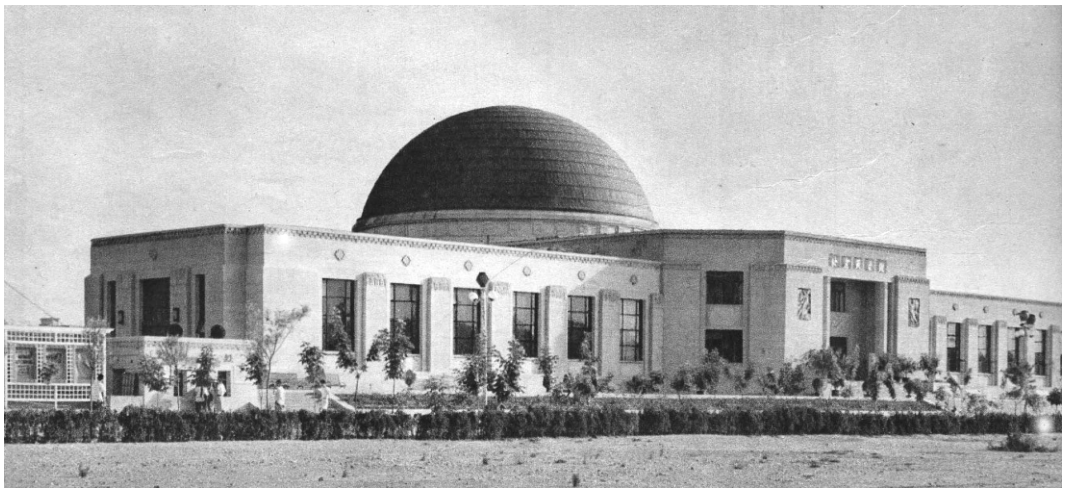

Figure 3-1 Beijing Planetarium, Beijing, 1954-1957, Zhang Kaiji

Figure 3-2 Guangzhou Gymnasium, Guangzhou, 1956-1958, Lin Keming and etc.

Figure 3-3 Beijing Telegraph Mansion, Beijing, 1955-1958, Lin Leyi

Beijing Telegraph Mansion is a relatively special building directly after the Anti-Waste Movement. It was designed by Lin Leyi, who studied in the United States in 1948 when "conservative modernism" was still prevailing in the country.[2] The architect laconically designed the façades, without applying any sophisticated motif or ornament, notwithstanding the horizontal bands used as main compositional element. Looked rather modern and austere, the mansion still implicates a classical feature, through the symmetric disposition, the façade composition, and the proportional manipulation.

The most representative approach of the architectural design directly after the Anti-Waste Movement would be at the Qianmen Hotel and the Central Party College, both in Beijing. The former was designed during the end of 1954 to March 1955, and its construction was finished in August 1956. Because his Friendship Hotel was sharply criticized during the Anti-Waste Movement as a typical instance of the mistake of "big roof," Zhang Bo paid more attention to economic and technical calculations during his for the Qianmen Hotel. However, since "composition" and "grandiosity" were still the matter of concern, a symmetry layout was adhered as the key feature of the plan and a classical proportion still dominates the façades. The architect arrayed a number of balconies on the façade to break monotony, although they are not functionally necessary. In order to get some sense of being Chinese, he adopted overhanging eaves on the building and manipulated the parapet walls and the balconies into the form of traditional Chinese railing.

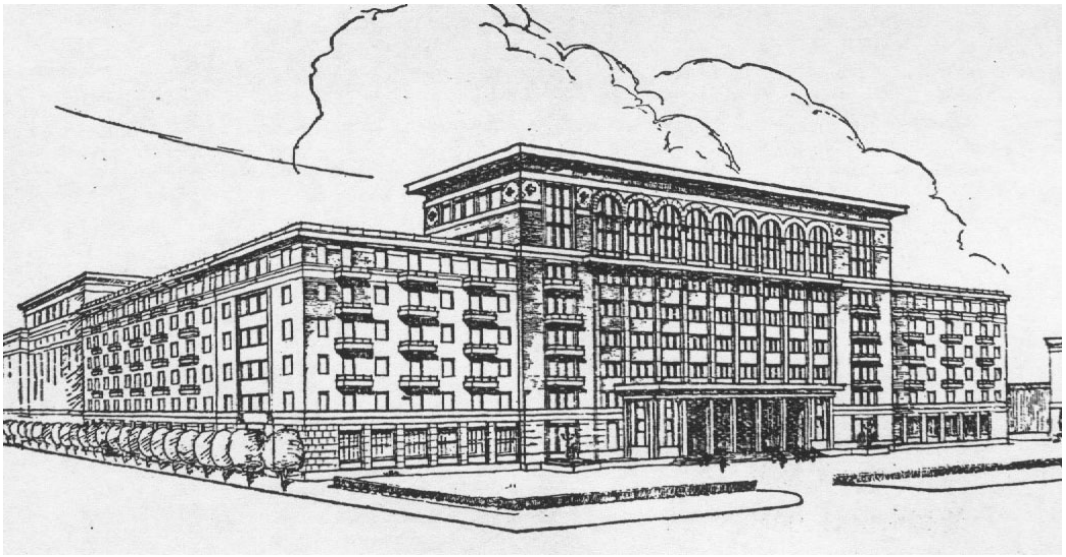

Figure 3-4 Qianmen Hotel, Beijing, 1954-1956, Zhang Bo

[2] *Ershi shiji Zhongguo jianzhu*, P.235

The Central Party College was planned and designed by Dai Nianci and his colleagues from 1955 to 1958. The overall construction was started in 1956 from the dormitories and lasted for eight years. At the campus, the Auditoria and the Main Building, erected respectively in 1959 and 1962, were the most conspicuous structures. The plan layout of the latter is identical to that of Moscow University – a prevailing plan layout called by Chinese architects as "toad-like" plan. The first scheme of the Main Building was flat-roofed, and "somehow looks like some buildings in the Soviet Union."[3] During the design, the architects made an effort to apply slope roofs but eventually gave up. In the final design, they exposed the columns in the middle part of the frame structure to make contrast between frame components and walls. In order to achieve a sense of Chinese architecture, they decorated the eaves with glazed tiles, and manipulated the entrance into the proportion of a Chinese *pailoo*[4], crowned with glazed eaves as well. After the Qianmen Hotel and the Main Building at the Central Party College, projecting eave to symbolize traditional Chinese roof, exposing frame structure, and emphasizing vertical lines on the basis of a western classical proportion became the most popular tactic in design practice. It prevails up until the 1980s, when modernist architecture was reasserted in the country.[5]

Figure 3-5 Main Building of the Central Party College, Beijing, 1955-1962, Dai Nianci

[3] Dai Nianci, "Yige shehuikexue xueyuan de guihua he sheji," *JZXB, Iss.1/1957*, P.20
[4] Similar tactic is also seen at Dai Nianci's West Building of Beijing Hotel designed in 1953
[5] The Qianmen Hotel and the Central Party College were published in *JZXB* first issue of 1957. This is partly the reason why there were largely imitated.

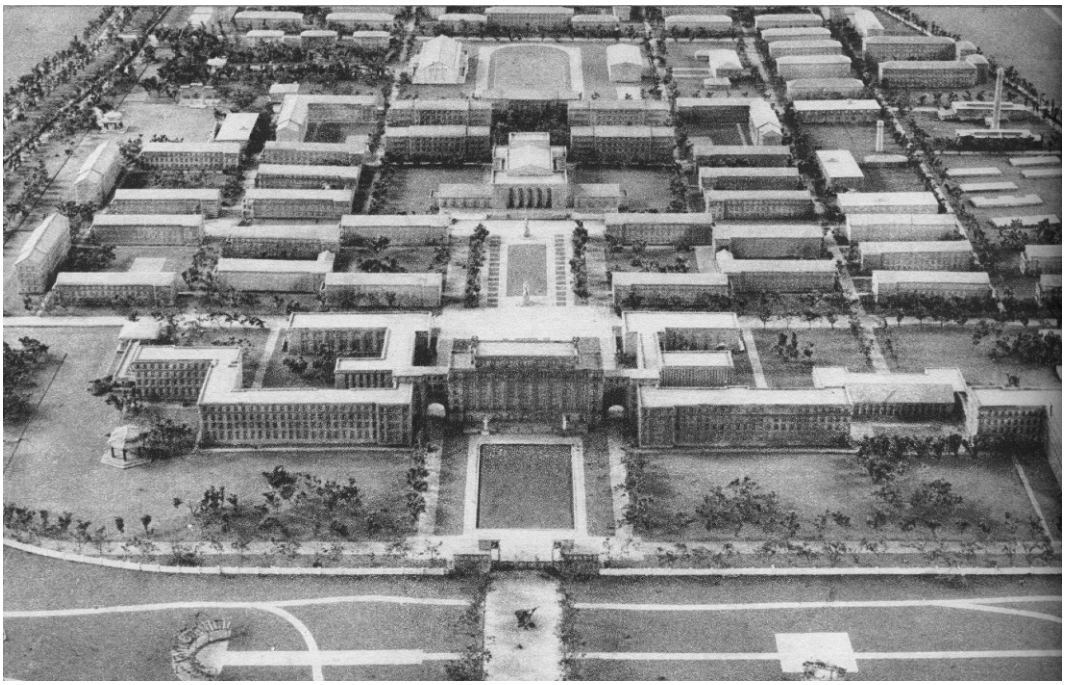

Figure 3-6 Central Party College, Dai Nianci

Directly after the Anti-Waste Movement, resorting to traditional roof to achieve national form was still continued, but only in the design for buildings in regions of ethnic minorities or buildings for ethnic minorities. In additional to local architectural ornaments, traditional roofs of ethnic minorities, which look different from the criticized big roof, were applied to such structures. Xinjiang People's Theater in Urumchi designed by Liu Hetian and others, and the Islamic Koran School in Beijing by Zhao Dongri, are two representative examples of this sort. Otherwise, scarcely any building still adopted a big roof, saving for Guangdong Science Hall in Guangzhou, designed by Lin Keming. In order to harmonize the nearby Sun Yat-sen Memorial Hall, the architect crowned the science hall with green glazed roofs at the central part, and decorated the façade with simplified traditional Chinese ornaments.

Although "big roof" became a taboo, slope roofs were still employed in architectural design. They became much simpler and more unadorned in comparison with "big roofs", which look similar to the roofs of grand classical Chinese architecture. This direction was progressed to a regional approach of architectural design, in which local materials were extensively utilized and vernacular characteristics were mostly pursued. The Lu Xun Museum in Shanghai designed by Chen Zhi and his colleagues in 1956 is one of the representative instances of such approach (See Section 3.5). The Office Building of the MBE in Beijing presented another approach of

pursuing national form. With the manipulation to mimic the eaves to those of classical Chinese architecture, the flat-roofed building embodied a relatively strong sense of traditional Chinese style. However, as mentioned in Section 2.4, this approach can be found in the proceeding works done in the 1920s and 30s, especially the edifice of the Ministry of Foreign Affairs designed by Allied Architects.

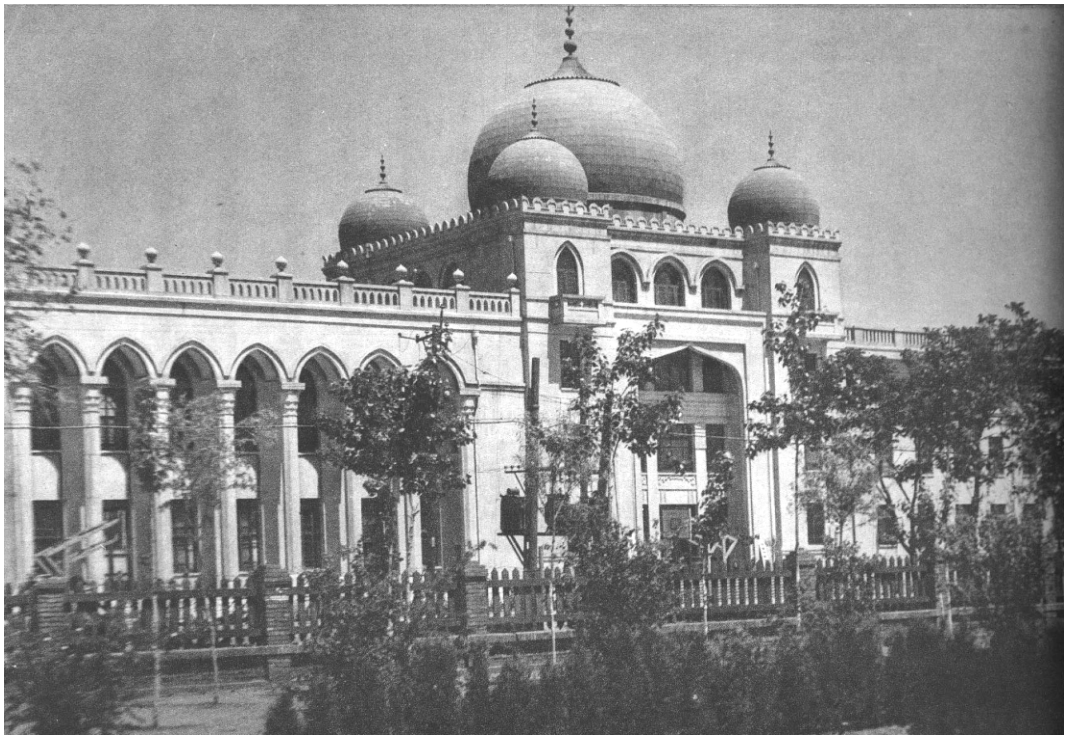

Figure 3-7 Islamic Koran School, Beijing, 1956-1957, Zhao Domgri

Figure 3-8 Xinjiang People's Theater, Urumchi, 1955-1956, Liu Hetian

Figure 3-9 Ministry of Building Engineering, Beijing, 1955-1957, Gong Deshun

After the Anti-Waste Movement, a trend in favor of modern architecture gradually loomed. In practice, several projects featured with modern style were built in Guangzhou. One example is the New Settlement for Returned Chinese Emigrants, constructed since May 1955. The planning and design was started in October 1954, conducted by a soon-established design committee which involved Lin Keming, Chen Boqi, She Junnan and other prominent local architects. To suit the hilly site, the planning abandoned the prevailing disposition of placing a central axis in a layout, and arranged houses according to the terrain to form a free overall plan. In the design for individual houses, the proposal of "national form" was given up to flat-roofed scheme, because the latter "suits to the abroad-living habits of the Chinese emigrants"[6].

Some other examples were designed by Xia Changshi, who continued his exploration on dealing with the hot climate with sunshade elements. Since August 1955, he and his colleagues designed the 400-bed First Attached Hospital of Sun Yat-sen University of Medical Sciences aside his earlier works on the campus. Although the plan of the hospital looks symmetric, the design was fully based on functional requests. Its clear and logical zoning

[6] See Zhu Pu, "Guangzhou huaqiao xincun," *JZXB, Iss.2/1957*, PP.17-37

was simulated in many later hospitals.[7] Without any ornament, the bare façades with sunshade boards as well as the brick vaults used for heat insulation, the Xia Changshi's building clearly presented a veritable image.

Figure 3-10 New Settlement for Returned Chinese Emigrants, Guangzhou, 1954-1956

Figure 3-11 The First Attached Hospital of Sun Yat-sen University of Medical Sciences, Guangzhou, 1955-1956, Xia Changshi

During September to October 1955, a Polish architects' delegation visited China. Chinese architects, who were suffering the confusion caused by the earlier criticism on constructivism and the later movement against "big roof," raised a number of questions to them for their comments on China's

[7] Zeng Zhaofen, *Chuangzuo yu xingshi,* P.70

architecture. The Chinese translations of the written replies from the delegation were shortly published in the first issue and the second issue of *JZXB* in 1956. The Polish architects stated that they agreed with the criticism on waste and luxury, and they thought the tendency of China's architecture in the previous time was "eclecticist and improper."[8] Although they still regarded that *jiegou zhuyi*[9] had aggrandized the role of building structures, they indicated that the Soviet slogan "oppose *jiegou zhuyi*" ("oppose constructivism") was wrong because it had been unilaterally comprehended and had leaded to a unilateral emphasis on architectural form. The Polish architects regarded it a mistake to bring the political and ideological bifurcations between the socialist camp and the capitalist one into the field of architecture design, because it leaded to neglects of the technological achievements of capitalist countries. Among the comments on China's architecture and planning, the Polish delegation delivered favorable ones on several modern-approached architectural works, including the Caoyang New Settlement, the Peace Hotel, and Beijing Children's Hospital, as well as the Youanmen Experimental Residence in Beijing.

In 1956, following the successful development of "socialist reforms" in handicraft, industry and commerce, as well as the establishment of socialistic economic system, the CCP government began to attach more importance to economic construction, and meanwhile, somehow relaxed the political control on Chinese intellectuals. In his "Report about Intellectuals" addressed in January 1956, Premier Zhou Enlai declared that the intellectuals had become a part of the working class, and subsequently in April, Mao Zedong raised the policy "let a hundred flowers blossom, and let a hundred schools of thought contend" (Hundred Flowers)[10]. The Hundred Flowers policy was affirmed at the 8th national conference of CCP in September 1956, and thereafter, intellectuals were encouraged to raise their opinions and carry out academic debates. Influenced by the 1956 anti-Soviet events in Poland and Hungary, CCP launched the Rectification Movement in 1957 in order to solidify its regime. In the movement, CCP asked intellectuals and other people to air opinions to CCP cadres. In architectural field, impassioned debates gradually came forth.

[8] Polish Architects Delegation, "Dui Zhongguo chengshi guihua jianzhu yishu he jianzhu jiaoyu de yixie yijian," *JZXB, Iss.1/1956*, P.109

[9] As mentioned in Section 2.1, *jiegou zhuyi* was the Chinese translation of constructivism, but its meaning here is vague between constructivism and structuralism.

[10] Pang Song & Chen Shu, *Zhonghua renmin gongheguo jian shi*, PP.190-191

In the second half of 1956 and the first half of 1957, appeals for modern architecture were conspicuous among various speeches and papers. In the 6th issue of *JZXB* in 1956 (published on September 30th), two students from Tsinghua University – Jiang Weihong and Jin Zhiqiang – published a paper titled "Women yao xiandai jianzhu" ("We Want Modern Architecture"), in which they expressed their appreciation to "fabricated shelled plants," "big glassed airports," "cable bridges" and so forth because they thought these things represented "our time." They also praised the Children's Hospital, the Peace Hotel because these buildings "started from function and adopted modern means"[11].

In the 6th issue of 1957 of the same journal, Hua Lanhong, the architect of the Children's Hospital, published a paper to analyze Yang Tingbao's Peace Hotel. With a series of analytic drawings, the author concluded that the hotel was very "practical" because "the architect had adopted many ingenious methods to solve many (almost all) practical problems and properly utilized new and advantageous means (namely advanced experiences) in some parts."[12] – The effort of reappraising the Peace Hotel that had been criticized as "constructivist" architecture was surely a representative event of that time. – Moreover, the year 1957 even witnessed introductions of Modernist architecture masters, such as the paper by Luo Weidong and the one by Zhou Buyi, respectively introducing Mies van de Rohe in the fifth issue, 1957 of *JZXB* and Walter Gropius in the seventh and the eighth issue.

However, the trend in favor of modern architecture ceased soon, accompanying with the Anti-Rightist Campaign, an ironhanded movement launched by CCP in the middle of 1957 to counterattack intellectuals' criticism during the Rectification Movement. In the Anti-Rightist Campaign, most of the architects and students who had delivered opinions in favor of modern architecture since 1956 were embroiled and labeled "rightists," such as Hua Lanhong, Zhou Buyi, Jiang Weihong. This round of academic debates in architectural circles ended suddenly.

3.2 The "National Day Projects"

In order to celebrate the tenth anniversary of the PRC's founding, the CCP central government decided in September 1958 to launch a large

[11] See. Jiang Weihong & Jin Zhiqiang, "Women yao xiandai jianzhu," *JZXB, Iss.6/1956,* P.56
[12] Hua Lanhong, "Tantan heping binguan," *JZXB, Iss.6/1957*, P.45

construction in the national capital Beijing. Accordingly, the Tian'anmen Square was to be renovated following the model of the Red Square in Moscow, and ten projects or thereabouts was to be built in the city. The overall building projects were called "National Day projects"[13].

On September 6th, Wang Li, a deputy mayor of Beijing, addressed a meeting that gathered more than 1,000 architects and engineers to mobilize for the National Day projects. Because all the projects were large in scale, complex in function and especially, tight in time schedule, a "mass movement" was called for in order to collect all possible contributions. In addition to the 34 design institutes in Beijing, more than 30 prominent architects from Shanghai, Nanjing, Guangdong, Liaoning and other places were invited to Beijing to participate in schematic design, which was then broadly distributed to all over the country to collect opinions. People from other occupations were asked to contribute their suggestions as well. Eventually the number of overall schemes summed up to 400, and merely for the Great Hall of the People, for example, the schemes for the plan design reached 84 and those for façade design reached 189.[14]

In the stage of schematic design for the National Day projects, various types of architectural form were presented, such as western classical style, "big roof", and modern style, showing that the taboos in architectural design were released in the special situation. However, the selected and realized schemes were in either Chinese style or eclectic style combining traditional Chinese components. By September 1959, the construction of nine buildings among these projects were finished, including the Great Hall of the People, Chinese Revolution Museum and Chinese History Museum, the Military Museum, Beijing Railway Station, Beijing Workers' Stadium, the National Agricultural Exhibition Center, the State Guesthouse, the Cultural Palace of Nationalities, and the Minzu Hotel; the Huaqiao Mansion was finished one month later.[15] These buildings were called "ten great buildings in Beijing."

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[13] The original projects included the Great Hall of the People, Chinese Revolution Museum and the Chinese History Museum, the Military Museum, National Agricultural Exhibition Center, the Cultural Palace of Nationalities, Beijing Railway Station, Beijing Workers' Stadium, Diaoyutai State Guesthouse, Huaqiao Mansion, State Theater, the Hall of Science & Technology, State Art Gallery. Latter the State Theater and Hall of Science & Technology were abandoned and State Art Gallery was postponed. Adding the Minzu Hotel, the finished projects were called "ten great buildings". See *Ershi shiji Zhongguo jianzhu*, P.239

[14] See. Zhao Dongri, "Jianzhu shiye shang jiti chuangzuo de fanli," *JZXB, Iss.9-10*, P.17

[15] Zou Denong, "Bange shiji de licheng," *Zhongguo jianzhu wushinian: 1949-1999*, P.38

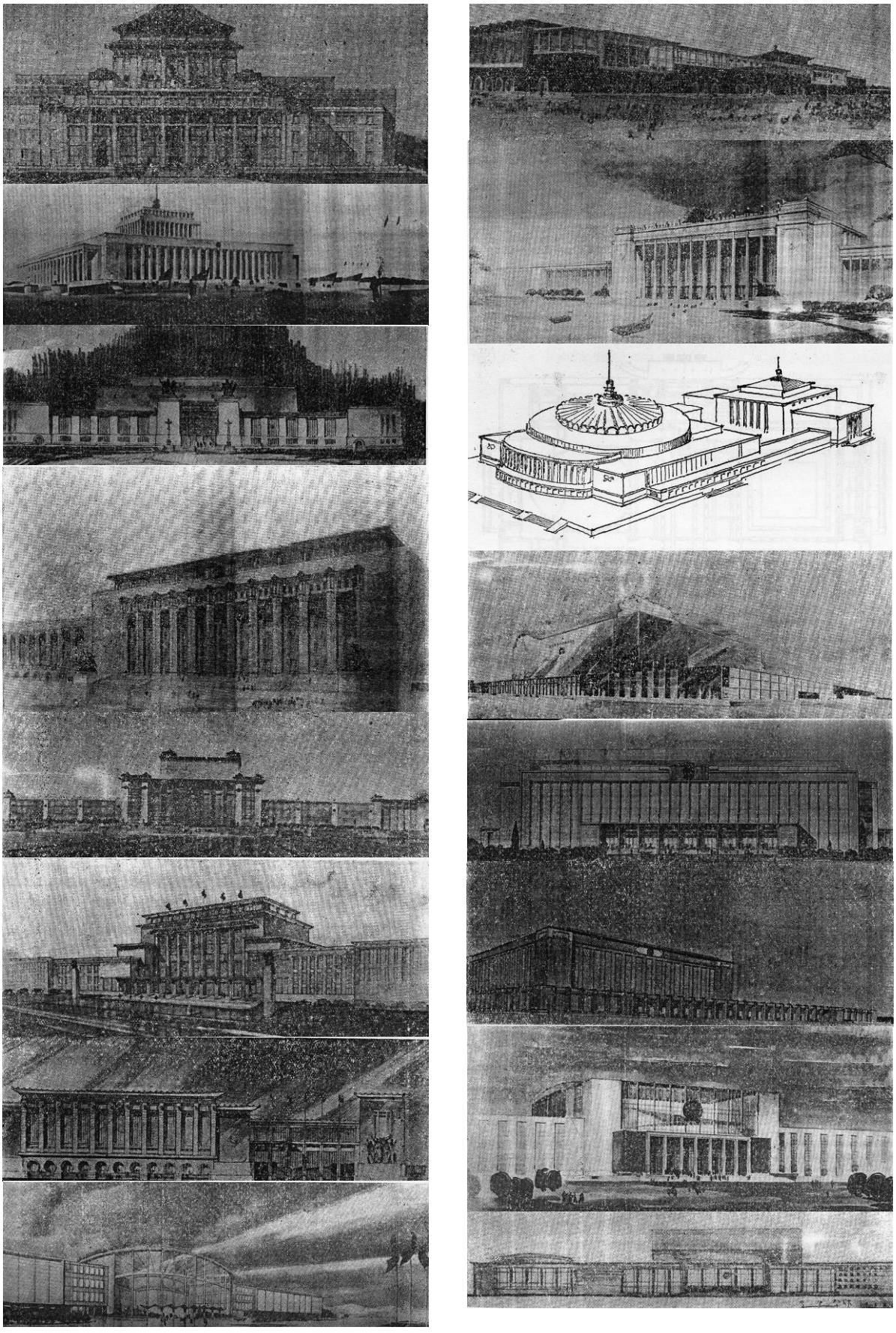

Fig.3- 12 Various design proposals for the Great Hall of the People

Among the ten buildings, the Great Hall of the People was the most important and most representative one. Early in 1956, Mao Zedong already raised the intention of building an auditorium capable of holding 10,000 people to the Minister of MBE.[16] When the National Day projects were planned, CCP attached extreme importance to the Great Hall so that Premier Zhou Enlai took charge of it by himself. In order to accomplish the design within the tight schedule, a "collective creation" was conducted, involving people from various occupations and localities. Almost all the most prominent architects from all over China, such as Yang Tingbao, Liu Dunzhen, Zhao Shen, Chen Zhi, Lin Keming, Xu Zhong, Lin Leyi, Dai Nianci, Zhang Bo, and Zhao Dongri, took part in a informal design competition for the Great Hall. Several rounds of the competition collected altogether 84 plan schemes and 189 façade schemes, in reflection of the architectural approaches in China at that time. There were four major directions in the façade design: the first one was the approach to apply Chinese glazed roof to the building, a kind of revival of the "big roof"; the second one was a western classical approach, characterized by colonnades; the third one was the combination of western classical style and Chinese roof; and the fourth one was modern style featured with large glass façade.[17]

A schematic design by Zhao Dongri and Shen Qi, the former the chief planner for the renovation of the Tian'anmen Square, was eventually adopted in October 1958, although it far broke the draft area quota. A team was then established for the further design, appointing Zhang Bo as the chief architect and Zhu Zhaoxue as the chief structural engineer. In order to finish the construction before the next National Day, the design had to be carried through along with the construction.[18] However, a dispute occurred as soon as the working design and construction started. Besides the discontents on the unequal or even illegal reality that the eventually adopted scheme was the one that broke the competition rules, the arguments gathered in two aspects: the size and the style.

On the former aspect, Wang Huabin, one of the chief architects of the Design Institute for Industrial Architecture of Beijing, regarded that the selected scheme was improperly big in both area and volume, and because of that, it became inevitable to use artificial lighting and ventilation so that

[16] *Dangdai Zhongguo jianzhuy*, P.73
[17] See, Zhao Dongri, "Cong Remindahuitang sheji fang'an de pingxuan lai tan jianzhu xin fengge de chengzhang," *JZXB*, 2/1960, PP.13-26
[18] *Ershi shiji Zhongguo jianzhu*, P.239

the cost would be higher.[19] Liang Sicheng invoked St. Peter's Basilica in Rome to illustrate that the selected scheme made the mistake of simply enlarging the size but keeping the classical proportion so that it looked like a "blown-up child."[20] On the latter problem, by ranking architectural styles in the sequence of "Chinese and new," "western and new," "Chinese and old," "western and old," Liang Sicheng commented that the adopted schemed was in the worst rank, namely, "Western & old."[21]In addition, six experts from Shanghai delivered their opinion against the western classical-style façades as well. [22] However, affirmed by the Premier, who pleaded that all the achievements from "old-time, today, China, and foreign countries" could be utilized and the raised problems could be experimented in later projects, the decision was not changed.[23] The process of the competition for the Great Hall set up a precedent that would be invoked in many important projects of China in later years – and interestingly, even in the argumentative project of the National Grand Theater at the turn of the century.

Located on the west of the Tian'anmen Square, the built Great Hall occupies 15 hectares of land and its total floor area reached 171,800 square meters, much more than the originally drafted 70,000 square meters. It consists of three parts: the conference part centered by an auditorium of near 10,000 seats, the banquet hall for 5000 people, and the offices for the Standing Committee of the National People's Congress. The east and west façades of the building are 336-meter long, the length of south and north façades are 174 meters, and the building's highest point reaches 46.5 meters.[24] The Great Hall was in general a western classical composition, where a colonnade familiar in western classical architecture was adopted to dominate the front façade. In order to assert the characteristic of Chinese architecture, some efforts were endeavored. For example, following the traditional structural custom, the distance of the central bay of the colonnade was set to be bigger than that of the others bays; at the top of the building, glaze tiles in pattern of lotus petals were attached on the overhanging eaves and the parapet walls; the corners of the eaves and the parapet walls were made not to be straightly 90 degree but a bit curled up, to drop a hint of

[19] Zhang Bo, *Wo de jianzhu chuangzuo daolu*, P.153-154, 157
[20] Ibid. P.157
[21] Ibid. P.153
[22] The six architects were: Wu Jingxiang, Feng Jizhong, Huang Zuoshen, Tan Yuan, Zhao Shen, Chen Zhi
[23] Zhang Bo, *Wo de jianzhu chuangzuo daolu*, P.157
[24] See. *Ershi shiji Zhongguo jianzhu*, P.239; Zou Denong, "Bange shiji de licheng," *Zhongguo jianzhu wushinian: 1949-1999*, P.39

Chinese wooden structure – a technique that had been used in the Qianmen Hotel; and the patterns of lotus petals were adopted at the stretched column caps to differentiate them from western style.

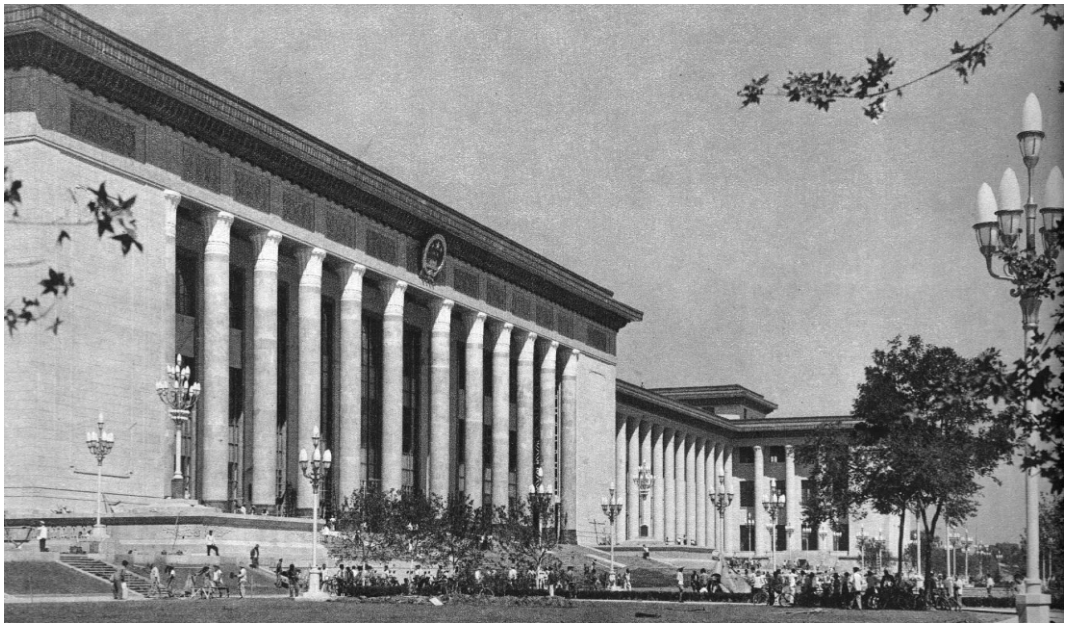

Figure 3-13 The Great Hall of the People, Beijing, 1958-1959, Zhao Dongri, Zhang Bo and etc.

On the east of the Tian'anmen Square, the complex of Chinese Revolution Museum and Chinese History Museum stands, vis-à-vis the Great Hall. Because of the inflation of the latter, the museum block had to be expanded accordingly. As a solution, several courtyards were filled in to build up a grandiose volume in the expense of lengthening the visiting tour. In the middle of its west façade facing the Tian'anmen Square, a huge colonnade (33 meters in height and more than 100 meters in width) was erected to separate the outer space from the entrance courtyard. This colonnade echoes the façade of the Great Hall, however with obvious differences. Here, the architects intended to give expression to the sense of triumph by mounting a red flag emblem at the middle of the colonnade top. In order to achieve the sense of being Chinese, the joints between the columns and the eave was manipulated like those of a wooden structure – a tactic was then regarded as an attempt of "new and Chinese."[25] The application of courtyards very much satisfied the chief architect of this project Zhang Kaiji, as he wrote in a paper:

> Several separated and run-through courtyards, in combination with the place at the entrance, created the diversiform spaces. It took the sense

[25] *Ershi shiji Zhongguo jianzhu*, P.240

of the tradition way of Chinese architecture, and at the same time it was just a coincidence to the space composition emphasized by some modernist architects. ……[26]

Figure 3-14 Chinese Revolution Museum and Chinese History Museum, Beijing, 1958-1959, Zhang Kaiji

Being a very functional building, the new Beijing Railway Station was in a eclectic style. It was designed since November 1958 and the construction started in January 1959. According to the long-term master plan of Beijing, there would be eighteen railways carrying 200,000 passengers or so to pass the station per day, and the highest hourly accumulation would be 14,000 people. The new station was without doubt the largest and best-equipped railway station all over China at that time.[27] Embellished by Yang Tingbao in the design, the outlook of the station was carefully and very well manipulated. However, one can sense the dissociable character of the building. On the one hand, the shell structure, especially the 35-meter by 35-meter pre-stressed concrete shell roofed on the central foyer, spontaneously casts a strong characteristic of the "advanced architecture of the time." On the other hand, in order to manifest Chinese architectural tradition and the emblem as the "door of China," national style was pursued. The façade of the Station, basically a western classical proportion, were

[26] Zhang Kaiji, "Tongguo shoudu jixiang zhongda gongcheng de sheji shi tan jianzhu chuangzuo wenti," *JZXB, Iss.12/1959,* P.37

[27] See Design Institute for Industrial Architecture of Beijing & Nanjing Institute of Technology, "Beijing xinjian chezhan dalou de jianzhu sheji," *JZXB, Iss.9-10/1959,* P.52

capped with glazed eaves, while the large glass windows were decorated with traditional components. The two 43.37-meter-high clock towers, which were designated as the main view attraction and to symbolize the “door,” were crowned with double-eaved roofs. Moreover, the shell atop of the central foyer, which was glorified as a great achievement of construction technology, was sheltered from front perspectives through the manipulation of the middle façade as well as the erection of the clock towers.

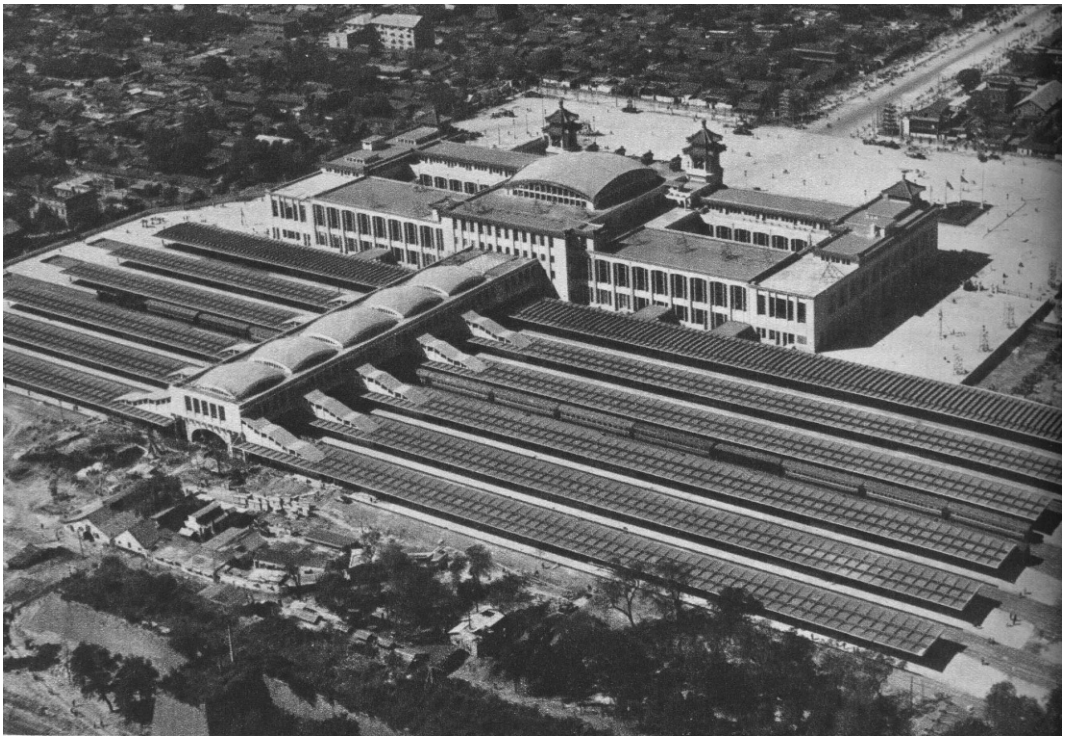

Figure 3-15 Beijing Railway Station, Beijing, 1958-1959, Yang Tingbao and etc.

Figure 3-16 National Agricultural Exhibition Center, Beijing, 1958-1959, Yan Xinghua and etc.

Figure 3-17 Military Museum, Beijing, 1958-1958, Beijing Architectural Design Institute

The tactic of combining a western classical composition with Chinese-style components, as presented on the Great Hall, the Railway Station, and the Chinese Revolution Museum and Chinese History Museum, shaped the biggest proportion of the National Day projects. Another example is the Military Museum, a building with a taste of Russian architecture flavored by a Russian-style tower standing at the middle top. The National Day projects also witnessed the resurgence of "big roof", despite it was sharply criticized shortly before in the Anti-Waste Movement. The Cultural Palace of Nationalities and the National Agricultural Exhibition Center, as well as the later built State Art Gallery are typical examples of this approach.

In terms of floor area, the Cultural Palace is the smallest one among the "ten great buildings"; however, it houses quite a lot of functions, including a museum for cultural relics of the 56 nationalities in China, a library for collecting books of ethnic minorities, an auditorium, a club, and an exhibition hall. This project was proposed early in 1951 and the design was commissioned in 1956. It had been under construction for three months by September 1958 when it was added to the list of the National Day projects. The characteristic of this structure mostly rests with a 67-meter-high pagoda

standing on a three-story skirt building. The plan size of the pagoda is 22.4 meters by 22.4 meters, stopped down to 16 meters by 16 meters at the top where double-eaved pyramidal roofs cover the pagoda. To foil the big central pagoda, four pavilions were put on the corners of the skirt part.

At the Cultural Palace, one can find many transformations that the chief architect Zhang Bo took up to pursue a new national style, or, a style of "Chinese and new." The composition of a high building standing on a huge base seen here is a typical technique manifested by many famous architectural relics such as the Tri-Palaces in the Forbidden City and the Temple of Heaven. However, the manipulation of retracting the plan of the pagoda at the top and attaching four pavilions at the corners has a hint to the Nabrask State Capital in the United States, designed by the famous American architect B. G. Goodhue during the 1920s and 30s.[28] In the decorative aspect, the blue glazed tiles on roofs and eaves, as well as the white ones on walls, colored the building different to traditional Chinese architecture, in which red and yellow formed the accordatura. According to Zhang Bo, Liang Sicheng's idea of "syntax" and "translatability" was the guidance for his practice of inheriting and developing the tradition of Chinese architecture, as for the design of the Cultural Palace.[29] This building was at that time praised as a paradigm of "new and Chinese" architecture, but it somehow reminds the Liang Sicheng's sketches published in 1954.

[28] *Ershi shiji Zhongguo jianzhu*, P.240
[29] Zhang Bo, *Wo de jianzhu chuangzuo daolu*, P.137

Figure 3-16 Cultural Palace of Nationalities, Beijing, 1956-1959, Zhang Bo

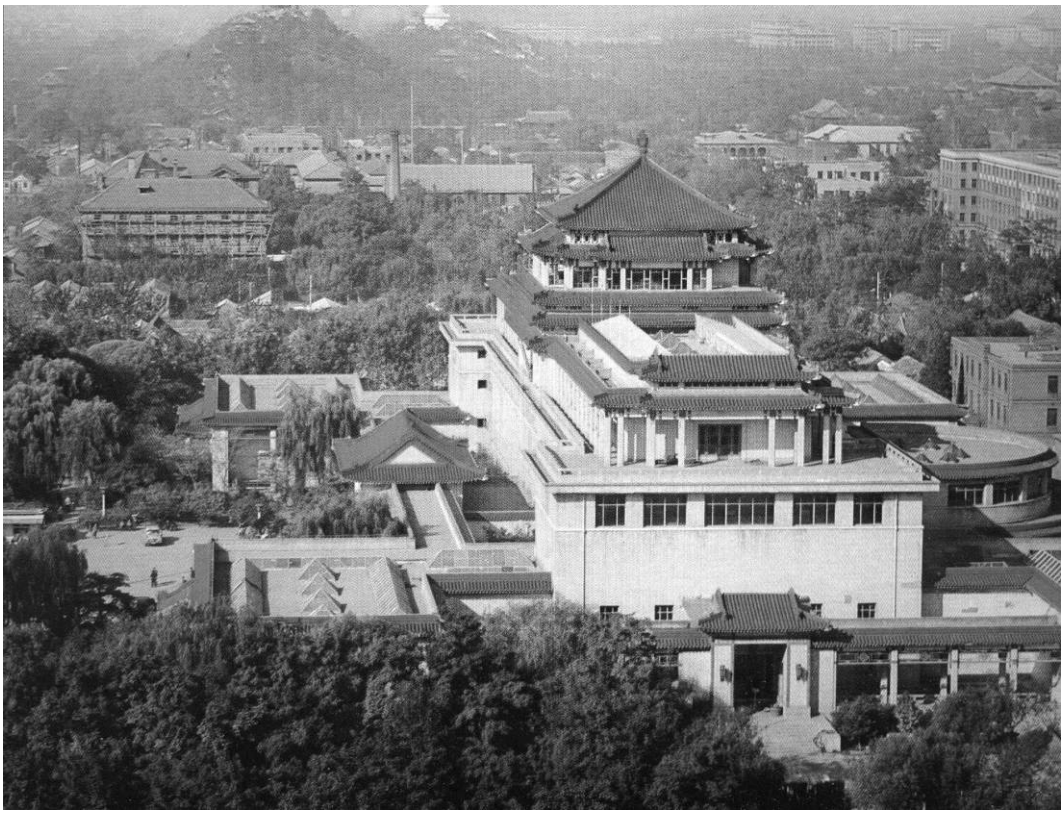

Figure 3-17 State Art Gallery, Beijing, 1958-1962, Dai Nianci and etc.

The State Art Gallery designed by Dai Nianci is quite similar to the Cultural Palace. It was originally on the list of the National Day projects, but its construction was postponed until 1960 and eventually finished in 1962. During the preparation phase of the design, Premier Zhou Enlai directed that classical Chinese architecture was "one of the flowers in the garden of Chinese art" and the design of the gallery should embody the characteristic of it.[30] The gallery is in a symmetric H-shaped plan – a very prevailing plan at that time, derived from the main building of Moscow University.[31] Through the application of glazed roofs, Dai Nianci transformed the western-proportional building, which was originally designed by a team from Tsinghua University, to Chinese-style one. The key view attractiveness was made at the ceremonious multi-eaved pavilion in the middle, accentuated by the sophisticated roofs underneath as well as the long glazed eave atop the flat skirt. Classical Chinese roofs were applied at the entrances as well.

[30] *Ershi shiji Zhongguo jianzhu*, P.257
[31] Ibid., P.258

Pursuing a Chinese trait through applying elements of traditional Chinese architecture was the mainstream of the design for the National Day projects, but a contrasting direction was presented, at Beijing Workers' Stadium. This arena looks extremely austere in its appearance, and its key characteristic mainly rests with the rhythm of the external row of vertical supports. The combination of vertical columns, horizontal windows between columns, and overhanging eaves hints a connection to some former manipulations, such as that Dai Nianci presented at his Main Building of the Central Party College. However, on the Workers' Stadium, structural elements were abruptly exposed, decorations were rejected, and strong colors were avoided in order to achieve a "light, decent and modest" appearance. In fact, this building has many similarities to the Lenin Stadium in Luahniki, Moscow built in 1955 to 1956, which was regarded as "a typical result of the new rationalist" Russian architecture of the late 1950s.[32] Although the architects of the Workers' Stadium still regarded the design of the façade as a "daring attempt,[33]" the tactic of the design was soon popularized in practice in China.

Figure 3-18 Workers' Stadium, Beijing, 1958-1959, Beijing Architectural Design Institute

[32] Ikonnikov A., Russian Architecture of the Soviet Period, P273
[33] Design Institute of Beijing Urban Planning Bureau, "Beijing gongren tiyuchang," *JZXB, Iss.9-10/1959,* P.68

3.3 The Debates around the "Socialist New Style"

Following the National Day projects, many cities began to construct their own "great buildings," for which, the buildings in Beijing played the role of prototypes. The construction of the National Day projects in Beijing somehow stimulated the repressed architectural circles, and made architectural activities stirring again. In a paper published in December 1959, Zhang Kaiji excitedly wrote:

> In designing these buildings (– the National Day projects), the architects did emancipate the minds and give up prejudices. In the creation, none of the distillates of the architecture in old-time or today, China or foreign countries was not absorbed and utilized. … The final styles were span-new and, at the same time, Chinese. [34]

During the design for the National Day projects, a new round of impassioned discussions on various architectural problems occurred. In this situation, the MBE and the ASC jointly convened a symposium in Shanghai from May 18th to June 4th, 1959. More than 120 architects, scholars and other experts from various concerned units of various areas, including almost all the prominent personnel, attended the meeting. It used four days to discuss housing standards, and spent the other days for the discussion on architecture design.

The reason why the participants were so eager to discuss architectural problems lay in their anxieties resulted from the various movements since the founding of the PRC. The criticism in 1953 on "constructivism" negated most architectural works since 1949; the gigantic Anti-Waste Movement in 1955, which criticized "big roof" with names, made the architects nervous and full of worry; and the Anti-Rightist Campaign in 1957 even threw fears to them. The large-scale construction of the National Day projects during 1958 to 1959 involved architects into important status again. It fired the ardor in architectural activities and at the same time, raised again the crucial problems remaining unsolved. The CCP government's opinion on the architectural design, which alleged that all the achievements in "old-time,

[34] Translated from Zhang Kaiji, "Tongguo shoudu jixiang zhongda gongcheng de sheji shi tan jianzhu chuangzuo wenti," *JZXB, Iss.12/1959,* P. 37

today, China, and foreign countries" could be utilized, somehow released the constraints formed since 1953.

Before the Shanghai symposium, some architects already started the debate. In its first issue in 1959, *JZXB* published Yuan Jinsheng's paper "Guanyu chuangzao xin de jianzhu fengge de jige wenti" ("On Creating the New Architectural Style"). In the 4th issue, Gong Zhenghong, Ma Haoran and Wu Tianzhu joined the discussion. The debate was actually initiated by the ASC, which, early in 1958 when the scheme of the Great Hall was selected, convened a special meeting to discuss the design. Although the disapprovals to the selected scheme brought forward by the meeting was not accepted by the government, the phrase "new and Chinese" invented by Liang Sicheng became consensus of the participants. In front of the Yuan Jinshen's paper, the ASC issued a leaderette to call for papers of "academic discussions" on "architectural creation and architectural art" under the Hundred Flowers policy and, in the following directions:

> 1. What are the main problems in the architectural creation since the Liberation? Which buildings are the successful instances of embodying the policy "utility, economy, and beauty"?
>
> 2. What is your opinion on creating the Chinese and new architectural style?
>
> 3. How to critically absorb the fine tradition of ancient architecture in practice, and which buildings since the Liberation are successful in this aspect?
>
> 4. How to correctly understand the ideology and artistry of architecture and how to represent it? [35]

Simultaneously, the ASC and the Design Bureau of the MBE, both of which planed to convene a meeting in May 1959 on housing standards, began to prearrange the Shanghai Symposium at the beginning of the year. Proposed by MBE Minister Liu Xiufeng, the symposium was eventually upgraded to be sponsored by the MBE in association with the ASC, and at the same time, the theme was broadened to include the "architectural problems that the architectural circles were eager to discuss."[36]

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[35] Translated from Yuan Jinshen, "Guanyu chuangzao xin de jianzhu fengge de jige wenti," *JZXB, Iss.1/1959,* P.38

[36] See. Wang Jiqi, "Huiyi Shanghai jianzhu yishu zuotanhui," *JZXB, Iss.4/1980,* P.1

During the symposium, conference speeches and grouping discussions went along alternately. One part of the meeting was the introduction of contemporary architectural developments all around the world. The lectures respectively on architecture of capitalist countries, architecture of socialist countries, and theoretical contentions of the early Soviet Union were delivered in the conference speeches. In the grouping discussions, the participants addressed their own opinions on the basic problems that had rose and had confused them so far since the founding of the PRC.

Mostly, the topics of various speeches at the symposium focused on the questions raised by the ASC in the first issue of *JZXB* in 1959, especially on the question of national style and the question of "Inheritance" versus "innovation". Liang Sicheng delivered a speech on June 2nd. At the beginning, he emphasized the policy "utility, economy and, if possible, beauty", which was framed by CCP in the early 1950s and reiterated since the Anti-Waste Movement. Then he defined the "content" of architecture as its function, including both physical and spiritual aspects. After criticizing the "revivalist contagions," he highly praised the new approaches of national style in the National Day projects. He quibbled that the difference between the "national style" architecture and the past "eclectic" architecture lay in their different ideological contents: the contents of the former were inheritances and innovations, while those of the latter were copies and patch-ups. He defended the new big-roofed buildings that emerged in the National Day projects and said: "relatively 'old' or immature things of this year will probably come forth with new appearances in next year. We can get progress in the innovation of tradition."[37]

In responses to the question of how to inherit tradition, he only brought forward his opinion on what to inherit. He exemplified houses in Kunming that normally face east, vernacular houses near Tianjin that normally have south-north cross ventilation, asking the architects to study architectural plans and spaces, as well as "what had been built based upon habits and customs," rather than "shapes or details of individual buildings." He pointed out: "Another aspect of the tradition and legacy that we can inherit and absorb is the artist laws in the architectural manipulations done by former craftsmen and the techniques of the manipulations, from the overall arrangements down to the details." Moreover, he stated that "the

[37] Translated from Liang Sicheng, "Cong "shiyong, jingji, zai keneng tiaojian xia zhuyi meiguan" tan dao chuantong yu gexin," *Liang Sicheng quanji Vol.5*, P.308

temperaments generated by architecture are a part of our traditional legacy."[38]

Liu Dunzhen, another prominent architectural historian, delivered his speech in the same direction on June 1st. On what to inherit, he concluded three aspects: different appearances and different styles created by the ancestors through suitably combining functions and terrains with buildings; the corresponding ways to adapt different climates; and the utilization of local materials.[39]

Different from Liang Sicheng's and Liu Dunzhen's conservative views, some speakers stressed more on the aspect of innovation. For example, Ha Xiongwen brought forward that "what we learn from the 'ancient' is neither the forms but where the forms have come from, nor the concrete techniques but why the techniques have been applied."[40] Chen Zhi stated that national form "must be discussed on the premise of scientific and popular nature," and that architects should "only absorb the souls, rather than copy the instances."[41] He said: "Our current direction of creation should not only inherit traditions but also reflect true lives and represent modern technologies."[42]Zhao Shen pointed out that "old buildings are outcomes of certain historical periods," and new buildings "need to reflect new demands of new time" although they "cannot deviate from the accordatura of old architecture." He regarded it unnecessary to be afraid of using new structures and new forms just because of they would be inharmonic with old buildings, and it unnecessary that new buildings should be restrained by old ones or should compromise with them.[43]

The opinions in favor of modern architecture and even in favor of the architecture in capitalist countries were witnessed at the symposium as well. The Ha Xiongwen's speech, for example, pointed out the good aspects of modern architecture in capitalist countries as: firstly, forms were close related to modern technologies, and reflected the application of new materials and technologies; secondly, structure systems had been intensively studied and daringly tried; thirdly, researches on technical equipments were carried on; fourthly, new materials were diversified and widely applied;

[38] Ibid., PP.309-310
[39] Liu Dunzhen, "Zhongguo jianzhu yishu de jicheng yu gexin," *JZXB, Iss.6/1959,* P.6
[40] Ha Xiongwen, "Dui jianzhu chuangzuo de ji dian kanfa," *JZXB, Iss.6/1959,* P.9
[41] Chen Zhi, "Dui jianzhu xingshi de yixie kanfa," *JZXB, Iss.7/1959,* P.3
[42] Translated from Ibid., P.4
[43] Zhao She, "Chuangzao zhongguo de shehuizhuyi de jianzhu fengge," *JZXB, Iss.7/1959,* P.5

fifthly, forms were concise and light, rather than miscellaneous; and lastly, architecture forms somehow had common taste with forms of other life tools.[44]

The various opinions presented at the Shanghai Symposium were summarized by Minister Liu Xiufeng in his speech "Chuangzao Zhongguo de shehuizhuyi de jianzhu xin fengge" ("To Create the New Style of Chinese Socialist Architecture"), which was then recomposed and published in the bound ninth and tenth issues of *JZXB* in 1959. Through reviewing the tortuous track of architectural design in the previous decade, the speech made a sober and objective evaluation on the status of China's architecture activities. It mentioned almost all the theoretical issues that had for years aroused great concerns in the architectural circles and tried to give comprehensive answers to convince and encourage the architects who had been puzzled and tortured by the successional criticisms. The speech consisted of six parts: basic principles for architectural researches, basic elements of architecture, architectural art, tradition versus innovation and content versus form, study and creation, and expectations to architects.

In the speech, the minister somewhat assented the principles of functionalism and "structuralism." He regarded functional demands, materials and technical conditions, as well as forms, as basic architectural elements. He said:

> The primary purpose of a building rests with the utility. … Functionalists attach importance to building functions and oppose the revivalism of academicism. At this point, they play a progressive role in architectural history. … Structuralists point out the importance of structure and illustrate the relationship between modern architecture and machinery as well as technology, against the academicist theory "art for art's sake," against revivalism, against eclecticism. They break old formalist restrictions and play certain promotional role in the development of building structure. [45]

On architectural artistry, the minister said it "rests with not only the utility of function and the rationality of structure, but also the beauty of appearance." He admitted that "functional reasonableness is indeed one of the elements

[44] Ha Xiongwen, "Dui jianzhu chuangzuo de ji dian kanfa," *JZXB, Iss.6/1959*, P.10
[45] Translated from Liu Xiufeng, "Chuangzao Zhongguo de shehuizhuyi de jianzhu xin fengge," *JZXB, Iss.9-10/1959*, PP. 4-6

that form the beauty," and regarded that "there is some truth" for the structuralists to "say that the reasonableness of structure is the beauty,"[46] however, he stated that both of the above were "never the whole of the beauty." On tradition and innovation, he stressed that national legacies should be highly valued and critically inherited, as he said:

> Tradition refers to means, techniques and diverse forms of past architecture, but not a certain classical architecture. … The innovation that we are talking about refers to developing and exuviating from Chinese tradition; it absorbs all the good aspects in past and present, China and foreign countries and digests them into something of our own by utilizing modern materials and technological conditions. It looks neither Chinese traditional, nor western, but rather of a Chinese socialist new character and new form that embodies the national characteristic. [47]

In addition, he pointed out that traditional form "should not be generalized" although it could be applied to special structures such as the State Art Gallery, and he said "even the grand buildings constructed in Beijing this year should not adopt this form, either."[48] On styles of China's different regions and nationalities, he stated: "We should commendably study the abundant and lively regional-style architectural forms … rather than give only attention to learning from classical architecture."[49] At the last part of his speech, the minister brought forward expectations to Chinese architects, first of all the reiteration of the "Hundred Flowers" policy. He asked the architects to contend different opinions, and said: "We hope to promote flowers blossoming in creation through thoughts contending in academia and, in turn, to enrich thoughts contending in academia through flowers blossoming in creation."[50]

Undoubtedly, the Shanghai Symposium is a landmark of China's architectural activities. It reviewed the architecture in the first decade of the PRC, and more importantly, somehow loosed the stern restrictions formed in past movements. It freed the ideological durance upon architectural form to a certain degree, and substituted the coercive Soviet doctrine on architectural design with the request of learning from all achievements in

[46] Ibid., P.6
[47] Ibid., P.9
[48] Ibid.
[49] Ibid.
[50] Ibid., P.11

any countries and any time. However, it was destined to be compromising, because none of previous decisions and policies by CCP was open to doubt, and the meaning of "socialist new style" was yet to be clarified. Moreover, learning from the Soviet Union was still reiterated in the minister's speech, although Soviet experiences were not any more regarded as the only option. CCP's ideology continued to restrict the debates, as the *JZXB* editorial alleged in its third issue in 1961:

> The scientific Marxism-Leninism is the correct thought in guiding our academic researches. … Architecture embodies social natures, and in a class society, architecture reflects class natures. So that, when (we) research and discuss architectural theories, … (we) must relate the history of our country's economy and culture and look at problems with the view of class analysis. When (we) research and discuss problems of the architectural creation after the Liberation … we should apply CCP's policies of General Line … as well as the policy on architecture – "utility, economy and, if possible, beauty" – as the guideline.[51]

Nevertheless, it seemed reasonable to except a flourish of architectural activities in such relatively loose atmosphere after the Shanghai Symposium, if China's economy was not to be encountered with tremendous difficulties at the beginning of the 1960s.

In 1958, Mao Zedong launched the radical movement Great Leap Forward, which soon aggravated the national economy and extremely destroyed the agricultural production. Shortly, the Sino-Russia relationship faced deterioration. The ideological divergence between the two parties and the two countries appearing after Khrushchev's 1956 criticism on Stalin eventually leaded to the break of the relationship in June 1960. Thereafter, most Soviet experts were called back and many Soviet-aided projects were abolished. Encountered with gigantic difficulties, China's economy had to enter a period of contraction and readjustment, and the financial controls cannot but be tightened. The scale of capital construction and the scale of industrial production were cut down, so were the urban employment and the urban population. In order to promote the contributions of Chinese intellectuals to fill the gap left by the Soviets, the CCP government made an effort to repair its relationship with the intellectuals that had been badly

[51] Translated from *JZXB* Editorial, "Kaizhan baijia zhengming, fanrong jianzhu chuangzuo," *JZXB*, Iss.3/1961, P.1

damaged in the Anti-Rightist Campaign, and disseminated a series of measures to loose the control and resume the Hundred Flower policy.

At the beginning of the 1960s, the architectural circles had to shift to academic researches due to the cut of design commissions. Pushed by the MBE and the ASC, the continuing discussion on the “new socialistic style” – mostly on verbal level – was carried out. Minister Liu Xiufeng convened architects in Shanghai in March 1961, and *JZXB* published an editorial in its third issue of this year, to initiate the discussion. Subsequently, a series of symposiums were held, many speeches were addressed, and a number of papers were published. Most of the speeches and papers focused on the theoretic explanation of the notion “new socialistic style” raised by Liu Xiufemg at the 1959 Shanghai Symposium. However, without practical progress, the somewhat metaphysical arguments didn’t lead to any pragmatic results.

Even worse, a gigantic disaster arrived soon. Since 1963, Mao Zedong enhanced the tone of “class struggle” and subsequently, launched the Four Cleanups Movement. The MBE was chosen as an experimental unit to carry out the movement.[52] Minister Liu Xiufeng was dismissed and his “mistakes”, including his provocation of the “new socialist style,” were criticized. Shortly, the Design Revolution was launched in design areas at the end of 1964, and destroyed the design system that had been established following the Soviet model since the early 1950s. One by one, the movements plunged architectural circles into dire suffering and eventually the torture of the Cultural Revolution. Thus the debates on China’s architectural design could not but mute until a decade later, when the Cultural Revolution formally ended.

3.4 The Technical Tendency during the Late 1950s and Early 60s

Since the National Day projects, new structures and new construction technologies were increasingly witnessed in practice, forming a flourishing

[52] Four Cleanups Movement四清运动, also known as the Socialist Education Movement was the movement launched by Mao Zedong in 1963. Mao sought to remove what he believed to be "reactionary" elements within the bureaucracy of the CCP, saying that "governance is also a process of socialist education." The Movement, whose goal was to cleanse politics, economy, organization, and ideology, was to last until 1966.

technical tendency in the late 1950s and early 60s. Several National Day projects in Beijing manifested this approach, such as the Minzu Hotel, a prefabricated structure; Beijing Railway Station, a building with a 35-meter by 35-meter hyperbolic shallow shell spanning over the entry hall; and the National Agricultural Exhibition Center, where individual exhibition halls applied various new structures.

Figure 3-19 Minzu Hotel, Beijing, 1958-1959, Zhang Bo

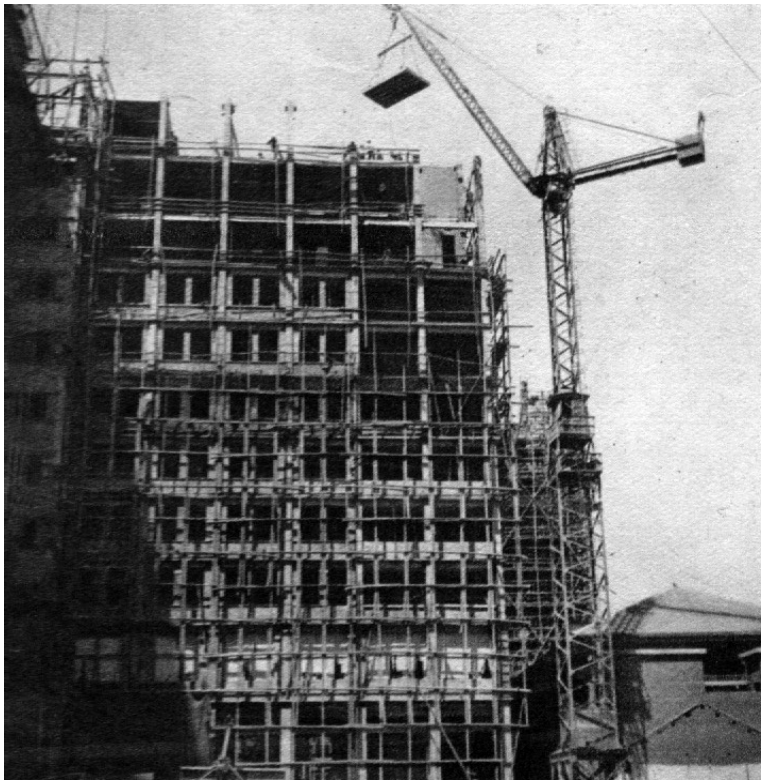

Figure 3-20 Minzu Hotel under construction

The application of concrete shell structure can be traced back to the Sino-Soviet Friendship Edifice in Shanghai, erected in 1955, as well as its imitation, the Sino-Soviet Friendship Edifice in Guangzhou built later in the same year. However, none of the previous examples had treated the shell structure as a key figure of form. During 1955 to 1958, Dai Nianci designed the Auditorium of the Central Party College, where he adopted a group of continuing arched shells on front foyer and two stepped classrooms, and achieved a vivid appearance. The manipulation with the shells and columns at the building's middle of the façade, which had some implications of the façade design of the CCCP Exhibition Hall in Beijing, became a model for similar building. Around the same time, Zhang Kaiji's Beijing Planetarium was erected, of which the remarkable hemispherical dome designed by an East German engineer is a 6- to 8.5-centimeter-thick concrete shell spanning 25 meters in diameter.

Figure 3-21 Auditorium of the Central Party College, Beijing, 1955-1959, Dai Nianci

It seems that the technical tendency in architectural design was stimulated by the Brussels EXPO held during July to September 1958. The characteristic features of modern materials and modern structural technologies presented by various countries' exhibition halls apparently caught the eyes of Chinese architects and engineers. The EXPO was introduced in the sixth issue of *JZXB* in 1959, and an article commented that it "exhibited the utilities of new structures as well as new materials, and enlightened us on choosing structure, plan and details according to the

condition of designing an exhibition building."[53] To Chinese architects, the most impressive aspect may rest with the fact that the three biggest exhibition halls at the EXPO – the CCCP Hall, the U.S. Hall and the French Hall – all applied suspend cable structure but presented very different looks.

After the National Day projects and the Brussels EXPO, research on new building structures, especially on various shell structures and suspend cable structure, made a fast progress. In July 1961, the MBE established a special institution to investigate and research the form, the application and the construction of various structures.[54] Simultaneously, the practice of new structures was booming and largely witnessed at wide-span spaces of stadiums, railway stations, theaters and so forth. Different from the aforementioned Beijing Railway Station, which somehow concealed the long-span shell with two towers outside and decorations and lamp bands inside, the newer buildings began to expose the form of new structures. The ever-criticized "structuralism" seemed unfolded.

One example is Fuzhou Railway Station designed by Huang Xiaoxiu, an architect from the Architectural Design Institute of Fujian Province. The remarkable building of Fuzhou was built in 1959, one year after railways reaching the city. The dominating aspect of the station was the shell vaults at the top, while the big glass windows set in the concrete frame were also fashionable at that time. Somehow, it imitated the central part of the façade of Beijing Railway Station, only the ornaments were stripped out and the structure elements were fully exposed.

The Shancheng Wide-Screen Cinema in Chongqing, designed by the architects from the Attached Design Institution of Chongqing Institute of Architecture and Building Engineering and built during 1958 to1960, was very similar to the previous building. At the cinema, three arched shells were used to cover the auditorium, and five shells were put atop the front foyer. The two groups of shells are perpendicular to each other. At the front, the combination of the five arches and six columns forms a colonnade, in contrast with solid walls standing left and right. The front façade is almost a clone of Fuzhou Railway Station, save for the strong decorative details at columns, windows, eaves and other places. Another representative work is the Students' Mess Hall at Tongji University in Shanghai built in 1963. The span of the reticulated shell structure of this building is 54 meters, covering

[53] i.e. Gong Zhenghong, "1958 nian Brussels guoji bolanhui," *JZXB, Iss.6/1959*
[54] *Dangdai Zhongguo de jianzhuye*, P.704

the 40-meter-wide hall. The bare main structure, together with the folded-plate structure at the entrance and the clerestory, forms the characteristic of the mess hall.

Figure 3-22 Fuzhou Railway Station, Fuzhou, 1959, Huang Xiaoxiu

Figure 3-23 Shancheng Wide-Screen Cinema, Chongqing, 1958-1960, Attached Design Institution of Chongqing Institute of Architecture & Building Engineering

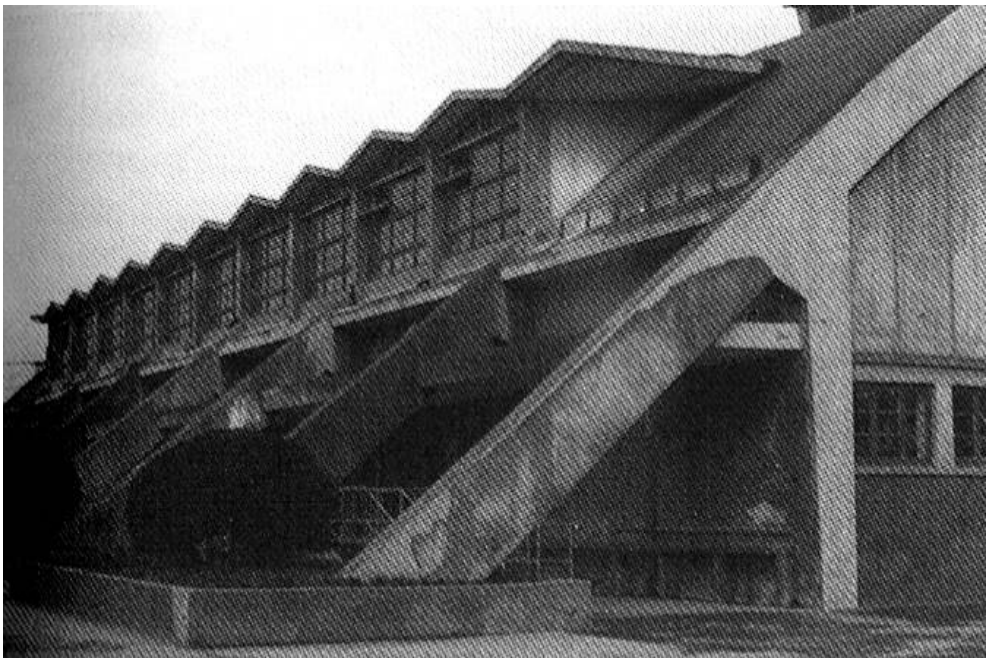

Figure 3-24 Students' Mess Hall at Tongji University, Shanghai, 1963, Design Institute of Tongji University

It was very soon that suspend cable structure emerged in architectural practice. In 1959, a sports hall by the Design Institute of Tianjin University was built on the campus of the university. It was recorded the first experimental project of saddle-shaped cable structure.[55] Saddle-shaped cable structure was then adopted to cover Zhejiang Gymnasium in Hangzhou, which plan is 125.24-meter long and 103.8-meter wide.[56]

Figure 3-25 A sports hall at Tianjin University, Tianjin, 1959, Design Institute of Tianjin University

[55] Zou Denong, *Zhongguo xiandai jianzhu shi,* P.257
[56] Ibid, P.256

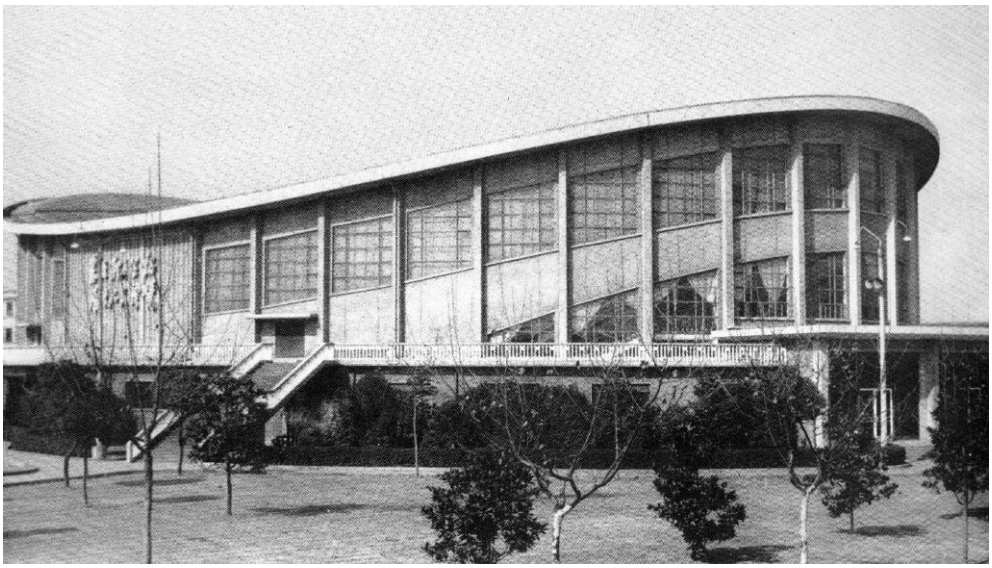

Figure 3-26 Zhejiang Gymnasium, Hangzhou, 1965-1969

Buildings with new structures were largely witnessed in northwest China at the beginning of the 1960s, especially in Urumchi, the capital of Xinjiang Autonomous Region. Such buildings in the city include the Xinjiang Exhibition Hall, the Tuanjie Theater, the Dongfeng Cinema, Urumchi Gymnasium and those erected in factories and colleges. In Yinchuan, the capital of Ningxia Autonomous Region, the Ningxia Gymnasium was built in 1961. The characteristic of the biggest gymnasium of northwest China of the time is featured by the prefabricated corrugated arch-shell roof, which spans 30 meters.

Figure 3-29 Xinjiang Exhibition Hall, Urumchi, 1964-1965, Meng Zhaoli and etc.

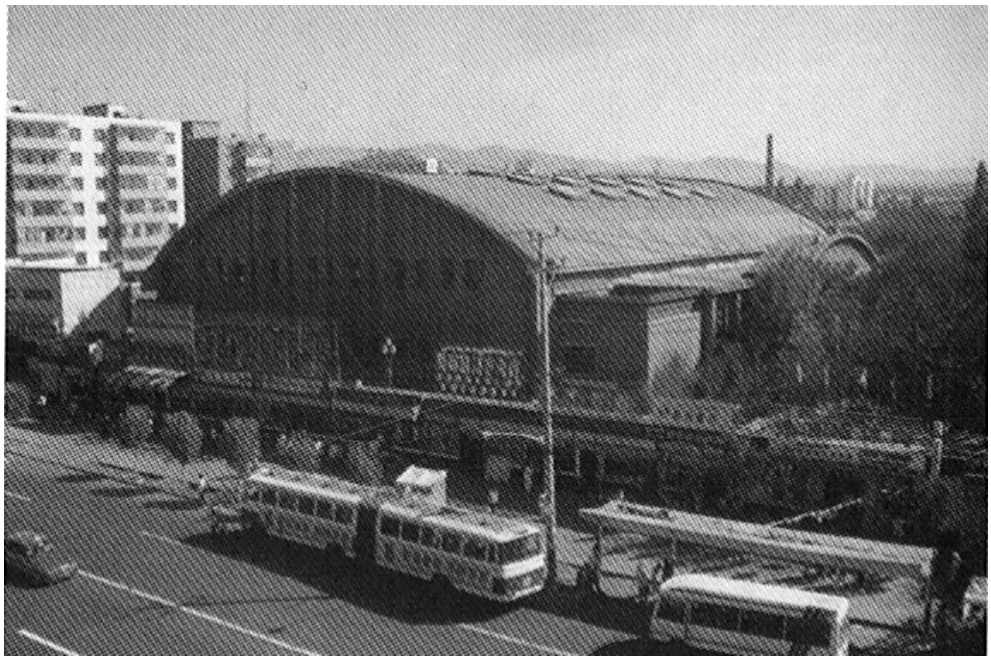

Figure 3-30 Urumchi Gymnasium, Urumchi

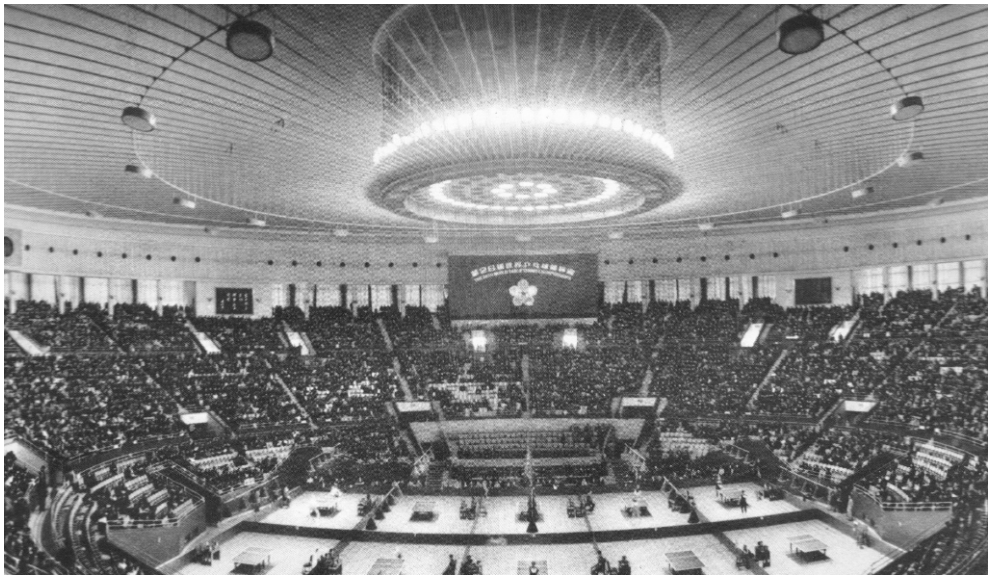

Figure 3-31 Beijing Workers' Gymnasium, 1959-1961, Beijing Architectural Design Institute

The most remarkable example of the technical tendency during this period is Beijing Workers' Gymnasium. This indoor sports arena was opened in February 1961, and its design was started since August 1959. It kept up the character of simplicity of the main arena (the Workers' Stadium), leaving the exposed structural components undecorated. Large windows were set in structural frame, while they were separated by additional beams in order to solve the problem of different floor heights and at the same time, manifest the height of the building. The striking characteristic of the gymnasium rests with its cover, a 94-meter-span suspend cable structure exposed to the inside

space. In 1961, Zhang Kaiji praised the gymnasium as representing a "relatively correct direction" of architectural design, and he commended:

> It has satisfied functional demands, adapted advanced structural technology, sufficiently utilized inner spaces, saved building volumes, paid attention to spatial manipulation, avoided complicated decorations, lightened deadweights, and lowered costs. It is real, reasonable, healthy, and it is suitable to the spirit of time.[57]

However, if we look at the industrial buildings that had been built since the founding of the PRC, we will discover that the application of structural elements was nothing new in building construction. Plus the fact that the prominent Chinese architects didn't play any important roles in this tendency, we would assume that the reason why the exploration of new structural system was so fashionable did not lie in the aesthetic aspect. The new structures were rather regarded as technical achievements as well as economic achievements because they would cost less steel and concrete. The impact of structural elements on aesthetic issues of architectural form and space, especially the latter, were still far away from the concerns of Chinese architects, who had been deeply influenced by the Ecole des Beaux Arts tradition and who never played active roles in the practice of industrial architecture.

3.5 The Regional Approaches and the Emergence of Lingnan Style

At the 1959 Shanghai Symposium, the issue on regional styles was raised and ardently discussed, although such styles were mostly regarded as extensions of national style. Learning from vernacular houses and gardens of various regions to create the "socialist new style" became a common view of the participants of the symposium. Liang Sicheng, for example, brought forward that he thought this subject would "bring enormous and favorable promotions" to contribute the formation of national style.[58] In the final sum-up speech, Minister Liu Xiufeng also brought forward this issue. He said:

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[57] Zhang Kaiji, "Shilun Beijing gongren tiyuguan de jianzhu yishu," *JZXB, Iss.8/ 1961*, P.8

[58] Liang Sicheng, "Cong "shiyong, jingji, zai keneng tiaojian xia zhuyi meiguan" tan dao chuantong yu gexin," *Liang Sicheng quanji Vol.5*, P.310

> China is a country of many nationalities. The national form cannot be only one sort. Even for one nationality, and for example, the Han[59] nationality, there are different regional colors and regional styles derived from different climates, different geographies, different customs and different material resources of (different) inhabited regions. These regional styles are created by local people and directly yield from the lives, and they are favored by the masses. We should commendably study the abundant and lively regional-style architectural forms, and learn from them fine techniques and skills, rather than pay only attention to learning from classical architecture.[60]

In fact, the regional trends had already gleamed in the early 1950s. In 1952, Xu Zhong designed the Office Building Complex of the Ministry of Foreign Trade in Beijing, and he well treated the complex with ordinary materials and constructions. Inspiration of the design was drawn from in-official architecture rather than grand buildings that were normally imitated in pursuing the "national form" architecture. In the design for the Ninth Classroom Building of Tianjin University – a prominent "national form" building around the same time, he adopted the same tactic.

Figure 3-27 An Office Building of the Ministry of Foreign Trade, Beijing, 1952-1954, Xu Zhong

[59] Han汉, a member of the principal ethnic group of China, constituting about 93 percent of the population, especially as distinguished from Manchus, Mongols, Huis, and other minority nationalities.
[60] Liu Xiufeng, "Chuangzao Zhongguo de shehuizhuyi de jianzhu xin fengge," *JZXB, Iss.9-10/1959*, P.9

After the Anti-Waste Movement, some architects began to turn their steps to consult vernacular houses in practice. One of the initiatory cases was the Lu Xun Museum in Shanghai, which was designed in 1956 by Chen Zhi and Wang Dingzeng and built in the same year, in commemoration to the great writer for the 20th anniversary of his death. The museum was located in the Hongkou Park, which was renovated at the same time with "spirits and skills[61]" of Chinese gardening. The architects intended to build a museum which would be "concise, modest, bright, pleasing, lively, elegant, and possessing the characteristic of the vernacular houses in southeast China."[62] They adopted regional-style elements of Lu Xun's hometown Shaoxing, such as white walls, gray-tiled roofs, and gable walls, on the façades, and set local-style hollowed-out balustrades between the columns of the colonnade aside the entrance. The rough stone base of the building also enhanced the vernacular taste.[63] Departing away from classical architecture, which had been dominating the design of monumental buildings in China, the Lu Xun Museum sought a way of achieving national style in the predicament following the Anti Waste Movement.

Figure 3-28 Lu Xun Museum, Shanghai, 1956, Chen Zhi and Wang Dingzeng

[61] Chen Zhi & Wang Dingzeng, "Shanghai Hongkou gongyuan gaijian ji," *JZXB, Iss.9/1956,* P.6
[62] Ibid.
[63] Ibid.

Promoted by the 1959 Shanghai Symposium, architecture featured vernacular house styles and local construction materials began to bloom. For example, in Qingdao, a summer resort for CCP leaders, Lin Leyi designed the Small Auditorium of the Number One Club. In order to harmonize the new building with the surroundings, the architect scattered the volume into small houses, and used red tiles (which are familiar in the city) on the shell-structured roofs and local stones on the walls. In Wuhan, Wu Husheng and Dai Fudong from Tongji University designed the Number One Building and the Number Three Building of the Meiling Rest House aside the East Lake. Elaboration of ordinary local materials was again the main feature of the complex. In Shaoshan, the Mao Zedong Museum designed by architects from Guangzhou was built in Mao's home village. The local gray tiles at the sloped roofs, the stucco walls with partial decorations of brick tiles, and the stone plinth courses shaped the building complex modest and close to vernacular houses. The museum was organized with several courtyards, and its different sectors were connected by simplified Chinese garden corridors – a tactic reflecting the new approach of Guangzhou's architecture discussed in the following.

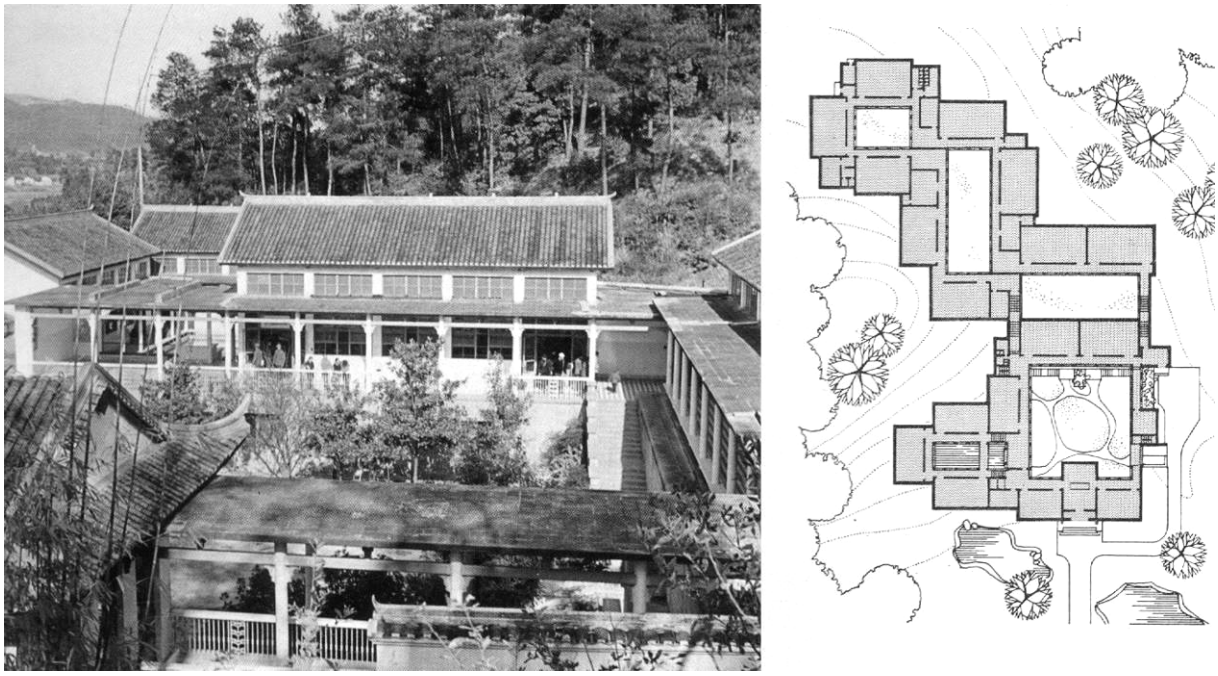

Figure 3-29 Mao Zedong Museum, Shaoshan, 1964, Huang Yuanqiang and etc.

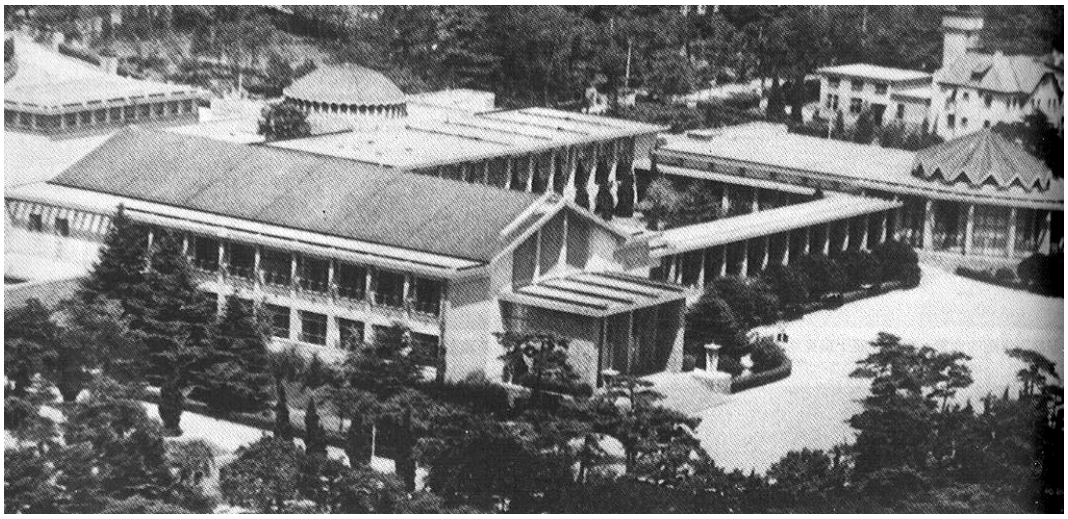

Figure 3-30 Small Auditorium of No.1 Club, Qingdao, 1961, Lin Leyi

Figure 3-31 Meiling Rest House, Wuhan, 1958-1963, Wu Husheng, Dai Fudong

Guangzhou was the place where regional architecture was the most vigorously explored, and where the so-called "Lingnan style" was germinated. Lingnan refers to the region that lies in the south of the Wu Ling (Five Ridges) Mountain in south China. Historically, this region had many particularities, and after 1949, as the bridge to Hong Kong, Guangzhou continued to play an important role in foreign trade. A relatively large amount of constructions ensured the development of architecture in the city since the founding of the PRC, not heavily interrupted by the economic

difficulties at the first years of the 1960s and rapidly resumed in the early 1970s after the upsurge of the Cultural Revolution.

Figure 3-32 Biology-Chemistry Building at Sun Yat-sen University of Medical Sciences, Guangzhou, 1952, Xia Changshi

The exploration of regional architecture in the city was leaded by the prominent architect Xia Changshi, whose practice with sunshades and components for thermal insulation and ventilation since 1952 is very distinguished. Such works in the 1950s include the Biology-Chemistry Building at Sun Yat-sen University of Medical Sciences, the Pharmacy Building at the same university, the Dinghushan Teacher's Sanatorium, the First Attached Hospital of Sun Yat-sen University of Medical Sciences, the Chemistry Building at South China Institute of Technology. Xia Changshi manipulated components of sunshade and heat insulation at these structures not only to deal with the local climate, but also to achieve characteristic forms. Although some of the works were commented in the 1960s as looking "too foreign[64]," the design of these buildings were widely copied in later decades and became a familiar tactic for Chinese architects. During the 1950s and 60s, Xia Changshi made a lot of investigations on gardens in south China with his students and young colleagues, among which, Mo Bozhi eventually became one of the most fruitful architects in the exploration of Lingnan style.

[64] Lin Keming, "Guanyu jianzhu fengge de jige wenti," *JZXB, Iss.8/1961*, P.4

Figure 3-33 Beiyuan Restaurant, Guangzhou, 1958, Mo Bozhi and etc.

Figure 3-34 Panxi Restaurant, Guangzhou, 1960, Mo Bozhi

The restoration of Beiyuan Restaurant in Guangzhou, designed and built in 1958, was Mo Bozhi and his colleagues' first attempt of introducing south Chinese garden architecture in design. With recycled components and

furniture from breakdown traditional buildings, the architects successfully built up a new genuine Chinese building. By manipulating rockery, water, plants, and several kinds of traditional pavilions, they introduced a Chinese garden in this public building and achieved the characteristic of transparency. This work was praised by Liang Sicheng in 1959 as "a successful attempt" of regional style and "a model worthy to be taken after."[65] Mo bozhi repeated the same approach at his Panxi Restaurant in the same city in 1960, and thereafter, he began to use flat-roofed reinforced-concrete structures instead of traditional wooden houses. This led to one of his most successful architecture works – the Baiyunshanzhuang Hotel in Guangzhou.

Figure 3-35 Baiyunshanzhuang Hotel, Guangzhou, 1962, Mo Bozhi and etc.

The Baiyunshanzhuang Hotel, located in Baiyunshan Mountain – a famous scenic area of Guangzhou, was built in 1962. In designing the hotel, Mo Bozhi and his colleagues separated the building mass into small volumes to house various functions. Once again, the combination of architecture and gardening form the characteristic. Two courtyards – the front one between the dinning hall and the guest room sector and the inner one surrounded by the guest rooms – were introduced to organize the overall plan. The buildings are concrete structures with flat or slightly pitched roofs. Their slender columns, thin eaves, and big openings would remind the Exhibition

[65] Liang Sicheng, "Cong "shiyong, jingji, zai keneng tiaojian xia zhuyi meiguan" tan dao chuantong yu gexin," *Liang Sicheng quanji Vol.5*, P.310

Hall of Aquatic Products designed by Xia Changshi in 1950 (see Section 2.3). With the slight structures, as well as various-shaped garden gates and window openings, and stone walls, the hotel embodies a strong characteristic of south Chinese garden architecture, which is further enhanced by two corridors – a flexuous one in the front courtyard and a straight one along one side of the inner courtyard. In the same mountain and around the same time, the architects also erected the Shuangxi Villas, which is another modern building complex of the same approach, featured south Chinese garden architecture as well.

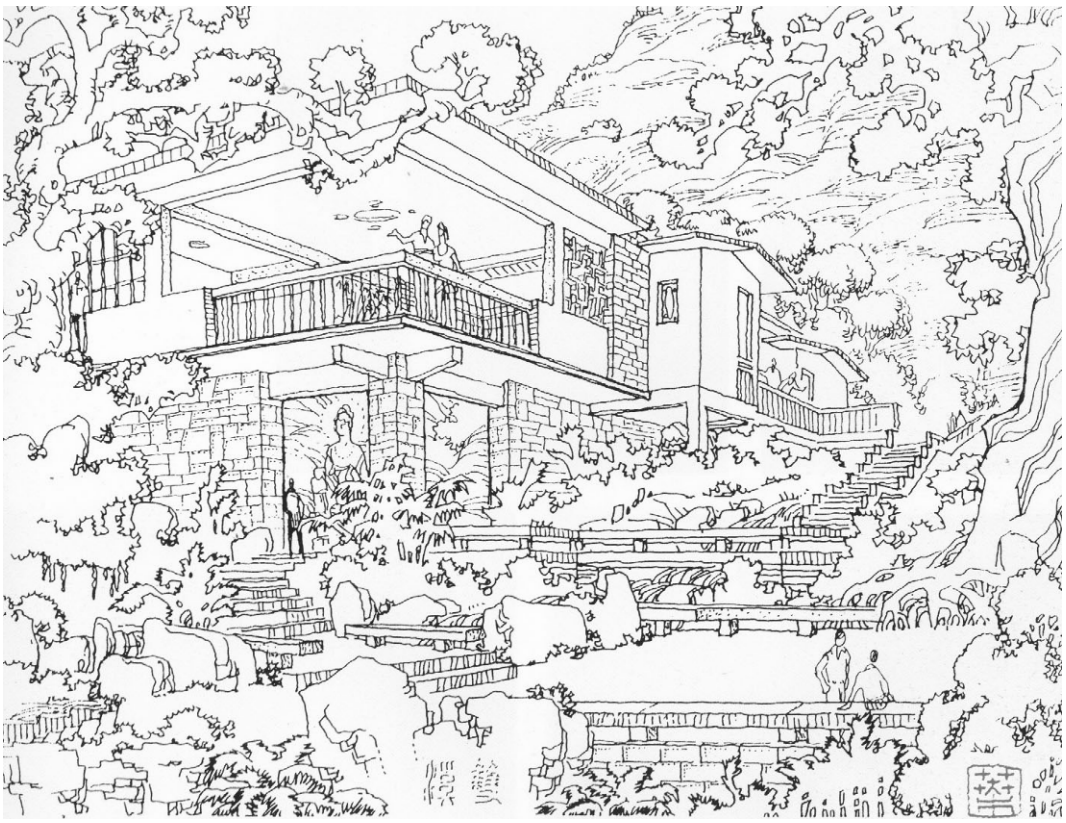

Figure 3-36 Shuangxi Villas, Guangzhou, 1963, Mo Bozhi and etc.

The Baiyunshanzhuang Hotel and the Shuangxi Villas established a landmark of Mo Bozhi's practice, and a landmark of Lingnan style. The openness, transparency and lightness manifested at buildings, the combination of architecture and gardening, as well as the transformation of traditional garden architecture to new buildings, became the most remarkable characteristic of Lingnan style. As Ye Ronggui commented, "these two groups of buildings set up a model for China's and especially Lingnan's new garden architecture, in whatever the aspects of overall arrangement, form, artistic style, culture, space, environment and so forth.

Their influence lasted for decades."[66] During the 1960s to the 1980s, a large number of similar or further transformed reinforced concrete structures were erected in many public parks and gardens, from Guangzhou to all over China.

Xia Changshi and Mo Bozhi's excellent works profoundly contributed to the Lingnan style architecture, which, thank to the specific economic situation of Guangzhou and the support from the city government, made a fast and fruitful progress during 1960 to 1966.[67] Mo Bozhi's practice of introducing Chinese gardening into new buildings was continued, as presented in his another masterwork, Kuanquan Hotel in Guangzhou, built in 1974. She Junnan, another prominent architect of Guangzhou, participated in this exploration as well. In the Friendship Theater designed and built during 1964 to 1965, he introduced a small garden into an open-air rest yard. At the beginning of the 1980s, these two architects played a key role in designing the White Swan Hotel in Guangzhou. Fully featured Chinese garden in the public spaces, this hotel is regarded as the culmination of the Lingnan style architecture; however, the gardening in the hotel is totally traditional.

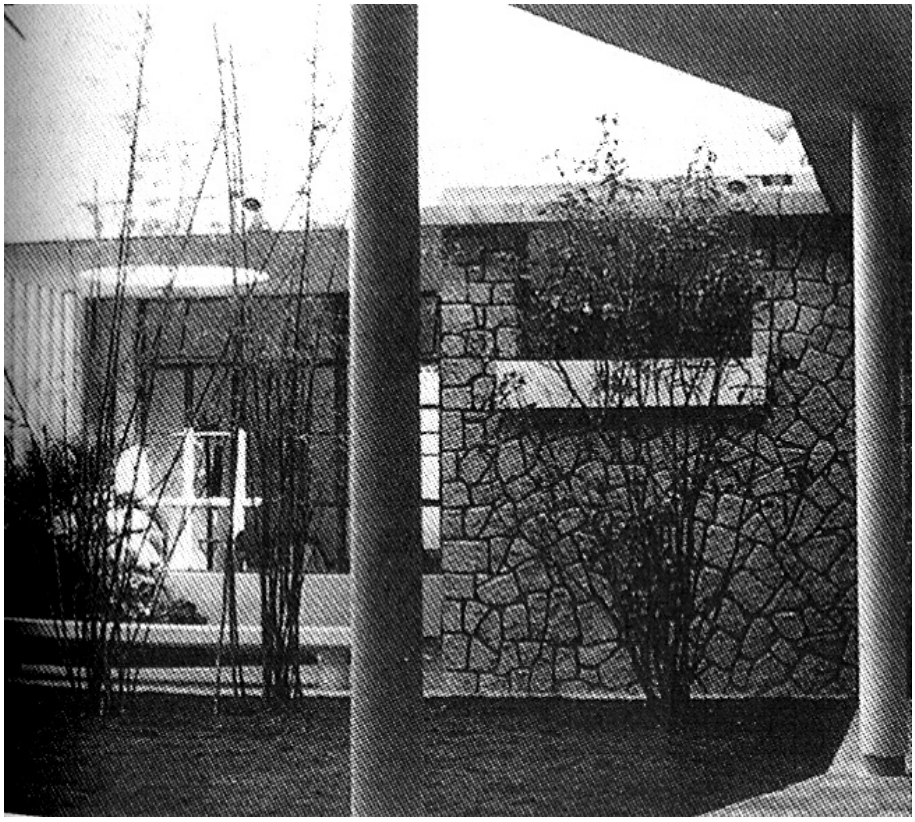

Figure 3-37 A courtyard in Friendship Theater, Guangzhou, 1964-1965, She Junnan

[66] Translated from *Mo Bozhi ji,* P.284
[67] See *She Junnan xuanji,* PP.49-51, for the support from the local government

Besides Guangzhou, Guilin, a famous scenic city in Lingnan region, greatly contributed to Lingnan style. In 1958, construction of public parks and greenbelts was promoted in China, and thereafter, a number of architects from other cities were invited to Guilin to participate in its construction. In 1959, the Theory and History Section of the Academy of Building Research from Beijing made the plan for the Qixingyan Park and designed the Yueyalou Pavilion, which at that time was the most important building of the park. The pavilion is a reinforced concrete structure and a simplified transformation of classical Chinese pavilion. In 1963, East China Industrial Architectural Design Institute, Shanghai Civil Architectural Design Institute and Tongji University were invited to design the buildings at the Ludiyan Park. Through utilizing simplified, abstracted and transformed elements of local vernacular houses, the architects from Shanghai added a local taste to the new garden buildings. The Rest House, for example, was featured with an overhead platform, slightly sloped roofs, stone walls, and an exposed reinforced concrete frame. In the middle of the 1960s, the Guangzhou architect Mo Bozhi and his colleagues also contributed to the architectural activities in Guilin. They designed two buildings in this city, the Fubolou Pavilion and the Bailongqiao Bridge. The former is an analogue of the Shuangxi Villas in Guangzhou and the latter is a simplified local covered bridge built with concrete.

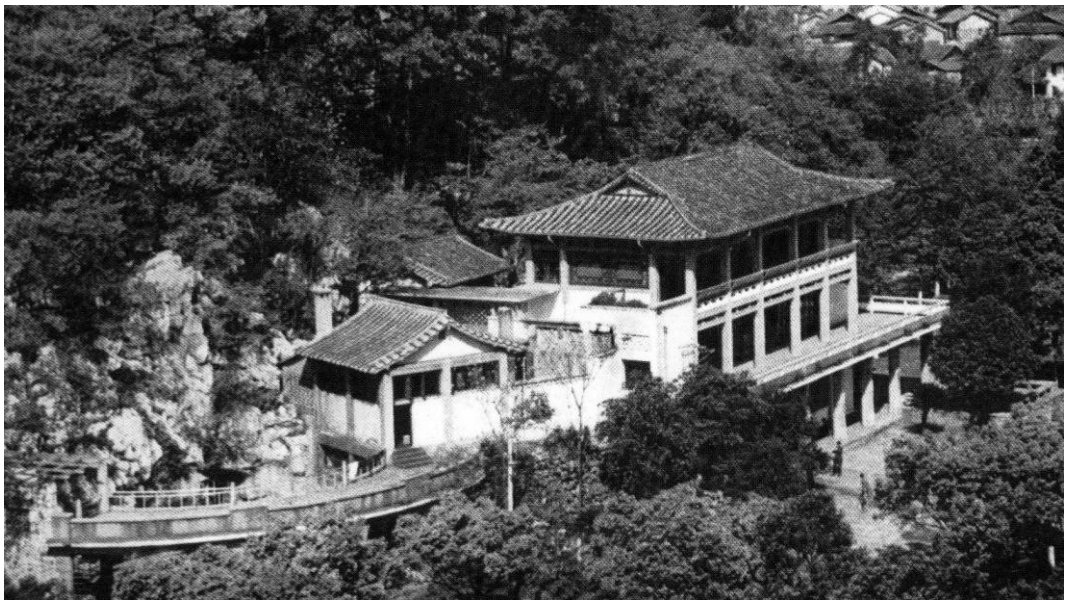

Figure 3-38 Yueyalou Pavilion at Qixingyan Park, Guilin, 1959-1960, Theory & History Section of Academy of Building Research

The previous garden buildings, designed by architects from other cities, established the foundation for the practice of garden architecture in Guilin. It made a progress afterwards and even during the decade of the Cultural

Revolution. Shang Kuo, an architect exiled from the Academy of Building Research in Beijing to the city during the Cultural Revolution, continued the exploration and made a great contribution. The activities of garden architecture in Guilin composed another important part of Lingnan style, which would produce a nation-wide influence to China's architecture in the 1970s and 80s.

Figure 3-39 Rest House at Ludiyan Park, Guilin, 1963, East China Design Institute for Industrial Architecture, Shanghai Design Institute for Civil Architecture, and Tongji University

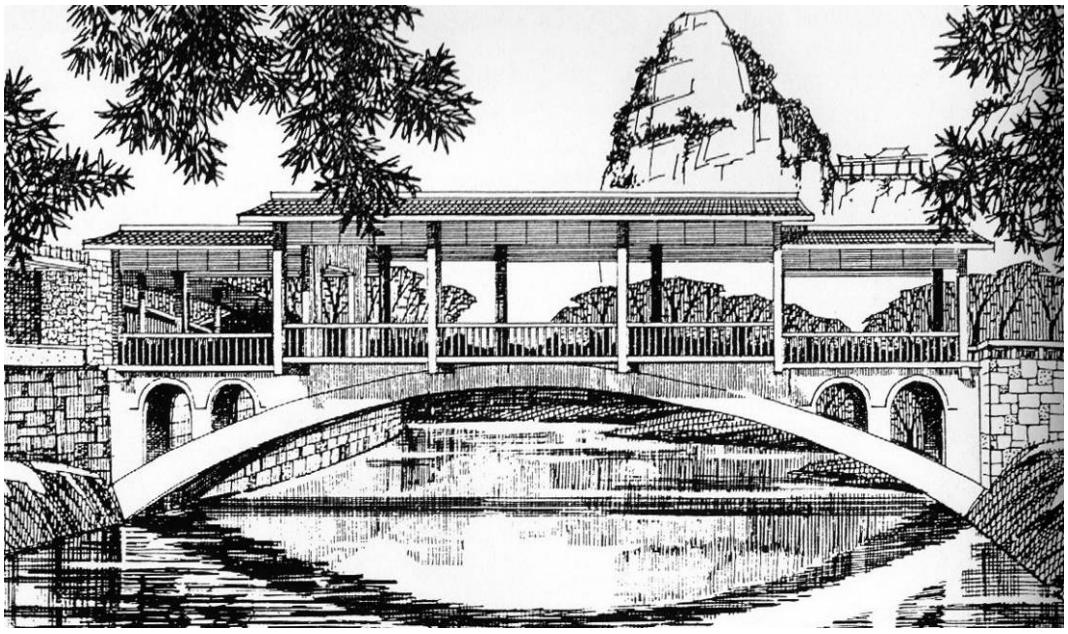

Figure 3-45 Bailongqiao Bridge, Guilin, 1964, Mo Bozhi and etc.

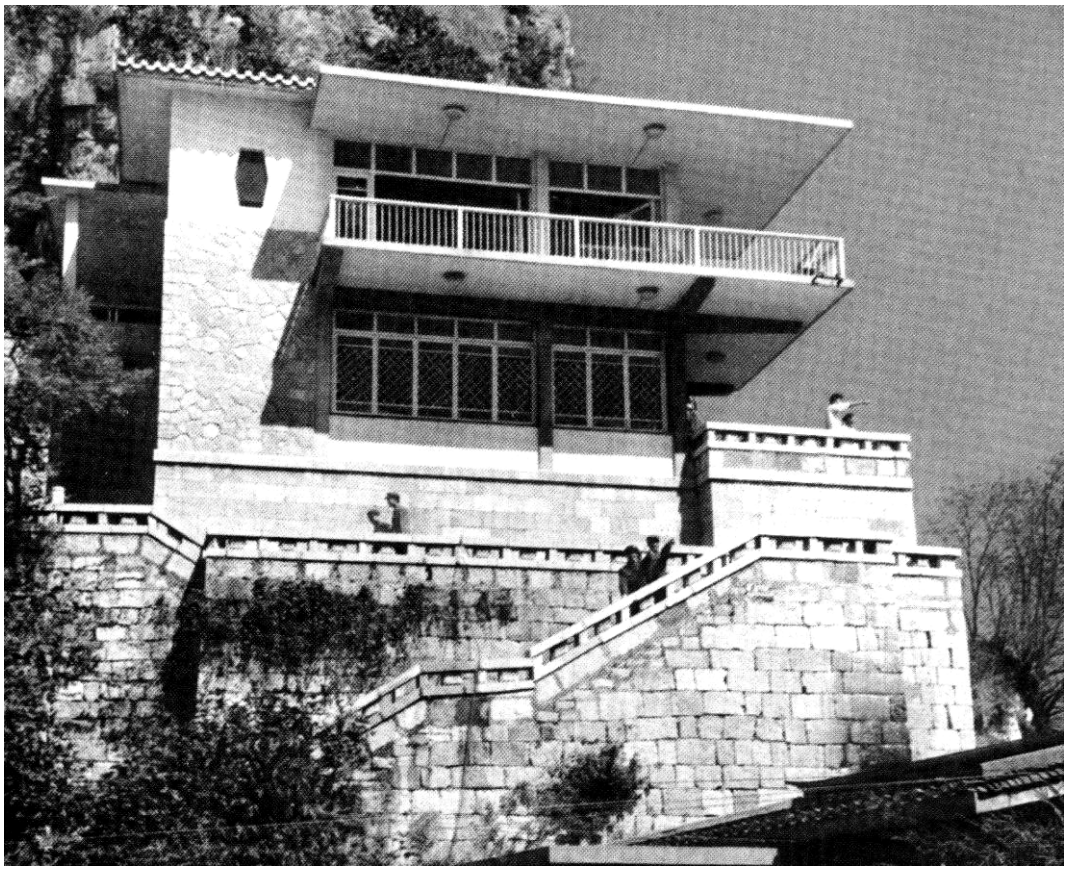

Figure 3-46 Fubolou Pavilion, Guilin, 1964, Mo Bozhi and etc.

PART 2

CONSTRUCTION AND PLANNING IN A PLANNED ENVIRONMENT

Generally speaking, the period from 1949 to 1965 in China could be divided into four stages: the recovery period, 1949-1952; the period of the First Five-Year Plan, 1953-1957; the period of the Great Leap Forward, 1958-1960; and the adjustment period, 1961-1965. In the first period, the government of Chinese Communist Party (CCP) made a series of efforts to consolidate the new regime of the People's Republic of China (PRC). Along with the remnant of the civil war and the intervention to the Korean War in October 1950, the CCP government confiscated bureaucrat-capital and achieved economic stabilization and financial unification. Meanwhile, through various mass campaigns in rural and urban areas, the government substantially strengthened political control over the country.

Based on that, the First Five-Year Plan was formally carried out in 1953, and a large-scale economic construction in imitation of the Soviet model was launched. Along with it, the socialist transformation – the change from private to state or collective ownership in agriculture, handicrafts, industry and commerce – started, and meanwhile, regularization and centralization of administrative system was pushed. When the State Planning Commission and a set of new economic ministries were established in the second half of 1952, the central government began to reduce regional powers to enhance the central authority, and in 1954-1955, abolished the regional level governments as well as their parallel party and military bodies, on the grounds of incompatibility with the needs of planned construction. In general, the first Five-Year Plan was successful, while the highly centralized Soviet model, which attached extreme importance to heavy industry, brought out its problem of inadaptability.

At the end of the First Five-Year Plan, the CCP government decided to take a more balanced policy in the second Five-Year Plan to advance development of heavy industry, light industry and agriculture. But such effort was shortly replaced by the radical movement of the Great Leap Forward, with the ambition of quickly catching up with developed countries. The Great Leap Forward resulted in a disaster at the end of the 1950s, and China had to be confronted with an economic stagnancy, which was aggravated by the abruption of Sino-Soviet relationship at the beginning of the 1960s. Thereafter, China entered the period of economic adjustment. The national economy was gradually resumed and improved, but the progress was soon interrupted by a series of political movements launched since 1964. In 1966,

the mass Cultural Revolution broke out; it leaded China into a catastrophe that would last for a decade.

In the main, China’s national economy achieved a great development during 1949 to 1965. The planned economy under a highly centralized leadership succeeded in mobilizing forces and collecting resources all over the country. As one of the important economic branches, China’s building industry also experienced a fast development during this period, and the development always followed the change of political and economic situation. To suit the planned economic, the building industry undertook the process of socialization and centralization in the early 1950s. Meanwhile, urban planning and regional planning as extensions of economic planning were learned from the Soviet Union, and various efforts for rapidly and economically developing China’s building construction were carried out.

CHAPTER 4 • TRANSFORMATIONS TO THE SOCIALIST SYSTEM

4.1 The Socialization of Building Industry and Design Organization

Before 1840, there already existed relatively large-scale handicraft workshops of building construction in China, and their construction techniques were relatively compound.[1] After the Opium War, western business mode of construction began to emerge and develop in the country. Chinese capitalist construction firms named "*yingzaochang"* came forth since the 1880s. Its emergence reflected the tendency that China's construction was developing from individual or small-scale collective activities to larger-scale multiplex professional collaborations. In the organization of *yingzaochang*, design was separated from construction work and further divided into the works respectively done by architects and engineers. Besides, construction work was divided into site management and construction operation. The latter became more and more specialized, and new types of construction work, such as wire tying, concrete casting, piling, and crane operation, were continuously emerging in *yingzaochang*, in addition to the traditional work done by masons and carpenters.[2] By the 1920s and 30s, Chinese construction firms had mastered modern construction technologies of the time and got great success in market competition.

However, at the time when the PRC was founded, the building industry of China still remained at a very low level. In 1949, there were only about 200,000 employees in the building industry, about 130,000 of them worked in state-owned enterprises and 70,000 worked in private ones.[3] The building industry occupied only 1.5% of the country's total employees, and the personnel of design and survey was very scanty.[4] For example, in January 1949 when Beijing was handed over, the city had only 240 building

[1] *Dangdai Zhongguo de jianzhuye*, P.32
[2] Ibid., PP.35-36
[3] *1953-1957 Zhonghua renmin gongheguo jingji dang'an ziliao xuanbian guding zichan touzi he jianzhuye juan*, P.577
[4] *Zhongguo jianzhu nianjian 1984-1985*, P.91

construction firms, all of which were in small-scale and without fixed workers. The number of scattered construction workers was 6900, occupying 1.6% of the whole city employees.[5] Even in Shanghai, the headstream and the most advanced area of modern building industry in China, there were only about 3000 construction firms and 100,000 construction workers in the 1920s and 30s, and the number of the firms even decreased to 2,000 or so at the beginning of the 1950s.[6]

At the end of 1949, CCP framed the guideline "three-year preparation and ten-year planned economic construction." In order to suit the needs of economic recovery and prepare for the coming large-scale construction, CCP governments started to recruit personnel to establish state-owned or cooperative building construction enterprises as soon as they took over lands. Normally, such work was separately done by industrial ministries or local governments.

As early as in April 1949, Jianlu Construction Company was established in Shandong Province, and in July, Tianjin established its first cooperative construction enterprise – Tianjin Construction Service Company.[7] When the new national capital Beijing was facing a relatively large-scale construction in this year, it began to collect architects, civil engineers and building workers from all over China, and thereafter, established a number of construction enterprises. The Construction Company of the Chief Bureau of North China Road Transportation was founded in Beijing in August 1949 and renamed to State-Operated Head Construction Company of the Ministry of Communications in 1950. It was issued the city's first temporary register of building industry.[8] In the first half of 1949, the Construction Office for Central Committee Departments was founded and it recruited a good many architects, engineers and skilled workers from Beijing, Shanghai, Guangzhou and even Hong Kong. In October, the Military Commission of Beijing established the Public-Operated Yongmao Construction Company (renamed to Beijing Building Engineering Company in October 1951), recruiting many personnel from other cities as well.

In Shanghai, the new municipal government established the state-private cooperative enterprise Guohua Construction Company in 1949, by taking

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[5] *Jian guo yilai de Beijing Chengshi jianshe ziliao, di wu juan: fangwu jianzhu*, P.36.
[6] http://www.shtong.cn/node2/node2245/node69548
[7] *Zhongguo jianzhu wushinian:*1949-1999, P.7
[8] *Dangdai Zhongguo de jianzhuye*, P.63.

over several old construction firms run by bureaucrat-capital. In the same year, by recruiting more than 200 technicians, East China Building Construction Company was established as the first state-operated construction enterprise of the city, and it further absorbed two private firms in August and November. In April 1950, Public-Operated Construction Company of Shanghai Municipal Bureau was established.

Other enterprises founded during this period including Chengdu Public-Operated Construction Company (in December 1950), State-Operated Southwest Construction Company (in May 1950), and Public-Operated Shandong Construction Company (in March 1950).[9] In addition, various industrial departments of metallurgy, coal, electricity, transportation, and railway established a batch of their own building construction enterprises.

At that time, the situations in various local areas differed very much, the governmental administration was far from centralized and its hierarchy was yet to be established. In order to immediately carry out construction work, governments at different levels and different localities had to establish construction enterprises by their own, and the overall process was not centrally planned and organized. New-established enterprises normally took the mode of old large-scale construction firms, and they usually comprised not only construction part but also design and material sectors. The fact that an enterprise could cover entire construction processes was important under the condition that a new social, political and economic structure had not been fully established.

There are a few data available to illustrate the situation of private construction enterprises in this period. In Tianjin for example, there were 240 private construction firms in July 1949, and the number was approximately 30 before 1949.[10] It shows that the economic resumption also stimulated the resumption and growth of private construction enterprises. According to *Zhongguo jianzhu nianjian 1984-1985* (*China's Building Construction Yearbook 1984-1985*), the proportion of private enterprises in

[9] See *Chengdu shi jianzhu zhi*, P.120; *Zhonguo jianzhu xinan sheji yanjiu yuan zhi*, P.4; and *Dangdai Zhongguo de jianzhuye*,P.66

[10] *Zhongguo jianzhu nianjian 1984-1985*, P.571

overall building industry in China was 35% in 1949, 25% in 1950, and 25% in 1951.[11]

The building industry was one of the earliest industrial branches that underwent "socialistic transformation." In July 1951, the central government of the PRC transmitted the sum-up report of the National Meeting of Building Industry Union held in June, pointing out the serious problems, such as jerry-building, corruption, and waste, of the building industry. Subsequently, governments at different levels started the rectifications. Besides some people were punished for the crimes, the socialistic transformation of building industry was triggered. In the winter, the Central Party Committee and the State Council decided to launch a movement against "three evils" – corruption, waste, and bureaucracy – in state organs and public economic sectors. Another movement was launched in early 1952 to fight against bribery, tax evasion, theft of state property, cheat in government contracts, and theft of economic information, extensively involving private firm owners in all major cities. During the two movements, namely the so-called Three Antis and Five Antis Movements, a large amount of problems of the building industry were exposed, causing the concern of governments.

In April 1952, the central government disseminated a decision to hasten the establishment of state-owned enterprises in the building industry and corresponding governmental administrations.[12] In June, the Head Department of Building under the Finance and Economy Commission of the Government Administration Council studied out *Suggestion of Establishing Organizational Structure of Building Industry (draft)*. It pointed out that the building industry had been exposed as the most problematic branch where the problems of corruption and waste had been very serious.[13] Afterwards, a number of state-owned building construction enterprises were rapidly established in the six "macro-regions"[14] and many big cities, meanwhile most private firms were absorbed into state-owned enterprises.

[11] Ibid. *1984-1985*, P.572

[12] i.e. *Sanfan hou bixu jianli zhengfu de jianzhu bumen he jianli guoying gongsi de jueding*三反后必须建立政府的建筑部门和建立国营公司的决定 (Decision on Must Establishing Governmental Building Construction Departments and State-run Companies after the Three Antis)

[13] Gong Deshun, Zou Denong & Dou Yide, *Zhongguo xiandai jianzhu shi gang*, P.26

[14] CCP divided China into 5 administrative regions in 1949 and 6 in 1952, which were abolished in 1954.

The Three Antis and Five Antis Movements dropped a great impact on China's building industry, and especially, they seriously cracked down the private firms. As a result, the proportion of private construction firms in the overall building industry sharply decreased to 1.7% in 1952.[15] Building industry then became the first industrial branch to accomplish socialistic transformation.

Along with resumption of the state economy, the building industry constantly developed during 1949 to 1952, and the employee number continuously went up, reaching 400,000 in 1950 and 600,000 in 1951.[16] At the end of 1952, the number of the workers in state-owned enterprises increased to 995,000, while that in private ones was 23,000. The number of the overall construction employees was approximately five times of that at the end of 1949, and their proportion in the total employees enlarged to 6.6%. Simultaneous with the growing, efforts for unifying and centralizing the buildings industry were carried out.

Firstly, a series of primary laws and rules were issued. In December 1950, the Government Administration Council (renamed to State Council in September 1954) disseminated *Decision for Final Accounting System, Budget Examining and Approving, and Construction Planning and Monetary Control of Investments*, which was the PRC's earliest regulation on production and operating activities of building industry. It required that the planning for investment should be strengthened and each construction project must have prudential design, construction plan, working drawings, financial plan, and government's permission. In addition, it clearly demanded that construction must follow design.

In March 1951, the Finance and Economy Commission promulgated *Temporary Method for the Procedure of Capital Construction*, and in August, issued *Direction on Improving and Strengthening Design Work of Capital Construction*, emphasizing that no construction could be started without permissions on its design by authorities in charge. In January 1952, Chen Yun, the Minister in Charge of the Finance and Economy Commission, formally issued *Temporary Method for Capital Construction Work*,

[15] *Zhongguo jianzhu nianjian 1984-1985*, P.572
[16] *Dangdai Zhongguo de jianzhuye*, P.66

particularly prescribing the procedure of capital construction. This document played a significant role in the building industry for a long time.[17]

Secondly, a large quantity of construction soldiers was transferred to construction enterprises. In February 1952, Mao Zedong signed a command to transfer a part of PLA men into construction armies, and shortly in April, the central government relocated eight divisions of them for civilian work, under the administration of the Finance and Economy Commission.[18] The handover had been mostly accomplished by the end of 1952, when 80,000 PLA men were transferred into construction enterprises. They became a fresh force of the building industry and later formed the basis of the building construction enterprises directly under the Ministry of Building Engineering (MBE).[19]

Thirdly, the management and organization of the building industry were adjusted, and the special administrative department in charge of the industry was established. In August 1952, the central government made the decision to establish the Ministry of Building Engineering when adjusting its own institutional organization. At the end of 1953, the newly established MBE took over the enterprises, institutions, and governmental departments concerning building construction under the First Ministry of Machinery Industry and the Second Ministry of Machinery Industry. Thereafter, construction enterprises under it began to contract with other central ministries to take buildings construction work.

In 1954, in order to strengthen the unified leadership, the central government called off the regional level governments. The ministries or bureaus in charge of building construction as well as their construction enterprises of the six “micro-regions” were handed over to the MBE. Synchronously, relevant relationships between the MBE and the provincial administrations of building industry were set up. A nationally centralized system of the building industry was then ultimately established, and the situation that diversified governmental departments separately organized their own enterprises to construct all their own buildings then fundamentally changed.

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[17] *Zhongguo jianzhu nianjian 1984-1985,* P.149*, Dangdai Zhongguo de jianzhuye,* P.69

[18] *Zhongguo jianzhu nianjian 1984-1985,* P.572

[19] *Dangdai Zhongguo de jianzhuye*，P.69

In the centralized organizational structure of the building industry, the MBE took charge of most construction of industrial buildings and important non-industrial buildings, the departments of metallurgy, coal, electricity, transportation and railway kept and expanded their enterprises for special construction, and the localities took the responsibility of urban construction, especially urban housing construction. At the end of 1957, the number of the building construction enterprises under the MBE reached 307, and the employee number rose up to 696,000, in the meantime, the number of the state-owned building construction enterprises all over China was 649, and that of the employees reached 2,237,000.[20] The above statistic numbers didn't calculate the usually small-scale local collective enterprises, of which the employee number in 1956 was 1,260,000 – 33% in the total of the building industry.[21]

The situation of design institution was very similar to the overall building industry. As mentioned in Chapter 1, Chinese architects come into being from practice since the 1910s, and after the 20s, a number of Chinese graduates from architectural schools in Western countries or Japan returned to China. They established design firms in imitation of western architectural design offices to take part in the business of architectural design. According to incomplete statistic figures, there were about 30 architectural design firms run by the Chinese in Shanghai, Tianjin, Beijing, Nanjing and other cities during the 20s and 30s.[22] Together with foreign design firms, they played an important role in the pre-1949 architectural activities in China.

Private design firms were still active during the first years of PRC. For example, the architects who run their own offices in Beijing at that time include Yan Tingbao and Yang Kuanlin from Kwan, Chu and Yang Architects, Zhao Shen, Chen Zhi and Tong Jun from Allied Architects, as well as the others like Lin Leyi, Liu Kaiji, and Shen Liyuan.[23] In Chengdu, the capital city of Sichuan Province, Liu Changcheng established a design office, commissioned with several buildings on the campus of Southwest Institute of Nationalities.[24]

[20] *Zhongguo jianzhu nianjian 1984-1985*, P.91
[21] Ibid.
[22] Ibid., P.38
[23] Ibid., P.66
[24] *Chengdu shi jianzhu zhi*, P.120

As various building construction enterprises were founded, they recruited a number of architects and engineers into their appurtenant design sectors. Early in August 1949, a design sector of the Construction Office for the Central Committee Departments was founded, which recruited Yan Xinghua and several other architects, and later, Dai Nianci in the winter of the year.[25] The shortly established Public-Operated Yongmao Construction Company also attached a design sector, which collected many architects and engineers from the old Longhu Construction Company. Zhang Kaiji and Zhang Bo joined the Yongmao Company as well; Yang Tingbao and Yang Kuanlin were respectively appointed as the advisory architect and the advisory engineer.[26] Other prominent architects and civil engineers recruited in big construction enterprises include Zhuang Jun, in the Chief Bureau of the Construction Company of North China Road Transportation, Zhao Dongri and Zhu Zhaoxue, in Beijing Public-Operated Construction Company.[27] The policy of absorbing technical personnel into state-owned enterprises was affirmed at the National Meeting of Building Industrial Union held in June 1951. Afterwards, more and more design personnel and private design firms joined state-owned construction enterprises and design institutions. This process was particularly accelerated by the Three Antis and Five Antis Movements, after which, private design practice basically vanished.

After the Three Antis and Five Antis Movements, as the building industry rapidly developed, the design sectors began to be divorced from construction enterprises to form independent design companies, which further developed to design institutes. In Beijing for example, based on the Construction Office for the Central Committee Departments, the Construction Company directly under the MBE was founded in 1952 and absorbed more than ten building construction enterprises in the city. In the meantime, the design sector of the office became the Design Company directly under the MBE, collecting the design personnel of those enterprises. In May of the following year, the design company further absorbed design personnel from Beijing Building Engineering Company (the successor of Public-operated Yongmao Construction Company) when the engineering company united with the Construction Company Directly under the MBE, and renamed to Industrial and Urban Architectural Design Institute of the MBE. In 1953, Beijing Municipal Architectural Design Institute was

[25] See Wan Qian: *Dai Nianci Yanjiu,* P.9
[26] See. Zhang Bo, *Wo de jianzhu chuangzuo daolu*, P.66, *Zhongguo jianzhu nianjian 1984-1985,* P.571
[27] Zhang Bo, *Wo de jianzhu chuangzuo daolu*, PP.64-65

founded through neatening, reorganizing and uniting several local private design firms and public design companies. It mostly took the design for local non-industrial civil buildings.[28]

The situations of Shanghai and other cities were similar. For example, both of the early-established East China Building Engineering Company and the Public-Operated Construction Company of Shanghai Municipal Bureau included design personnel when they were founded. The latter expanded to Shanghai Municipal Building Engineering Company in July 1951, when a sector for architectural design was set up. This sector further developed to Shanghai Municipal Architectural Design Company in January 1952, and united with the design sector of East China Building Construction Company in May to become the Architectural Design Company of the Ministry of Building Engineering of East China, which was renamed to East China Industrial Architectural Design Institute in October 1954.[29]

When the regional level governments were called off in 1954, the MBE deployed in each of the six regions a big-scale design institute to carry design work for large-scale capital construction. These institutes were mostly founded based on design companies, institutes, or design sectors of building construction enterprises earlier established by the regional governments. By 1955, all the regional design institutes had been renamed as "industrial design institutes," namely, Northeast Industrial Architectural Design Institute, Northwest Industrial Architectural Design Institute, Southwest Industrial Architectural Design Institute, Middle-South Industrial Architectural Design Institute, East China Industrial Architectural Design Institute, and Beijing Industrial and Urban Architectural Design Institute.[30] Besides, the MBE established the Geological Exploration Institute in Beijing to take on survey tasks. All the above institutes were directly under the Chief Bureau of Design of the MBE, and they had possessed about 2,500 technical personnel by the beginning of 1956.[31] The primary task of them

[28] *Jian guo yilai de Beijing chengshi jianshe ziliao, di wu juan: fangwu jianzhu*, P.37
[29] See http://www.shtong.gov.cn/node2/node2245/node4482/node54706/
[30] Beijing Industrial and Urban Architectural Design Institute was the inheritor of Industrial and Urban Architectural Design Institute of Building Construction. It was renamed as Beijing Industrial Architectural Design Institute in 1956 when the civil architectural design sector merged into Beijing Municipal Architectural Design Institute, following the setup of the Chief Bureau of Urban Construction in May 1955.
[31] *Zhongguo jianzhu nianjian 1984-1985*, P.8

was to accomplish most of the design work for industrial enterprises at that time extensively built in China.[32]

As mentioned, various departments of metallurgy, coal, electricity, transportation and railway still held special construction enterprises. They included design companies or institute for designing special industrial enterprises as well. For example, the Administration Bureau of Iron and Steel Industry and Anshan Iron and Steel Works, both of which were under the Ministry of Heavy Industry, respectively established their design companies in December 1952 (renamed as design institutes in January 1955) to design iron and steel factories as well as the appurtenant buildings.[33] In September 1953, the Ministry of Forestry set up a design company, which was later recomposed to the Design Company of Central Ministry of Forestry, Heilongjiang Forestry Design Company, Jilin Forestry Design Company, and other two forestry design companies. These companies took charge of designing most structures in the precincts of the ministry.

Meanwhile, through gathering design personnel from building construction enterprises, design institutes on provincial level or municipal level were established. Such institutes were put under the leadership of the MBE when relevant relationships between the MBE and the provincial administrations of building industry were set up. The main tasks of local institutes, as mentioned, were the design for local non-industrial civil buildings. In May 1955, the State Council set up the Chief Bureau of Urban Construction to take charge of urban construction and urban planning, thereon, the local design institutes were detached from the MBE and came under the leadership of the newly established governmental department.

Around 1954 to 1955, the goal of nationalizing and centralizing the building industry as well as the design institution was roundly achieved. The CCP governments could now mobilize the construction and design forces of the country to undertake the large-scale construction tasks that the First Five-Year Plan premeditated. In the sphere of architectural design, most architects and civil engineers were collected in state design institutes, save for those teaching at colleges. Architects and engineers became employees

[32] Actually, because some half of the industrial enterprises and the most of the large-scale ones were designed by the Soviet Union or other foreign countries, the Industrial Design Institutes must always carry on the design tasks of civil buildings to fulfill their workloads. See *Zhongguo jianzhu nianjian* 1984-1985, P.14

[33] *Zhongguo jianzhu nianjian 1984-1985,* P.100. The Ministry of Heavy Industry was renamed to the Ministry of Metallurgy Industry in 1956

of the governments, so that they embodied some nature of governmental cadres. They were not only burdened with design tasks, but also took some responsibilities to implement policies and economic controls of the governments, in the area of building construction.

Table 4-1: Employees in Building Industry and personnel of design and survey in 1952-1957[34]

Year	Average Employees in Building Industry (1000)	Average Personnel of Design and Survey in State-owned Institutions (1000)
1952	394	
1953	1302	4.6
1954	1264	6.9
1955	1281	8.4
1956	1826	12.7
1957	1937	16.1

Along with the growing of forces in building industry and design, the tendency of specialization was witnessed. In May 1956, the State Council issued *Decision on Reinforcing and Developing the Building Industry* and *Decision on Reinforcing Design Work*, both emphasizing the specialization. The former stated that "a great many of current organizations of building construction work in our country still adopt the 'package' form of integrated building construction companies, which is disadvantageous for rapidly mastering technologies, heightening the level of mechanized construction, ensuring quality and safety, and increasing labor productivity." It proposed to respectively establish specialized enterprises for machine installation, electric equipment installation, metal structure installation, and pipe installation, and to establish specialized enterprises for earthwork, concrete-work, brickwork, hoisting, and decoration.[35]

[34] See respectively in *1953-1957 Zhonghua renmin gongheguo jingji dang'an ziliao xuanbian guding zichan touzi he jianzhuye jua*, P.593; *Zhongguo jianzhuye tongji ziliao 1952-1985*, P.35.
[35] *Zhongguo jianzhu nianjian* 1984-1985, P.11

The later document made an effort to reorganize the design forces of different sectors. It required to separate design institutions from administrative institutions, and to detach the work of non-industrial civil architectural design from the industrial design institutes under the MBE to local design institutions. The local institutions would take on urban planning, regional planning, and the design for public utility, besides the design for non-industrial civil architecture. They would also take the responsibility to design local level industrial, rural, and other construction, including factories, traffic facilities, state-owned farms, pasturages, tractor stations, and small-scale irrigation facilities. The document also required industrial ministries as well as the Ministry of Urban Construction[36] to collect their design personnel to establish specialized design institutions respectively for metallurgy, transportation, ore dressing, coal preparation, weak electricity, water supply and sewerage, steel structure, and public utility. In order to equilibrate the scales of design institutions, it prescribed that in general, the employee number of an institute should be controlled to be less than 1,000, an overrunning design institute would be cut into several smaller institutes, and excessively small local design institutions would be united.[37]

In a way, the specialization of building construction enterprises and design institutions was a further progress of the centralized administration of the building industry. But before it tangibly commenced, the tendency of decentralization was witnessed in 1957. Although the general accomplishment of socialist transformation at that time made the centrally planned economy further strengthened, the defects of the centralized system were increasingly unfolded in the meantime. The overfull centralization of power and the over strictness and rigidness of administration had tampered with initiatives and enthusiasms of localities and individual enterprises, therefore, in the second Five-Year Plan (1958 - 1962), which was framed since 1956, the CCP government began to revise the highly centralized economic system. The policy of strengthening the development of agriculture and light industry was then raised, although heavy industry was still regarded as the core of the economy. The government planned to establish more middle- or small-scale enterprises, besides big-scale ones. Although appropriate centralization and unification was still insisted, more importance was attached to flexibility. The relationships between the central

[36] the inheritor of Chief Bureau of Urban Construction
[37] See *Zhongguo jianzhu nianjian 1984-1985*, PP.15-16

government and localities, between ministries and enterprises, between new-established enterprises and existing ones were to be adjusted.

The immediate measure for boosting up the flexibility was handing over a large number of enterprises under central ministries to local authorities. In the building industry, the handover of building construction enterprises was very thorough. According to a report in May 1958, most of the 31 construction enterprises directly under the MBE were planned to be transferred to localities before June 15th, only leaving several ones that were bearing important construction tasks for later handover. Meanwhile, 19 of the 23 cement factories would be transferred, so were most middle technical training schools. All of the six regional chief bureaus of construction administration under the MBE were called off, at the same time most regional level enterprises were directly handed over to localities, and the others were redeployed to assist important projects or transferred to the provinces where construction forces were weak.[38]

Different from the situation of construction enterprises, the design and survey institutions under the MBE were mostly kept, except the three institutes formerly under the Ministry of Urban Construction. [39] The remained design and survey institutions still took the responsibilities of designing foreign-aided projects, projects commissioned by other central governmental departments, whole sets of building material enterprises, and large-scale projects that local design institutions were not capable to design. They were also supplemented with the task of helping local design institutions to improve design techniques, and training personnel of the local institutions for industrial architectural design and planning.[40]

In this situation, local design institutions met their fast development, which further accelerated during the Great Leap Forward. As a great amount of construction projects spurted out since 1958, a large number of design institutions were established in succession, many of which were even founded by various colleges' architectural departments. Since then, the big-scale regional level design institutions, the local design institutions, and the college ones comprised the institutional structure of design practice in China, which lasted up until the 1990s.

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[38] See Ibid., P23
[39] Ministry of Urban Construction was united into MBE in February 1958
[40] *Zhongguo jianzhu nianjian 1984-1985*, P.23

4.2 The Evolution of the Administrative Structure and the Role of the MBE

Early in October 1949, a department on capital construction was established under the Finance and Economy Commission. In order to strengthen the leadership in the building industry, which the government regarded as one of the most important industrial branches where, in the meantime, CCP's influence was still weak, the commission decided to set up a special administrative department in charge of the industry. The Head Department of Building under the commission was then established in April 1952.[41]

In August, to prepare for the coming large-scale nation-wide economic construction, the central government made the decision to establish the Ministry of Building Engineering based on the Head Department of Building, and in November, appointed Chen Zhengren as the minister, Wan Li, Zhou Rongxin and Song Yuhe as the vice-ministers.[42] In 1954, Liu Xiufeng was appointed as the minister, who then devoted himself to this position for a decade. The primary task of the MBE was to organize state-owned building construction enterprises to mastery the building industry of China in short order.[43] Very soon and especially after the Three-Antis and Five-Antis Movements, as discussed in last section, a large number of state-owned building construction enterprises were established and reorganized, and a great state-owned force of building construction was assembled under the MBE.

Based on a report by the MBE, the Central Committee of CCP issued *Decision on the Work of the Ministry of Building Engineering* in September 1953, prescribing that the primary work of the MBE should focus on industrial construction. It stated that the direction of using construction forces should guarantee the construction of industry, especially the construction of heavy industry, and generic building construction should only be treated as being secondary. The Central Committee also decided to transfer the MBE's tasks concerning military construction to departments under the Military Commission and the administrative work concerning

[41] *1949-1953 Zhonghua renmin gongheguo jingji dang'an ziliao xuanbian jiben jianshe touzi he jianzhuye juan*, P.392
[42] *Zhongguo jianzhu nianjian 1984-1985*, P.6; *Dangdai Zhongguo de jianzhuye*, P.70
[43] Liu XiuFeng, "Jiaqiang guanli, tigao jishu, wei wancheng geng da de jiben jianshe renwuer fendou", *JZ, Iss.6/1956*, P.1

non-industrial civil building construction to localities.[44] Thereafter, by further collecting construction forces from other ministries and regional governments, and by establishing the dual-leadership system (shared with local construction administrations) to administrate local construction forces, the MBE became the highly centralized authority in charge of the building construction.

In each of the six "macro-regions," the MBE installed a region level Chief Bureau of Construction Management to hold large- or middle-scale building construction enterprises. In addition, it established three specialized chief bureaus to respectively take charge of the enterprises on facilities installation, those on material production, and those on installation of metal structure or mechanized construction. The MBE also established a number of affiliated machining factories. To manage the design work, it established the Chief Bureau of Design to direct the six industrial design institutes as well as the specialized design institutes under it. It established the Bureau of Urban Construction as well, to take the responsibility of urban planning and urban construction, and to conduct local construction institutions.

At the end of 1954, the administrative structure of building industry was adjusted and the work of MBE was apportioned. To unify and strengthen the administration of the state capital construction that had been supervised by various ministries and governmental departments, the State Construction Commission (SCC) was established in November, and Bo Yibo was appointed as the Minister in Charge. In May 1955, the Chief Bureau (earlier Bureau) of Urban Construction was separated from MBE to form the new Chief Bureau of Urban Construction directly under the State Council, which was upgraded to the Ministry of Urban Construction one year later, and the former Vice-Minister of the MBE Wan Li was appointed as the chief. The hierarchical administration of capital construction was then structured, in which the SCC took the responsibility of overall administration, the MBE was in charge of industrial building construction as well as the important projects commissioned by the departments of the central governmental, some other industrial ministries managed special industrial construction, and the Chief Bureau of Urban Construction (the Ministry of Urban Construction) took the responsibility of urban construction and jointly administrated local construction enterprises with local authorities.

[44] See *Zhongguo jianzhu nianjian 1984-1985*, PP.6-7

The administrative structure was reorganized in the period of the second Five-Year Plan (1958-1963). As discussed in last section, since 1957, the trend of decentralizing the planned economy took place, in which a large number of enterprises under central ministries were handed over to local authorities. As the central government reorganized its structure at the beginning of 1958, it removed the SCC, and merged the Ministry of Urban Construction as well as the Ministry of Building Material Industry into the MBE.[45] While the MBE handed over most of its building construction enterprises to localities, its role of directly participating in construction activities was relatively weakened, and its administrative function got strengthened.

Afterwards, the structure underwent some reversals, following the changeful economic and political situation at that time. In October 1958, the State Capital Construction Commission[46] was established, which function was similar to the former SCC. It was removed in January 1961 and reestablished again in March 1965, when the Ministry of Building Material Industry divorced from the MBE. These three organs were reunited in 1970, with the name of State Construction Commission.

Generally speaking, it was the MBE which took the most important role in the administration of building construction in China during the 1950s and 60s. In May 1954, the MBE began to publish its internal periodical *Jianzhu* (*JZ, Building*), in an effort to reinforce the administrative work. According to the "Decision on Publishing *JianZhu*" by the MBE, the task of this magazine included following aspects: firstly, transmitting and carrying out the policies, directions and decisions of the Party, the governments and the MBE; secondly, reflecting the main conditions and problems in key projects and major works; thirdly, summarizing and exchanging experiences; fourthly, introducing and popularizing advanced experiences of the Soviet Union; and lastly, carrying on criticisms and self-criticisms.[47] The MBE decided to distribute *JZ* to the cadres and technical personnel in its system, as well as the main cadres of construction enterprises, design institutions and concerned schools. At the same time it required the local administrations concerning building construction to take the magazine as "documents that

[45] The Ministry of Building Material Industry was established when the Ministry of Heavy Industry was divided into three industrial ministries in June 1956.
[46] In Chinese, it shared the same abbreviation "guojia jianwei" 国家建委 with the State Construction Commission
[47] See *JZ (internally published), Iss.01/1954*, P.1

must be read."[48] Since October 1954, *JZ* was formally published and extended to the public.

After its founding, the MBE took a very important role in enacting rules and regulations concerning building construction and design, besides organizing state-owned building construction enterprises to accomplish construction tasks. As mentioned in last section, the first regulation for the building industry of PRC was *Decision on Final Accounting System, Budget Examining and Approving, and Construction Planning and Monetary Control of Investments*, disseminated by the Government Administration Council in December 1950. In March 1951, the Finance and Economy Commission issued *Temporary Method for Capital Construction Work Procedure*. It disseminated *Direction on Improving and Strengthening Design Work of Capital Construction* in August 1951, and *Temporary Method for Capital Construction Work* in January 1952. Established on the basis of a department in charge of the area of building construction under the Finance and Economy Commission, the MBE assumed the administrative responsibilities. Since 1953, it promulgated a serious of rules and regulations on building construction and design, such as *Trial Method for Labor Contract System (Draft)* in March 1953, *Direction on Trying out Labor and Material Contract System* in June 1954 and *Temporary Method for Labor Contract in Construction and Installation Projects* July 1954.[49] In November 1954, the SCC was established to strengthen the leadership of the state capital construction. It took the responsibility of approving and promulgating laws concerning construction. A series of rules and regulations were promulgated in succession, as seen in Table 4-2.

The SCC and MBE also took the responsibility of setting up technical criterions for building construction and design, together with other ministries that were in charge of special criterions. As the first Five-Year Plan was carried through, the scale of construction drastically expanded, and meanwhile, the technical demands increasingly heightened. It was then urgently needed to establish a series of standards and criterions as the guidelines for construction and design activities. The immediate way to achieve this was to translate and edit corresponding Soviet standards and criterions. Soon after it was founded, the MBE collected a number of technical personnel to translate and enact a batch of structural design criterions on load, foundation, brickwork and stonework, steel, timber, and

[48] Ibid.
[49] See. Table 4-2 & *Zhongguo jianzhu nianjian 1984-1985*, P.148

concrete, as well as *Temporary Code for Construction and Acceptance of Building Engineering*. During the translation, the terminology was carefully weighed for unification, and the criterions of load were complemented according to the situation of China. For the specialty of architecture, *Code for Architectural Design* was enacted, which laid the foundation of the architectural criterions in China.[50]

In 1955, the Soviet Union enacted the new *Building Code*, and accordingly, emended their standards and criterions. Following it, the Finance and Economy Commission rapidly organized correlative personnel from thirteen ministries, such as the MBE, the Ministry of Heavy Industry, the Ministry of Railways, the Ministry of Communications, and the Ministry of Water Resources, to translate the new published Soviet *Building Code* and seven volumes of design criterions, as well as *Temporary Technical Regulation for Construction and Acceptance of Building & Installation Engineering*, all of which were published during 1955 to 1957 with annotations. From 1957 to 1966, the MBE disseminated 24 volumes of ministry-level standards, criterions and rules, which combined Soviet criterions with the experiences accumulated in construction practice and the results of a series of scientific experiments in China. These newly published laws included rules for material usage, criterions for quality judgment, rules for construction operation, and design criterions for municipal construction. During 1961 to 1966, sixteen volumes of national level criterions were promulgated, which were the first batch of formal criterions on this level, ten of which were edited and approved by the MBE.[51]

Besides other responsibilities, the MBE also assumed the charge on the publications concerning building industry. Early in April 1954, it established the Building Engineering Press. In 1956, the SCC, the Ministry of Urban Construction and the Ministry of Building Material Industry established their own publishing institutions as well, all of which were eventually merged into the Building Engineering Press in 1958. From 1954 to 1960, this press (including the other three publishing institutions) published altogether 2,157 books, most of which were written or translated according to the publishing plan made upon policies and tasks issued by the MBE.[52] In 1961, the Building Engineering Press and other seven publishing institutions united into an independent publishing institution – China Industrial Press –

[50] See Table 4-3 & *Zhongguo jianzhu nianjian 1984-1985*., P.151
[51] See Table 4-4, 4-5, 4-6 & *Zhongguo jianzhu nianjian 1984-1985*. P.151, P.154
[52] *Dangdai Zhongguo de jianzhuye*, PP.623-624

while the editorial department of the former Building Engineering Press was kept under the MBE. Collaborating with China Industrial Press, the editorial department published hundreds of books on architecture and urban planning during 1961 to 1965.

The MBE contributed to scientific research concerning architecture and building engineering as well. Shortly after its founding, the MBE scheduled to establish a research institution, and in December 1953, formally founded the Research Institute of Building Technology, which consisted of six research teams and an experimental plant, employing approximately 50 personnel. Based on the institute, the MBE established the Academy of Building Research in May 1956, when the employee number approximated 500. The academy drastically developed, especially after many personnel concerning the research of building and municipal engineering merged from some other governmental departments into it. By the end of 1957, it had set up twelve specialized departments for the researches on architectural theory and history, industrial and civil building, regional planning and urban planning, sanitation, building material, building structure, concrete, base and foundation, construction engineering, architectural physics, architectural economy, and municipal engineering, and the employee number reached 2,178.[53] The research work of the academy focused on studying and mastering new technologies of foreign countries, especially those of the Soviet Union, as well as popularizing native technical achievements. Since 1954, the MBE made yearly plans to impel the application of building technologies. It also established several experimental bases for testing new technologies and training people.

Table 4-2: Rules and Regulations Promulgated during 1950-1965[54]

Year	Rule/Regulation	Promulgated by
1950	*Decision on Final Accounting System, Budget Examining and Approving, and Construction Planning and Monetary Control of Investments*	Government Administration Council
1951	*Temporary Method for Capital Construction Work Procedure*	Finance and Economy Commission

[53] Ibid, PP.6514-515
[54] This table is based on *Zhongguo jianzhu nianjian 1984-1985* P.148.

Year	Rule/Regulation	Promulgated by
1951	*Direction on Improving and Strengthening Design Work of Capital Construction*	Finance and Economy Commission
1952	*Temporary Method for Capital Construction Work*	Finance and Economy Commission
1953	*Trial Method for Labor Contract System (Draft)*	MBE
1954	*Direction on Trying out Labor and Material Contract System*	
1954	*Temporary Method for Labor Contract in Construction and Installation Project*	MBE
1955	*Temporary Method for Design and Budget of Industrial and Civil Buildings*	SCC/MBE
1955	*Temporary Method for Delivery, Acceptance, & Open of Capital Construction Project*	SCC/MBE
1955	*Draft Method for Organization of Standard Building Company*	SCC/MBE
1955	*Precept for Division & Collaboration of Mechanized Engineering Tasks between Building Company & Mechanized Construction Company*	SCC/MBE
1955	*Management Method for Building Machinery*	SCC/MBE
1955	*Responsibility of Safety Technique & Labor Protection in Enterprise*	SCC/MBE
1955	*Trial Method for Overall Contract & Subcontract of Building & Installation Engineering (Draft)*	SCC/MBE
1955	*Temporary Method for Responsibility System of Financial Costs of Building & Installation Enterprise*	SCC/MBE
1955	*Temporary Method for Circulating Fund Management of Contract Building Enterprise*	SCC/MBE
	Regulations on Production Reporting System	SCC/MBE

Year	Rule/Regulation	Promulgated by
1955	*All-China Labor Quota for Building Engineering*	SCC/MBE
1955	*Supplementary Labor Quota for Plant Building Engineering*	SCC/MBE
1956	*Unified Construction Quota for Building & Installation Engineering in 1956*	SCC/MBE
1956	*Decision on Reinforcing and Developing Building Industry*	State Council
1956	*Decision on Reinforcing Design Work*	State Council
1956	*Decision on Reinforcing New Industry Zones & New Industrial Cities*	State Council
1956	*Temporary Method for Making, Approving and Using Standardized Design*	MBE
1956	*Temporary Regulations on Saving Metal, Wood and Cement in Building*	MBE
	Notice on Dividing Construction Bounds in Site between Building Company & Installation Company	MBE
1959	*Measures for Ensuring Structural Design Qualities of Industrial Plants*	MBE
	Opinions on Engineering Quality Accident & Safety Measure	MBE
	Regulations on Reinforcing Construction Management	MBE
1961	*Regulations of the Work of State-run Industrial Enterprise (Draft)*	Central Committee
1962	*Plan for Carrying out Regulations of the Work of State-run Industrial Enterprise (Draft)*	MBE
1962	*Regulations of the Work of Building & Installation Enterprises*	MBE

Table 4-3: Criterions Based on the Soviet Union's Criterions before 1954, Published during 1952-1955[55]

Serial Number	Title
规结 1-54	*Temporary Code for Loads*
规结 2-55	*Temporary Code for Brick Structure & Reinforced Brick Structure*
规结 3-55	*Temporary Code for Design of Timber Structure*
规结 4-54	*Trial Code for Design of Steel Structure*
规结 6-55	*Temporary Code for Design of Reinforced Concrete Structure*
规结 7-54	*Temporary Code for Design of Natural Foundation*
	Code for Architectural Design
	Temporary Code for Construction and Acceptance of Building Engineering

Table 4-3: Translations of the 1955 Soviet Union's Criterions, Published during 1955-1957[56]

Design Standard & Technical Code for Brick Structure & Reinforced Brick Structure
Design Standard & Technical Code for Steel Structure
Design Standard & Technical Code for Timber Structure
Design Standard & Technical Code for Reinforced Concrete Structure
Design Standard & Technical Code for Indoor Water Supply and Sewerage of Productive Plant and Accessorial Plant of Industrial Enterprise
Design Standard & Technical Code for Natural Foundation of Building & Industrial Structure
Design Standard & Technical Code for Productive Plant of Industrial Enterprise
Temporary Technical Regulation for Construction and Acceptance of Building & Installation Engineering

[55] *Zhongguo jianzhu nianjian 1984-1985*, P.152; These criterions were compiled with the organization of MBE based on concerning criterions of the Soviet Union published before 1954.
[56] See. *Zhongguo jianzhu nianjian 1984-1985*, PP.152-153

Table 4-4: Criterions & Standards Published during 1955-1956

Serial Number	Title	Approved by
标准 101-56	*Temporary Sanitary Standard for Design of Industrial Enterprise*	SCC, Ministry of Public Health
标准 102-56	*Temporary Fire Protection Standard for Industrial Enterprise & Residential Building*	SCC
标准 103-55	*Code for Monochromatic Building Drawing*	SCC
标准 104-55	*Unified Modulus for Building*	SCC
标准 105-56	*Basic Rule on Unification of Plant Structure*	SCC
标准 106-56	*Temporary Code for Artificial Lighting of Industrial Enterprise*	SCC

Table 4-5: Ministry-level Criterions & Standards Published during 1957-1966

Serial Number	Title	Approved by
建规 1-60	*Trial Specification for Production of Steamed Portland Cement Concrete*	MBE
技规 2-57	*Temporary Specification for Application of 25ГС Low Alloy Reinforcing Steel Bar in Reinforced Concrete Structure*	MBE
技规 3-58	*Trial Code for Construction and Acceptance of Prestressed Concrete*	MBE
建规 4-58	*Specification for Operation of Structure Installation of Industrial Plant*	MBE
建规 5-61	*Specification for Application of Second Quality & Substandard Reinforcing Steel Bar*	MBE
建规 6-62	*Code for Construction and Acceptance of Acid-resistant and Anticorrosive Engineering of Industrial Building & Structure*	MBE、Ministry of Chemical Industry

Serial Number	Title	Approved by
建规 7-62	*Temporary Code for Construction and Acceptance of Installation Engineering of Cement Mechanical Equipment*	MBE
建规 8-59	*Specification for Operation of Manufacture Technique of Steel Structure*	MBE
建规 9-64	*Specification for Maintenances of Building Machinery*	MBE
JG 10-63	*Code for Design of Urban Water Supply*	MBE
JG 11-63	*Code for Design of Urban Water Sewerage*	MBE
JG 12-64	*Specification for Experiment of Technique of Building Machinery (Trial)*	MBE
JG 13-64	*Specification for manufacturing and application of steam-curing flyash concrete masonry (Trial)*	MBE
JG 14-64	*Specification For Operation Of Insulated Aluminum Conductor Cable*	MBE
JG 15-64	*Code for Design of Indoor Water Supply, Water Sewerage, and Hot Water Supply*	MBE
BJG 16-64	*Specification For Structural Calculation of Reinforced Concrete Shell Roof & Floor*	MBE
BJG 17-64	*Code for Construction and Acceptance of Foundation Engineering*	MBE
BJG 18-65	*Code For Operation And Acceptance Of Welding Of Reinforcing Steel Bar*	MBE
BJG 19-65	*Specification for mixing and application of concrete with tenuous sand*	MBE
BJG 20-66	*Code for the Building in the Area of collapsible loess*	MBE
BJG 21-66	*Code for Design of Reinforced Concrete Structure*	MBE
BJG 22-66	*Standard of Quality Inspection and Assessment (Building)*	MBE

Serial Number	Title	Approved by
BJG 23-66	*Standard of Quality Inspection and Assessment (Installation)*	MBE
BJG 24-66	*Temporary rule for application of general low-alloy steel bar including 16 Mn and 25 MnSi*	MBE

Table 4-6: State-level Criterions & Standards Published during 1957-1966

Serial Number	Title	Approved by
GBJ 1-62	*Sanitation Standard for design of Industrial Enterprise*	Ministry of Public Health
GBJ 2-63	*Code for Construction and Acceptance of Installation Engineering of mechanical Equipment*	No. 1 Ministry of Machinery Industry
GBJ 3-63	*Code for Construction and Acceptance of Mine Workings Engineering*	Ministry of Coal Industry
GBJ 4-64	*Code for Construction and Acceptance of Earth Works and Explosion Works*	MBE
GBJ 5-64	*Code for Construction and Acceptance of Timber Structure*	MBE
GBJ 6-64	*Code for Construction and Acceptance of building ground*	MBE
GBJ 7-64	*Code for Construction and Acceptance of chimney*	Ministry of Metallurgical Industry
GBJ 8-64	*Code for Construction and Acceptance of brickwork of Industrial furnace*	Ministry of Metallurgical Industry
GBJ 9-65	Standard for architectural drawings	MBE
GBJ 10-65	*Code for Construction and Acceptance of Reinforced Concrete*	MBE
GBJ 13-66	*Code for Construction and Acceptance of Water Supply Tube Well*	Ministry of Metallurgical Industry

Serial Number	Title	Approved by
GBJ 14-66	*Code for Construction and Acceptance of masonry engineering*	MBE
GBJ 15-66	*Code for Construction and Acceptance of decoration*	MBE
GBJ 16-66	*Code for Construction and Acceptance of Roof , Waterproof & Insulation*	MBE
GBJ 17-66	*Code for Construction and Acceptance of Foundation*	MBE
GBJ 18-66	*Code for Construction and Acceptance of Steel Structure*	MBE

4.3 The Mechanism of State Design Institutes

The big-scale state design institutes, each of which consisted of most, if not all, the specialties concerning architectural design, was absolutely an outcome of the planned economy and the result of imitating Soviet Union.[57] In a speech addressed at a meeting in August 1957, the ASC Councilor General Zhou Rongxin vindicated the system of state design institution. He said:

> We must point out that because of the needs of the socialist construction, we were demanded to adopt the organizational form of state design institute, while private design office was the outcome of capitalism. The experiences of the construction in the previous years have proved that only with the organizational form of state design institute, which contains complete range of types of work, divides the work appropriately and cooperates them closely, we can accomplish the large-scale construction work … according to the unified national plan. … Before the Three Antis, there were many private design offices. Because they couldn't suit the needs of the construction of the first Five-Year Plan, the organizational form of state design institute

[57] Xue Qiuli, "Zhongguo tese de jianzhu sheji yuan", *Shidai jianzhu*, *Iss.1/ 2004*, P.27

> was then adopted. … It is absolutely and thoroughly impossible for private design offices to suit the large-scale socialist construction.[58]

Actually, the organization of big-scale state design institutes was established in imitation of the Soviet model. In a paper published in 1955, Jin Oubu, the Vice Director of Beijing Industrial Architectural Design Institute, introduced the Soviet experts' help in setting up the organizational structure of his institute, besides other contributions. He wrote:

> In the aspect of organizational structure, based on the suggestions of Soviet experts, we have set up a series of specialized design departments, such as the design office(s) for general layout and transportation, the design office(s) for budget and construction management, the office(s) for industrial architectural design, and so forth, all of which are integrant for industrial architectural design. With the training by the experts, design personnel of these departments (progressed) from ignorance to knowing and from the minority knowing to the majority knowing. Thereby, we have not only learnt to design individual plants, but also started to learn overall design of whole factories, and we can assume not only the design for general industrial buildings, but also the overall planning and design for grand industrial bases, as well as the design for whole set of their affiliated enterprises.[59]

The same paper also referred the helps of Soviet experts in strengthening the plan management (schedule management) of the institute. According to it, the Soviet experts had proposed to strengthen the function of the Technical Office of the institute and suggested to set up the Technical Committee to censor drawings and to unify drawing methods.[60]

Normally, the scales of the state design institutes in employee number varied from 300 to 1000, and in general, each of the state design institutes comprehensively consisted of various design departments respectively for the design work on general layout, architecture, structure, water supply and sewerage, heating and ventilation, electric and lighting, power, budget, and construction management. A state design institute was usually managed by a three-level organizational structure, and the three levels were respectively

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[58] Zhou Rongxin, "Hanwei dang dui jianzhujie de lingdao, jianjue zou shehuizhuyi de daolu", *JZXB, Iss.11/1957*, P.4
[59] Jin Oubu, "Bixu quanmian xitong de xiang Sulian zhuanjia xuexi", *JZ, Iss.15/1955*, P.3
[60] Ibid.

institute directors, design departments, and design teams. The administrative system was called “director responsibility system under the leadership of the Party,” in which the chief engineers took the responsibility to assist the directors in technical area. In addition, a state design institute also included departments for technical managements, such as department of plan management and department of techniques. The logistic sector of a state institute was comprised of one or several departments for information collecting, blueprint making, archiving and so forth. The design sector was usually divided into specialized departments such as those for architectural design, structure design, and water supply/sewerage design, or divided into several integrated design departments, each of which could covered whole design process. For the management of each project, the so-called “project principal responsibility system” was taken. An institute first differentiated its projects into institute-managed ones and department-managed ones according to the importance, scale and complexity of each project. Then accordingly, the institute or a department of the institute selected the project principal and design principals for each project to manage the design process.[61] The purpose of such comprehensive organizational structure and management system was to ensure the accomplishment of every aspect of every design within an institute.

In order to validly distribute and evaluate design work, the institutes adopted a Soviet-model schedule management system. As mentioned in Section 4.1, at the beginning of the 1950s, the operational mode of state design companies or sectors was not much different to that of old private design firms. Their design jobs were either distributed by upper authorities or commissioned directly by owners, and they signed contracts with owners and charged design fee.[62] Inside a design company or sector, the estimation of workday, the determination of schedule and the plan of work were studied out according to either the floor areas or the numbers of blueprints. Since 1954, a set of plan tables for schedule management prescribed by the State Planning Commission were popularized in the state design institutes. The new schedule management (called plan management) was based on currency calculation of workload and value of design work. At that time the currency calculating system was the uniform system of national planned

[61] *Dangdai Zhongguo de jianzhuye*, P.246

[62] In January 1954, the Ministry of Building Engineering, the No. 1 Ministry of Machinery Industry, the No. 2 Ministry of Machinery Industry and the Ministry of Heavy Industry enacted a temporary measure of design fees, which stipulated the design fee standard as 2.2% of building cost in generic constructions, and 2.5% and 2.2% respectively in special or complex projects and industrial projects. Design fee system was abolished and replaced by financial allocation in 1959.

economic management learned from the Soviet Union. It replaced the floor area calculating system that had been mainly used in design institutions.

The paper "Sheji jihua guanli gongzuo zanxing banfa" ("Interim Procedure for the Management Work of Design Plan") by the Industrial and Urban Architectural Design Institute of the MBE (later Beijing Industrial and Urban Architectural Design Institute) published in *JZ* in November 1954 shows some information of the plan management system in the state design institutes at that time. Since the first quarter of 1954, the Beijing institute began to use the plan tables prescribed by the State Planning Commission to strengthen the plan management of design work, and approximately after half year, set up a regulation on it. According to the paper, the Beijing institute made the plan for design work on three levels, namely yearly schedules, quarterly schedules, and monthly schedules, to manage the design tasks, which at that time were mostly allotted by upper authorities. In these three levels, the lower ones were framed by the upper ones. The subordinate design departments could only take the tasks prescribed by a monthly schedule or a "temporary order form," both of which were issued by the planning department with the ratification of the institute's director.[63]

The work of scheduling included estimating workloads, compiling time schedule tables, and then enacting monthly schedules. A monthly schedule was began to be made by the planning department at the end of the previous month, based on the statistic table for the condition of the accomplishment of the previous month reported by the design departments before the month end. The schedule for the new month, which should have been discussed with the design departments and approved by the director, was then delivered to the design departments.[64] In order to check-up the condition of the transaction of the schedule, a series of index values were required to be calculated, including the index of workload (the accomplished work in comparison with the schedule, calculated in currency), the index of practicality (the actual rate of progress in comparison with the schedule), the index of efficiency (the accomplished work per day per person calculated in currency), and the index of equilibrium (including absent rate and the data of rework, idleness and overtime).[65] The regulation of the Beijing institute also defined different roles in the work of plan management, level by level from

[63] MBE, Chief Bureau of Design, Industrial and Urban Architectural Design Institute, "Sheji jihua guanli gongzuo zanxing banfa", *JZ (internally published), Iss.2/1954*, P.32
[64] Ibid., PP.32-33
[65] Ibid., P.33

the institute director, the planning department, the project principals, the deans of design departments, down to the headmen of design teams and all the designers.[66]

In the 1950s, the state design institutes also adopted a uniform system of technical management. One aspect of this system is the responsibility system of technical personnel. It clearly defined the technical responsibilities of technical personnel on every level, such as the chief engineers (or chief architects), the deans of design departments, the engineers in charge of specialties, and the headmen of design teams. In parallel, a project responsibility system clearly defined the responsibilities of the project principal, the design principals of specialties, the designers, and the correctors of each project. In addition, in order to deal with the complexity of the design for industrial enterprises, the Chief Bureau of Design of the MBE enacted a trial regulation to organize the design procedure of each project in parallel orders of different specialties and lap the design processes of them to quicken design. This regulation acted well for design institutes in establishing well-balanced design orders, ensuring quality and progress of every design, and avoiding disjointedness and inconsistency between different specialties.[67] In order to strengthen cooperation among design personnel especially for important projects, the collective design mode was established in state design institutes, and for this purpose, individual design mode was criticized “capitalist orientation on masterworks”.

Around the responsibility system and the regulation, each design institute usually established its own rules and regulations to strengthen technical management and heighten design quality. For example, some design institutes established technical committees to take the responsibility of discussing and censoring design schemes, solving difficulties in design, examining and approving plans of technical progress. Some design institutes also established proofreading, examining, and approving systems to ensure depths of design blueprints and calculation reports. In an institute, the chief engineers of the technical department should examine design documents of institute-managed projects, and besides, they took the responsibility to selectively examine the documents of department-managed projects to control and supervise the design qualities of subordinate design departments.

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[66] See Ibid., P.33

[67] *Dangdai Zhongguo de jianzhuye*, P.248

Since 1955, in order to overcome the weakness in industrial building design, the Chief Bureau of Design conducted a serious of courses taught by Soviet experts to train the personnel from various design institutes. The courses covered construction organization, budget, general layout and transportation, building facilities, and so forth. The design institutes also made the effort to train their technical personnel to heighten the design level and to make them familiar with design regulations and professional knowledge. Even the training given to the juniors on lettering and drawing was witnessed at these design institutes.[68]

Although the Soviet imitation of management systems founded the basis of the mechanism of the state design institutes in China, it was always accompanied with problems. The system of calculating loads and values of design work in currency contributed to the unification of the price of design work and could more directly offer the reference data for overall economic planning, but because China's condition differed from that of the Soviet Union, the copies of the Soviet tables were not very adaptive. Since design depth varied among projects, plus the tasks, composition and design levels of personnel varied from one institutes to another, the schedules based on such calculating and statistic tables were often divorced from the reality. In practice, the index of workload calculated in currency usually couldn't exactly reflect either the real workload of individual project or the rate of design progress. This caused problem in schedule management because both of the above aspects were crucial for schedule estimating. For example, according to the statistics based on currency-calculated workload, the production plan of design in 1955 was seemingly fulfilled, but in fact, the design tasks of the year were not accomplished: there were 18.67% of design documents postponed and 11.8% design personnel idled.[69] Another problem rested with that the price list as the basis of the calculating was not directly linked up with actual design fees. In addition, the work of looking up and filling in the tables and calculating the values was too complicated, and the over-elaborated calculating seemed more unnecessary for the design of non-industrial buildings, which procedure was rather simpler. Overall, the currency calculating system didn't have strong practical significance, especially for the schedule management within a design institute.

At the same time, the Soviet imitation of technical management was also complicated, and many of the Soviet technical standards on fireproofing,

[68] See Ibid., P.248

[69] Yan Zixiang, "Zongjie jingyan, gaijin minyong biaozhun sheji gongzuo", *JZ, Iss.14/1955*, P.9

aerial defense, sanitation, quakeproof and so forth, which were taken with little modification in China, were too high for the practice. The technical regulations were somehow plethoric, meticulous and stiff.[70] The design procedure was obligatory but complicated, disregarding scales of buildings. As someone pointed out, under this system, "an ordinary design drawing was to be examined by more than ten checkpoints, from the designer, the team meeting, the engineer in charge, to the technical department, and even to the chief engineers." [71] In addition, due to the complicated procedures, the administrative structure of a state design institute was usually inflated with superfluous people, so that the proportion of non-production personnel in the overall employees became very high.

Drastic simplification of the management systems was witnessed during the period of the Great Leap Forward. In order to accomplish the design work for the large quantity of construction within tight time schedules, the so-called "technical renovation" and "technical revolution" were launched in the design field in 1958, when the prescribed design procedure and the technical regulations were largely neglected. This leaded to the rapidly increased speed in design and construction; however, the quality of design inevitably went down. As a result, accidents took place at many construction sites due to the culpabilities of design. At the end of this year, the efforts of rectification began to be made, while a balanced and suitable system for design management was pursued.

In 1961, the wake of the Great Leap Forward, the MBE disseminated *Regulation for Design Work* to resume the order of design work and strengthen the management. The regulation consisted of twelve chapters, referring almost every aspect of design work. The design procedure, the plan management, the technical management and the technical responsibility system were respectively prescribed in the third to the sixth chapter. It allowed adopting bi-phase design procedure instead of the tri-phase procedure in simple, small or experienced projects.[72] For plan management, it adopted a multi-index system, which included the indexes of project, schedule, quality, workday and the number of working people, in place of the former currency calculating system. In general, it was essentially the

[70] Liu Xiufeng, "Guzu ganjin, lizheng shangyou, geng duo geng kuai geng hao geng sheng de wancheng guojia jianshe renwu", *JZ, Iss.8/1958*, P.6
[71] Yuan Jingshen, "Tantan sheji fangmian guizhangzhidu de po he li", *JZ, Iss.2/1959*, P.18
[72] The tri-phase procedure includes preliminary design, technical design, and working drawing; the bi-phase procedure includes preliminary design and working drawing.

renewal and simplification of the Soviet design management system that had been wrecked during the Great Leap Forward.

The effort of reestablishing the design order was broken down in the Design Revolution in 1964, which drove design personnel from design institutions to construction sites to conduct design work. Furthermore, the countrywide Cultural Revolution in 1966 throughout destroyed the management systems of the state design institutes. The administration structures were wrecked, the regulations on design management were criticized as being revisionist, and in addition, technologies were regarded useless. Finally, a number of design institutes were disbanded, a large proportion of design personnel were dismissed, and a mass of technical data were destroyed or lost.[73] The overall resumption of the design institutions and the management systems would not take place until the conclusion of the Cultural Revolution.

4.4 The ASC and Its Role

The Architectural Society of China – the ASC – was formally established in October 1953, when its first national congress as well as founding convention was held in Beijing. Since its founding, the ASC took a very important role in the realm of architectural activities.

In July 1949, the preparatory meeting for the National Congress of Scientific Workers was held in Beijing. One year later, the congress was convened, which established the All-China Union of Special Societies of Natural Science and the All-China Association for Science and Technology Popularization.[74] Proposed by the former, Liang Sicheng and some other prominent figures of the architectural circles in Beijing communicated with the localities and collected 296 signatories as the initiators to prepare the foundation of a national society of architecture and engineering. Subsequently, a preparatory committee was established, electing Liang Sicheng as the chairman, Fan Li and Wang Ming as the vice-chairmen. The preparation went along swimmingly, and local branch preparatory committees were setup one after the other. Since the Three Antis and Five Antis Movements were launched at the beginning of 1952, the preparatory

[73] *Dangdai Zhongguo de jianzhuye*, PP.252-253
[74] At a joint meeting held in September 1958, the two organizations merged to form the China Association for Science and Technology.

work was interrupted for more than a half year until the autumn, when the MBE and the regional ministries of building industry were successively established. Afterwards, supported by the central and the local governmental administrations, the preparation was quickened.

By July 1953, Shanghai, Tianjin, Changchun, Guangzhou, Kaifeng and Lanzhou had formally founded branch societies, while Beijing, Nanjing, Kunming, Wuhan, Fuzhou, Qingdao and Xi'an had established preparatory committees. In Jinan, Hangzhou, Guiyang and Chongqing, the chiefs of preparation teams had been elected. Altogether 1,572 people had registered for the membership. Approved by the All-China Union of Special Societies of Natural Science, the First National Congress of the ASC was then convened.[75]

The All-China Union of Special Societies of Natural Science and its subordinate societies were under the Party Leadership Group of Chinese Academy of Sciences, therefore the first congress of the ASC was approved by Zhang Jiafu – the Secretary of the Party Leadership Group – as well as Xi Zhongxun from the Government Administration Council. About 40 delegates attended the congress and elected a council composed of 27 people. Following it, the council held a meeting to discuss its working plan and elected eleven people as the members of the executive council. The latter then elected the President, the Vice-Presidents, the Secretary General and the Deputy Secretary General. Meanwhile, the Secretariat and the four boards – the Organization Board, the Editorial Board, the Architectural Research Board, and the Academic Research Board – were also established with nominations.[76]

Just like other special societies in the PRC, the ASC as an academic organization was actually a quasi-official institution, although the academic posts were mostly held by architects. This is implied by the fact that Vice-Minister of the MBE Zhou Rongxin assumed the presidency of the ASC. In an enlarged session of the council of the first congress in April 1956, it was proposed and passed that the ASC would under the leadership of the State Construction Commission (SCC) and this overture was approved by the latter. Later in 1958, when the SCC was removed, the ASC became under the newly united MBE.

[75] Wang Jiqi, "Zhongguo jianzhu xuehui chengli dahui qingkuang huiyi", *JZXB, Iss.9/1983*, P.27
[76] Ibid., P.29

Directly after the founding, the ASC didn't move very well because no people were released from his own duty to work specially for it. Except that the Editorial Board published two issues of *Jianzhu xuebao* (*JZXB, Architectural Journal*) in the following year, no meeting was formally convened by other boards and only a few activities were carried through. Even the publication of *JZXB* was broken off at the beginning of 1955 when the Anti-Waste Movement burst out. This situation was not ameliorated until July 1955, when China was accepted as a member country of the UIA. Afterwards, the ASC began to have full time people and fixed place to carry out the daily work.[77]

Despite the early problems, the ASC played an important role in promoting the communication of architectural thoughts since its founding, so it did in the unification of the thoughts. By the time when the ASC was founded, a mood of depression had diffused in the architectural fields, due to the criticisms on the modern-trended architecture in China in the early 1950s and the problem that the meanings of the Soviet slogans such as "Against Constructivism" and "socialist realism" were unclear at all. Some delegates of the founding convention even expressed that their intentions of attending the meeting were to take back some "formulas" of the "national form."[78] In a special session of the convention, the ASC invited Zhou Yang, who was a Vice-Minister of the Publicity Department as well as the Secretary of the Party Leadership Group of the Ministry of Culture, and more than ten other well-known people from literary and art circles to join the discussion on socialist realism with the architects. Zhou Yang was the earliest importer of this theory in the 1930s as well as one of the key promoters and interpreters of this doctrine in the literary circles in the PRC. Although the theoretical discussion on socialist realism was hard to be transferred to any practical solution in architecture, Liang Sicheng's speech on it and national legacies at this meeting exerted a great impact on architectural activities in 1953 and 1954. His interpretation of the Soviet doctrine was actively promoted by the first two issues of *JZXB* – the journal published by the ASC – in 1954.

As the activities of the ASC got gradually normalized, its function of communicating and unifying thoughts in architectural circles was reinforced. Inviting experts to give lectures and convening symposiums were the familiar activities of the ASC. In the Anti-Waste Movement and the Hundred Flowers Movement, the ACS and its branches organized series of

[77] Ibid.
[78] Ibid., P.27

meetings to mobilize the corresponding discussions, and *JZXB* offered the means for delivering the opinions. In 1958 and 1959, the discussions on the renovation of the Tian'anmen Square and the National Day Projects organized by the ASC arouse the academic atmosphere in architectural circles, which had been hazed since the Anti-Rightist Campaign in 1957. In 1959, together with the MBE, the ASC convened the remarkable Shanghai Symposium participated by most prominent Chinese architects. The question of "new socialist style" raised by the symposium was then widely discussed in the 1960s at various meetings organized by the ASC and its branches.

ASC also played an important role in controlling and improving design levels. Shortly after its founding, the ASC began to organize reviews on architectural design and urban planning, especially for important projects. For example, before 1957, the headquarters of the ASC participated in the preliminary design reviews for the unified housing projects in Beijing, which was presided by the Ministry of Urban Construction. Requested by the building owners who had different opinions with the design side, the ASC sometimes organized technical meetings to select design schemes.[79] As just mentioned, in 1958 and 1959, the ASC organized a series of discussions on the renovation of the Tian'anmen Square and the National Day projects, providing great references to the construction of the national capital. Besides, it also contributed to the selection of the schematic design for the bridge towers of the Yangtze River Bridge in Nanjing and the landscape planning of Guilin. In the aspect of generic design especially housing design, the ASC organized a series of competitions and exhibitions, through which the optimal schemes were selected and the design level were heightened and unified. These competitions and exhibitions built up the precedent for housing design in China, followed up to today.

The ASC's contribution touched many other aspects, such as popularizing scientific and technical achievements, introducing technical trends of other countries, carrying on researches, and publishing academic and technical journals. In the aspect of foreign exchange, the ASC played a key role in the whole architectural area. Although it merely dispatched two and four people abroad respectively in 1953 and 1954[80], its function on foreign exchange was boosted after July 1955, when China's membership was accepted by the UIA. In 1956, for example, the number of the people sent abroad by the ASC

[79] Zhou Rongxin, "work report at the 2nd Congress of ASC", *JZXB, Iss.03/1957*, P.7
[80] Ibid.

raised to 35.[81] After joining the UIA, the ASC began to invite architects' delegations from other member countries to visit China and make exchange activities with the ASC and its branches. As mentioned in Section 3.1, in September and October 1955, a twelve-people delegation from Poland visited China. They brought forward a series of comments on China's architecture and answered many questions raised by Chinese architects who were puzzled by the fickleness resulted from the criticisms on "constructivism" and "revivalism." This exchange made a positive contribution in activating the bemused architectural creativities in China.

After the Polish delegation, the ASC invited a number of delegations from various countries, such as those from the Soviet Union during August to October 1956, from Poland again in September 1956, from East Germany in April and May 1957, from Romania in September to October 1957, and from France in June 1958, as well as a British delegation in July 1958. Besides participating in the meetings of the UIA and other meetings convened by correlative international organizations, the ASC dispatched delegations to visit other member countries and hold exhibitions of China's architecture. Such delegations visited the Soviet Union, Poland, Romania, East Germany, Czechoslovakia and Brazil respectively in October 1955, June 1956, June 1957, August 1958, August 1958 and October 1963.[82]

Parallel to the ASC, there was another special society running in China. It is China Civil Engineering Society (CCES), which discipline and practice were close related to the ACS. These two societies were independent with each other all along until 1958. In July of this year, the ASC and CCES began to operate together within the MBE system, and a joint conference by them was convened in May 1959, which brought forward the request of keeping close ties in activities. Meanwhile, the organizational structures of the ASC and CCES were adjusted: the ASC concentrated more on architectural design and urban planning while CCES covered the activities of structural engineering.

In 1966, the great calamities also impended over the ASC. In a report delivered by the MBE in this year, the ASC was concluded as the "front against the Party and socialism," and *JZXB* run by the ASC was depicted as "the means for publicizing feudalism, capitalism and revisionism, as well as

[81] Ibid.
[82] See the Memorabilia of ASC, *http://www.chinaasc.org/society/text.php?NewsId=57*

the means against the Party, socialism and Mao Zedong Thought."[83] So that, the activities of the ASC were halted at once; in August, the publication of *JZXB* ceased, and in May 1967, most people working at the ASC were exiled.

[83] Ibid.

CHAPTER 5 • URBAN PLANNING UNDER THE ECONOMIC PLAN

In the circles of urban planning in China, the 1950s were praised as a "spring" of urban planning. With the help of the Soviet Union, the work of urban planning was gradually carried out during this period, and the subject of urban planning was established in imitation of the Soviet model. In general, the development of urban planning during 1949 to 1965 could be divided in to three periods, reflecting the economic situation in China. The first one is the first Five-Year Plan (1953-1957), during which urban planning was commenced along with the construction of Soviet-aided key industrial projects. The second one is the Great Leap Forward (1958-1960), during which urban planning was made for most cities and a part of counties. The last one is the period of stagnation (1960-1965), during which the work of urban planning was frozen, and most institutions of urban planning were cancelled.[1]

5.1 The Early Development of Urban Construction and Urban Planning

Shortly before the founding of the Peoples Republic of China (PRC), Chinese Communist Party (CCP) already attached importance to urban construction. At a meeting of the Central Committee of CCP held in February 1949, Mao Zedong pointed out that the focal point of their work would shift from countryside to cities. He also brought forward the policy "transforming consumptive cities to productive cities" for urban construction.[2] The period from 1949 to 1952 brought economic recovery to the newly founded PRC, when the major tasks facing the government included: holding down rising prices, suppressing inflation, and ensuring the supply of basic daily necessities. Renovating urban environments and improving living conditions, as well as ameliorating urban transportations, water supplies and other facilities were the main work of urban construction at that time.

[1] Liu Rengen & Gao Chunmao, "Zhongguo de chengshi guihua," *Nanfang jianzhu*, *Iss.1/1997*, P.14
[2] See *Dangdai Zhongguo de chengshi jiansh*, P.25

In the victories of the Liberation War (Civil War) as well as the period of economic recovery, the number of cities in China largely increased through upgrading a good many counties and towns to cities. For Mainland China, the number grew from 58 in 1948 to 160 in 1952, when the urban population (population of all the cities and towns) reached 71.63 million and occupied 12.5% of overall population.[3] As urban construction developed, the corresponding administrative system was set up. In October 1949, a department on capital construction under the Finance and Economy Commission of the Government Administration Council was founded, and the municipal commissions or bureaus responsible for urban construction and urban planning were established in succession. To prepare for the coming large-scale economic construction, the Ministry of Building Engineering (MBE) was founded by the central government in August 1952 to specially deal with urban construction and building construction. In September, the Finance and Economy Commission convened the First Symposium on Urban Construction, which framed the following strategies for promoting urban construction.[4]

The first strategy was to strengthen central and local administrative institutions to unify the administration of urban construction. The overall administrative system would include institutions on different levels. Under the central government would be the Bureau of Urban Construction, in each of the six "macro-regions", the department of capital construction under the regional financial or planning commission, and various cities would establish their corresponding special commissions or bureaus. In addition, construction commissions would be established in each of the 39 key cities, and it was prescribed that the mayor or the general CCP secretary of a city should assume the position of director. Each construction commission should include a department in charge of design and planning and another one responsible for supervising.

The second strategy was to carry out urban planning for all cities. Long-term master plans should be made at first to guide urban construction, and they should be made according to *Procedure of Urban Planning and Construction Design of PRC (draft)*, which had just been drawn out by Soviet experts. The third strategy was to demarcate the range of urban construction. It was prescribed that the plans of urban construction should be

[3] See *Dangdai Zhongguo de chengshi jiansh*, P.34. By April 1948, there were 57 cities in China altogether, and 9 of them were in Taiwan Province.
[4] See Ibid., PP.36-37

included in the economic plans of finance and economy commissions or planning commissions. Lastly, different developing strategies would be adopted for different types of cities, and the cities were sorted into four types, including eight heavy industrial cities, fourteen renovated cities with large proportion of industry, seventeen old cities with small proportion of industry, and other ecumenical cities. Because the focal point of economic construction was put on heavy industry, the cities of former types would have more priorities in construction than those of latter types.

After this symposium, China's urban construction entered a period of developing in a planned way under the centralized leadership. With the help of the Soviet Union, China began its first Five-Year Plan in 1953 with the establishment and operation of a planned economic system of socialist industrialization, when a large-scale undertaking focusing on 156 Soviet-aided industrial projects and other 538 large industrial projects started.[5] Confronted with the situation, the effort of strengthening the centralized administration was made. In March 1953, the MBE established the Bureau of Urban Construction (renamed to Chief Bureau of Urban Construction in August 1955) to take the responsibility of the work of urban construction, and in May, the State Planning Commission (the successor of the Central Finance and Economy Commission) founded an urban construction sector under its United Office for Capital Construction. The sector was transformed into the Bureau of Urban Construction Planning in July. The dual-administration system of urban planning was then formally established, in which the State Planning Commission took charge of the constitution of standard quotas and procedure of urban planning, as well as the appraisal of urban planning, while the MBE took the responsibility of the operational guidance and the organization of urban planning.[6]

Following the establishment of the State Construction Commission in November 1954, the Bureau of Urban Construction Planning was

[5] In 1950, China signed an agreement with the Soviet Union, getting the help from the latter in building 50 industrial projects. In late 1952, a delegation of leading Chinese went to Moscow and negotiated for Soviet assistance until mid-1953, and the Soviet Union finally agreed to help build 91 large scale construction projects, which with the 50 previously contracted brought the total to 141. These became the foundation of the five-year plan and they were called "141 projects." In late 1954, when Khrushchev and Bulganin visited Beijing, they increased the number of aid projects to 156. In 1955, the number was increased to 174. Fnally, 154 projects were confirmed and inactuality, 150 were built. Because the number 156 had been publicized, the overall Soviet-aided projects were then called "156 projects." See *Zhongguo jianzhu nianjian 1984-1985* , PP.552-553 for the list of the projects.

[6] Zhao Shixiu, "Woguo chengshi guihua liangge 'chuntian' de huiyi ," *Wushi nian huimou – Xin Zhongguo de chengshi guihua*, P.31

transformed to a new organization in charge of state construction and renamed to Bureau of Urban Construction. In May 1955, the Chief Bureau of Urban Construction under the MBE separated from the MBE to be directly under the State Council, and it was upgraded to the Ministry of Urban Construction one year later. Since 1953, along with the commencement of construction in various cities, the regional level and municipal level administrative organizations in charge of urban construction were established as well.

In the planned economy of the Soviet model, urban planning was regarded as continuation and embodiment of national economic plan.[7] The first Five-Year Plan of China gave the first priority to the construction of heavy industry and treated urban construction as subordinate aspect. The economic departments of the central government deployed the important industrial projects and decided the developing plan of industry, and the scale as well as the status of industry determined the development of a city. The task of urban planning was to suit the needs of industrial construction, and to offer necessary infrastructures as well as dwelling and other facilities for the workers and urban inhabitants.

With preliminary urban plan sketches, the work of site selection for the key industrial projects was largely commenced since 1953 by united teams. One of such teams was composed of personnel from various governmental departments on urban construction, railway, transportation, geology, water resources, electric power, air defense, hygiene, and police, and it usually included one or more Soviet experts. By 1954, most of the sites of the key industrial projects had been decided, and their construction was to be carried through. As the industrial construction gradually expanded, the problems in urban construction were getting increasingly acute, because no master plans but only the plan sketches or overall layouts for approximately twenty industrial cities were available to guide the urban construction.[8] Urban development suffered from the lack of overall arrangement and consecutive guidance, and therefore the rational disposal of factories, houses and roads, as well as the correct distribution of building lands was affected. Due to the over-estimation of the expansion of urban populations and the scale of construction, the scale of cities was usually blindly amplified. In addition,

[7] Baragin D. D. "Sulian chengshi guihua de yiban wenti ji Zhongguo chengshi jianshe de ruogan wenti," *JZ, Special Issue on the First National Meeting of Urban Construction /1954*, P.11

[8] See Sun Jingwen, "Ji nian lai chengshi jianshe gongzuo de chubu zongjie yu jinhou chengshi jianshe gongzuo de renwu," *JZ, Special Issue on the First National Meeting of Urban Construction/1954*, P.2

confronted with the urgency, many factories were built separately in new areas divorced from existing cities, leading to a dispersive tendency in urban construction.

In June 1953, Premier Zhou Enlai stressed that the thought of dispersiveness should be opposed and the construction should systematically go along according to priorities.[9] Demanded by him, the MBE initiated a study on the urban construction of that time and then handed in a report to illustrate the status and present opinions on urban construction. Shortly, it convened the First National Meeting of Urban Construction in June 1954 to correct the mistakes in the earlier urban construction and to explicate the policies and principles for urban construction. This meeting clearly stated that urban construction must suit the needs of industrial construction. It pointed out that during the first Five-Year Plan, the construction of the key industrial cities must be ensured to guarantee the accomplishment of the important industrial projects, and, in the key industrial cities, the forces must concentrated on industrial areas as well as the major projects that sustained industrial construction and production.

This meeting re-sorted the cities except Beijing into four types: new industrial cities with important industrial projects, to which construction a high priority would be given; extending cities, where extensions and renovations should be combined to serve the construction of new industrial districts while the old parts should be extensively utilized; partly extending cities, where partial extensions and renovations would be conducted and the focus would be on the maintenance of urban facilities; and middle- or small-scale general cities, where the work of maintenance and adjustment would be commenced.[10]

Earlier in September 1953, the Central Committee stated that the urban planning for the important industrial cities should be rapidly started.[11] The 1954 meeting concretely indicated the immediate tasks of urban planning. It demanded that before the end of 1954, the master planning for the newly-built industrial cities and the extending cities, where many industrial projects would be located, should be worked out, and for the cities with many new industrial projects, the detailed planning should be accomplished. It decided that before the third quarter of 1954, namely before the

[9] *Dangdai Zhongguo de chengshi jianshe*, P.42
[10] See Ibid., PP.43-44
[11] Ibid, P.48

finalization of the master plans, the planning for new industrial districts should be finished to support the construction of the 141 Soviet-aided projects.[12] It also demanded to work out the immediate plans and the cost calculations for the first phase of construction as soon as the preliminary master plans were framed.[13]

This meeting attached importance to both long-term plans and short-term plans. It brought forward the policy "overall planning, construction by stages, from inside to outside, and filling the vacancy to solid" for urban planning and construction. In the first stage (five to seven years until the Soviet-sided projects was accomplished), urban construction would try to be collective and compact in order to save lands and investments of urban facilities and to remain lands for the second-stage (fifteen to twenty years or longer) or longer-range construction. This meeting also laid emphasis on making the most of the existing cities, required that the planning and construction should be conducted on the basis of existing situations, and halted the idea of building entirely new districts while abandoning old urban districts.[14]

In addition, it stressed aesthetics, regarding urban planning and architectural design as the basis for building beautiful cities. It criticized the so-called "barrack-like" parallel housing layout as well as the "box-like" architecture, and divided architecture into following different levels of treatments:

> Beauty and splendor should be accentuated in large permanent or monumental buildings; utility should be noticed mainly in ecumenical buildings and beauty will be pursued without increasing the costs; the main demands of plants are firmness and utility and it is not indispensable to emphasize artistry.[15]

Overall, the First National Meeting of Urban Construction in June 1954 concluded the practice of previous urban construction in China, and it clearly indicated the direction for later urban planning and urban construction. In reality however, China was suffering from the lack of planning experiences and the shortage of planning personnel. In 1952, the specialty concerning urban planning, in imitation of the "городское

[12] See Note 4-7
[13] Sun Jingwen, "Ji nian lai chengshi jianshe gongzuo de chubu zongjie yu jinhou chengshi jianshe gongzuo de renwu," *JZ, Special Issue on the First National Meeting of Urban Construction/1954*, P.6
[14] See Ibid., P.6
[15] Ibid., P.7

строитепъство и хозяиство" ("urban construction and management") of Soviet colleges, was founded at Tongji University in Shanghai, and it began to produce some graduates since 1953.[16] Together with them, a number of graduates from architecture, economy and other correlative majors as well as some senior engineers were engaged upon this work, on the basis of the planning theories and methods copied from the Soviet Union and under the guidance of Soviet experts. After it founded the Urban Design Institute in October 1954, the MBE sent a number of teams to key cities to make the planning. Under the direct leadership of local party committees and the guidance of Soviet experts, these teams, with the collaboration of local technicians, worked out the master plans and detailed plans of these cities.[17]

The work of urban planning was firstly conducted for key industrial cities such as Taiyuan, Baotou, Lanzhou, Xi'an, Wuhan, Datong, Chengdu and Luoyang. By the end of 1954, the master plans of Taiyuan, Xi'an, Lanzhou and Luoyang had been approved by the State Construction Commission, and the detailed plans for these cities had been approved by the Chief Bureau of Urban Planning.[18] By 1957, master plans or preliminary master plans of approximately 150 cities had been made, among which 15 master plans had been approved by central governments. These plans played a significant role in directing urban construction to a systematic development.

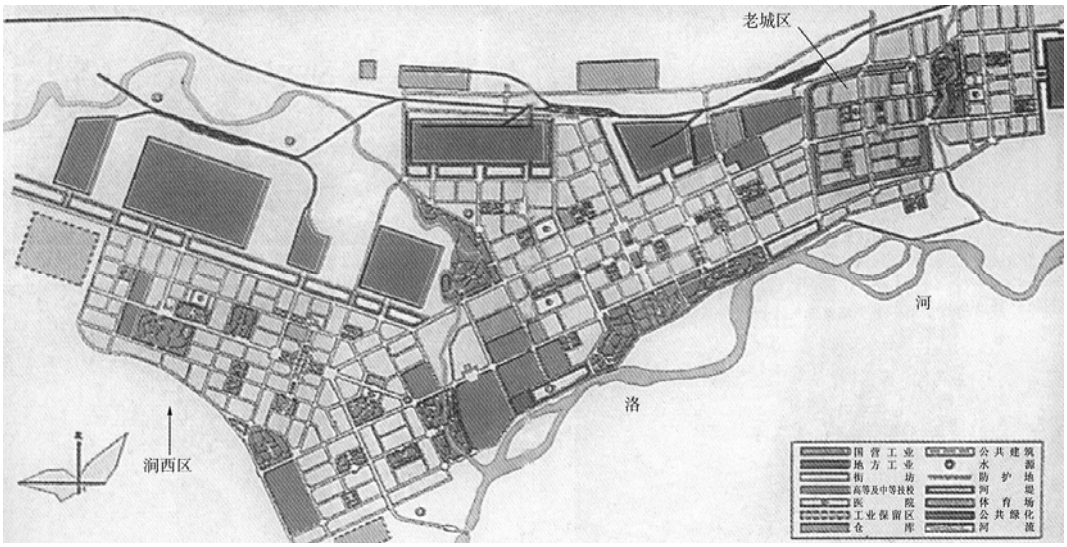

Figure 5-1 Master Plan of Luoyang in the First Five-Year Plan

[16] Li Dehua & Dong Jianhong (1997), 'The Evolution of Planning Education at Tongji University within the Past 45 Years', *Sishiwu nian jingcui: tongji daxue chengshi guihua zhuanye jinian zhuanji,* PP.1-2
[17] *Dangdai Zhongguo de chengshi jianshe*, P.49
[18] Ibid., PP.49-50

Figure 5-2 Preliminary Master Plan of Shenyang, 1956

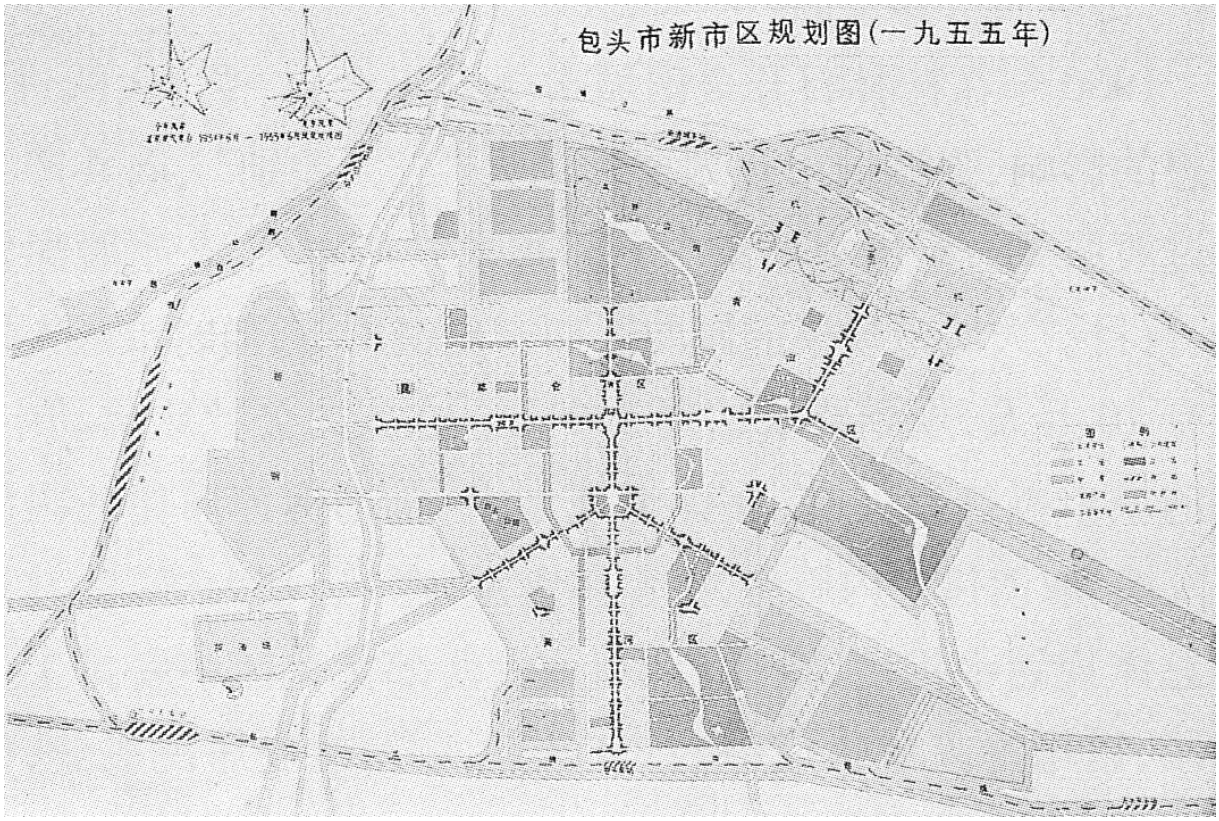

Figure 5-3 Plan of a sector of Baotou, 1955

5.2 The Imitation and Modification of the Soviet Urban Planning

As mentioned in last section, the early planning work in the PRC imitated the experiences of the Soviet Union, and was conducted under the guidance of Soviet experts. The principle, the method of economic and technical analysis, the composition of urban buildings, and the procedure were all copied.[19] As the first Five-Year Plan was carried through, the adjustment and modification of urban planning to adapt China's condition gradually took place.

In the Soviet Union, urban planning was divided into short-term planning and long-term planning. The former covered the period of the coming one to ten years and the latter was concerned with the period in fifteen to twenty-five years. The division of short-term period and long-term period was introduced into China's urban planning. Considering China's situation, the time definitions were respectively adjusted to five to ten (or seven) years and fifteen to twenty years. The former coincided with the due time of the 156 projects while the latter fitted the implementation time of the "general line of the transitional period."[20]

For Soviet urban planning, the quota system was very crucial. It played an important role in controlling the scale and investment of a city, and at the same time, offered practical means for urban planning. In this system, the calculation and forecast of population based on the scale of industry was the key precondition of urban planning. The population was divided into basic population, service population, and dependent population, and the ratios of each were differently set for planning different-scale cities. The main economic-technical indicators of urban planning included per capita living area, the ratio of living area to service area, the ratio of living area to floor area, the ratios of different-story buildings, and building density, as well as per capita land areas of residential building, various types of public buildings, green space, road and square. With these indicators and the forecast of population, the scales of land and construction of a city was

[19] Ibid., P.147

[20] MBE, Bureau of Urban Construction, Department of Information, 'References of Several Quotas of Urban Construction', *JZ, 2/1954*, P.36. "General line of the transitional period" was the creed of transforming from "new democracy" to socialism, issued by CCP in 1953. It said that in a relatively long transitional period from the founding of PRC to the accomplishment of socialist transformation, the general line and task of CCP was to gradually accomplish the socialist industrialization and gradually achieve the socialist transformation of agriculture, handicrafts, as well as capital industry and commerce.

calculated, therefore a careful quantification of the values was crucial for urban development control. This system was imitated in China's urban planning, and the key quotas in Soviet long-term urban planning, such as per capita 9-square-meter living area and per capita 76-square-meter residential land area, were all copied in the early practice of urban planning.

For the operational purpose, the quota system was studied very early. A book by J. P. Levchenko on the economic-technical indicators of urban planning was then translated and taken as the guidance for China's practice. The Soviet indicator values and the calculating formulae, listed in this book, were all adopted as reference. (Actually, most of the terminologies in China's urban planning came from this book.[21]) By comparing the situation of China with that of the Soviet Union, the value of each quota was carefully re-defined. In "Dui chengshi guihua ding'e de ji dian yijian" ("Some Opinions on the Quotas of Urban Planning"), which was in the internally published first issue of *JZ* in May 1954, the author Zhao Fengshi from the Bureau of Urban Construction of the MBE proposed the values of the main quotas. In general, his proposal kept the quota values of Soviet long-term planning, while it cut down most of the values for the short-term planning according to China's situation. For example, it suggested using per capita 9-square-meter living area of housing in long-term planning, while decreased it to 4-5 square meters and 3-3.5 square meters respectively for apartment and dormitory in short-term planning.[22]

Because housing occupied the biggest part of the non-industrial civil buildings in urban construction, the definition of its quota values was very crucial. The basic quota was per capita living area, which, together with other fixed indicators, was used to control the overall scale and land consumption of housing construction. In the Soviet Union, its value was six square meters for short-term urban planning and nine square meters for long-term urban planning. The latter value was considered as the basic hygienic living condition in the Soviet Union and regarded as the embodiment of "caring for people." In the aforementioned Zhao Fengshi's paper, it was suggested to follow the nine-square-meter quota in long-term planning in despite of that the author pointed out "it is impossible to arrive at the level of nine-square-meter living area per person in fifteen to twenty-five

[21] See Dong Jianhong, "Ji jian jiyiyouxin de wanggshi," *Wushi nian huimou – Xin Zhongguo de chengshi guihua*, P.665

[22] See Zhao Fengshi, 'Dui chengshi guihua ding'e de ji dian yijian', *JZ(internally published), Iss.1/1954*, PP.28-29

years," because he considered "it would obstruct long-term urban construction if the planning was not conducted based on nine square meters."[23] However, in the paper by the Department of Information of the Bureau of Urban Construction published in *JZ* in November 1954, the author from the same bureau of Zhao Fengshi revised the previous opinion. The Department of Information proposed to use per capita six-square-meter living area in long-term planning instead of the nine-square-meter quota. Because the nine-square-meter quota was still regarded as the "matter of principle in urban planning," the author brought forward a practical tactic, suggesting the planning upon the six-square-meter value to reserve lands in the master plans for adopting the nine-square-meter quota in the future.[24]

Whether using nine square meters or six square meters as the value of per capita living area in long-term planning gave rise to a controversy during the period of the first Five-Year Plan. The state economic departments were inclined to the latter, because it was advantageous to controlling the investment of urban construction and coincident with the policy of giving first priority to developing industry. In 1955, the Anti-Waste Movement was launched, and in June, Li Fuchun delivered his speech "strictly enforcing economization." Following it, the Bureau of Urban Planning under the Chief Bureau of Urban Construction handed in a report on reexamining urban plans and revising urban planning, in which they assumed to use six square meters as the quota of per capita living area for long-term planning. Besides, they redefined a number of other quotas for long-term planning, such as the ratios of one-story housing, two-story housing, and multi-story housing, as well as the land-use quotas for various public buildings.[25]

The controversy between the nine-square-meter value and the six-square-meter value seemed to be concluded at the end of the first Five-Year Plan. In 1957, the State Construction Commission issued *Preliminary Opinion for Future Urban Construction, Housing, and Civil Buildings*, and decided to use the six-square-meter quota and abolish the nine-square-meter quota in long-term planning. Because single-story housing was much cheaper than multi-story housing, the commission decided to build single-story buildings as the main part of housing. This

[23] Ibid., P.28
[24] See, MBE, Bureau of Urban Construction, Department of Information, 'Chengshi jianshe ji xiang ding'e de cankao ziliao', *JZ, Iss.2/1954*, P.36
[25] See, *1953-1957 Zhonghua renmin gongheguo jingji dang'an ziliao xuanbian guding zichan touzi he jianzhuye juan*, P.803

decision was made despite that multi-story buildings occupied the biggest proportion in the Soviet Union's urban planning. Because the land use of single-story housing with the six-square-meter quota was similar to that of three- or four-story housing with the nine-square-meter quota, the State Construction Commission thought it would be possible to shift to nine-square-meter living area per capita in the future, when simple single-story housing would be wiped off and replaced by multi-story housing.[26]

A radical revise of the quota system was soon witnessed. In January 1958, the State Construction Commission and the Ministry of Urban Construction prescribed a new quota system, in which only a small part of the Soviet quota system was remained as controlling indicators for master planning and detailed planning. According to it, there would be only two quotas for long-term planning. The first one was per capita residential land-use, fixed to 35 square meters. The second one was the ratio of basic population, fixed to 30% for new cities and new industrial zones, and its value for old cities could be varied according to local conditions. The first quota would be used to replace the per capita living area quota in long-term planning in controlling the overall scale of a city. The new system also included various quotas for short-term planning, such as per capita residential land-use, averagely 18-28 square meters; the ratio of basic population, 35-40% or bigger; per capita living area, 4 square meters; and building density, fixed to 50%, 30%, 30%, and 25% respectively for single-story, two-story, three-story, and four-story buildings. In addition, the principle of building height was generally framed, indicating that single- or two-story buildings should be extensively built except in large cities or where the land were inadequate or the agricultural yield were high.[27] The other quotas, such as per capita average land-use of road and square, as well as per capita area of public buildings were no longer prescribed on the national level.

Besides the quota system, the 1950s and 60s also witnessed the imitation and modification of Soviet urban planning procedure in China. In the Soviet Union, the procedure of urban planning and the work of each stage were strictly defined. This was copied to China. As mentioned in last section, at the First Symposium of Urban Construction held in September 1952, the *Procedure of Urban Planning and Construction Design of PRC (draft)*

[26] See Ibid., P.841-846
[27] See, Wang Wenke, "Fan langfei, fan baoshou, dali gaijin chengshi guihua he xiujian guanli gongzuo," *JZXB, Iss.4/1958*, P.6

drawn out by Soviet experts was discussed and adopted as the measure for China's early urban planning. This document divided the procedure of urban planning into four stages to deal with urban plans on different levels, namely, urban planning (master planning), immediate planning (建设规划), detailed planning, and construction design (修建设计).[28] The procedure and method of the Soviet-modeled planning was very complicated, therefore the workload of planning was very heavy. After two years of practice since 1953, it was discovered that the result and the rate of progress of urban planning practice were not able to suit the reality of China's urban development. Then the State Construction Commission decided to carry out the research to constitute an appropriate measure for China's urban planning.[29]

In winter 1955, a team composed of the personnel from institutions under the State Construction and the MBE was established to compile the new measure, and Ya. T. Kravchuk, a Soviet advisor at the State Construction Commission, was invited as the instructor. In a half year, *Temporary Measure for Urban Planning* was finalized and disseminated in July 1956, with the sanction by the State Construction Commission.[30] In comparison with the Soviet urban planning, the procedure prescribed by the new measure was rather simplified. For example, the Soviet urban planning was comprised of three stages: mater planning (long-term planning), detailed planning, and construction design (short-term immediate planning was the additional work of mater planning). Considering the situation that many cities in China were to be newly and urgently constructed, renovated or extended, the new measure cut the procedure to two stages: mater planning and detailed planning. In order to shorten the work time of planning, most of the work in the stage of construction design was expelled to architectural design; only the work directly related detailed planning was kept and merged into the second stage. At the same time, "preliminary planning" as the adaptation of mater planning was brought out. When construction task was urgent and it was difficult to entirely make the master plan, a preliminary plan would be made and used as the basis for the further detailed planning. The new measure also prescribed that the sketch for the disposal of industrial plants or residential area of a newly built industrial city could be made by plant-selecting team together with the urban construction

[28] Wang Dehua, *Zhongguo chengshi guihua shigang*, P.160
[29] Ge Qiming, "Woguo di yi bu chengshi *guihua bianzhi zanxing banfa* dansheng ji," *Wushi nian huimou – Xin Zhongguo de chengshi guihua*, P.55
[30] Ge Qiming, "Woguo di yi bu chengshi *guihua bianzhi zanxing banfa* dansheng ji," *Wushi nian huimou – Xin Zhongguo de chengshi guihua*, P.56

administration. Approved by the State Planning Commission or other concerned governmental departments, such sketches could be used as the basis of urban planning.[31]

In the Soviet-modeled urban planning, master plan played an important role in controlling urban development, but the mater planning upon Soviet quotas immediately brought problems in China's practice. Although the scale of immediate building construction could be controlled through lowering the quota values, the infrastructure and public facilities had to be constructed to meet the requirement of the long-term plan. This problem was pointed out in 1955 and meanwhile, in order to lower construction costs, a series of measures such as narrowing roads and leaving the lands for greenery and public buildings untouched were brought forward. At the same time, it was criticized that the urban planning had laid too much stress on long-term development. At the National Conference of Design in 1957, Li Fuchun stated that long-term planning had been attached too much importance and long-term plans had been too much detailed while immediate construction had not been well arranged. He proposed to only make long-term plans for a few large cities and the cities with many construction projects, postpone long-term planning for small and middle cities, and leave urban planning absent for the cities where only a few factories would be constructed.[32]

According to the 1956 measure, the process of urban planning included master or preliminary planning, immediate planning for the first stage construction, and detailed planning for the coming construction.[33] The measure prescribed "master plans should be made if the requirements are satisfied," in practice however, preliminary plans rather than full-scaled master plans were usually made. Meanwhile, as mentioned, the quota system of urban planning was simplified, especially in 1958. It was thought that the past quota system had been too complicated and inevitably subjective, and it was impossible to make a set of unified quota values for all the country. Therefore, the state administrations only stipulated some key quotas and the principle of quota evaluation, and most of the quota values would be fixed by the localities according to their own conditions.[34]

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[31] Ibid, PP.58-59
[32] Li Fuchun, the report at the national conference of design work, *JZ, Iss.15/1957*, PP.5-6
[33] Wang Wenke, "Fan langfei, fan baoshou, dali gaijin chengshi guihua he xiujian guanli gongzuo," *JZXB, 4/1958*, P.1
[34] Ibid., P.6

In addition to the previous modifications, the effort of revising the artistic tendency in urban planning was witnessed during the period of the first Five-Year Plan. At the beginning when the first batch of urban plans was made, artistic layout composition was very popular. Imitation of a Soviet city plan, urban space axes, symmetrical composition, and radial road system, as well as squares accumulated with public buildings, featured most of the urban plans. Moreover, perimeter block neighborhood layout dominated most of the detailed plans for residential areas. This tendency was criticized in the Anti-Waste Movement in 1955, following the same effort in the Soviet Union since the second half of 1954. Subsequently, as the emphasis was increasingly put on economization, artistic composition in urban planning gradually gave way to functional arrangement, and the ever-criticized "barrack-like" parallel housing layout became more and more popular.

5.3 The Trials of Regional Planning

In the planning system of the Soviet Union, regional planning was very important, because it bridged between the national economic plan and urban plans. The task of regional planning was to locate new cities and to distribute and arrange various economic sectors, such as industrial enterprises, settlements, resorts, rural areas, transportation and infrastructure, on the regional level. It was prescribed in the Soviet Union that construction must be undertaken on the basis of regional planning if concerned existing enterprises, newly built enterprises, and cities serving these enterprises shared common transportation system, electricity supply, material bases, public facilities, or cultural facilities.[35]

At the beginning of the first Five-Year Plan, urban planning in China was based on the work of site selection for industrial enterprises. The site selections were usually hastily conducted by some special teams composed of personnel from various corresponding governments and institutes as well as Soviet experts. It was not until the second half of the 1950s that regional planning was called for to rationally arrange newly built industrial enterprises, industrial cities and workers' towns in advance. Regional

[35] Baragin, D. D., "Sulian chengshi guihua de yiban wenti ji Zhongguo chengshi jianshe de ruogan wenti," *JZ, Special Issue on the First National Meeting of Urban Construction /1954*, P.12

planning was invoked to overcome the passiveness in the work of site selection, urban planning and urban construction during the first Five-Year Plan.[36]

At the 1956 First National Conference of Capital Construction, the Minister in Charge of the State Construction Commission Bo Yibo demanded that regional planning should be undertaken within the year by united forces from all the concerning governments and institutions.[37] Shortly in March, the State Construction Commission released a resolution on starting the work of regional planning. In May, the State Council dissimilated *Decision for Strengthening the Work of New Industrial Districts and New Industrial Cities*, in which the importance of regional planning was stressed as well. In July, the department in charge of regional planning under the Bureau of Urban Construction of the State Construction Commission was upgraded to the Bureau of Regional Planning, and meanwhile, the State Construction Commission enacted *Measure for Making and Approving Regional Planning (draft)*.[38] The first attempts of regional planning were then carried out.

With the help of Soviet experts, the first batch of regional planning mainly on overall industrial arrangements for the regions of Maoming, Gejiu, Lanzhou, Xiangzhong, Baotou, Kunming, and Daye were commenced in 1956, and those on uniting industry and agriculture for Guizhou and Shenyang was started in 1957.[39] But the experimental work of regional planning was soon interrupted in February 1958, when the State Construction Commission was cancelled.

Confronted with the surge of industrial construction in the Great Leap Forward, the work of regional planning was resumed soon by the MBE, which took the responsibility of urban planning after the cancellation of the State Construction Commission. In May 1959, the MBE established a special department for regional planning to organize the work. The first regional planning during this period was that for Chaoyang region in Liaoning Province, made in 1959. A conference to summarize its experience was held subsequently at the beginning of 1960, at which the administrative

[36] See, Bo Yibo, "Wei tiqian he chao'e wancheng di yi ge wunian jihua de jiben jianshe renwu er nuli," *JZ, Iss.7/1956*, P.10
[37] Ibid.
[38] *Zhongguo chengshi jianshe Nianjian1986-1987*, P.129
[39] Ibid.

organization, the methods of regional planning, and the experience of various specialized planning were broadly discussed. The meeting also asked opinions for *Temporary Measure for Regional Planning (Draft)*, which was compiled based on the experience of the Chaoyang regional planning. Anyhow, the Chaoyang regional planning established the precedent for later work, following which, the planning for the regions of Zhengzhou and Xuzhou respectively in Henan Province and Jiangsu Province were soon conducted, and other 39 regional plans were made in 1960. Simultaneously, the theories and methodologies of regional planning became the focal point of the economic geography departments at various research institutions and colleges.[40] The work of regional planning was interrupted again in the period of economic adjustment at the beginning of the 1960s. It was no until 1978 when the Cultural Revolution was over that regional planning could be gradually resumed.

5.4 The Upsurge and Downfall of Urban Planning

At the end of the first Five-Year Plan, reviews on the national economy as the preparation for the second Five-Year Plan were largely carried out. As mentioned in Section 5.2, a series of measures concerning urban planning were issued in 1957. Their main objectives were to lower the cost of urban construction and to simplify the process of urban planning. In April, a workgroup leaded by top leaders of the State Construction Commission and the Ministry of Urban Construction visited Xi'an, Lanzhou and Chengdu to check up the work of urban construction and urban planning. Their report in June concluded the main problems of urban construction, pointing out that the scales had been excessively big, the land occupations had been excessively high, the pursuit of newness had been excessively hurried, and the standards had been excessively high.[41] It seemed that a modest line of urban construction was to be continued.

However, the movement of the Great Leap Forward turned this direction. Responding to the call of largely setting up industrials, almost all the 2,195 cities and towns in China were allocated with various industrial projects. Up

[40] See, Zhang Qixian, "Woguo di er pi quyu guihua shidian zhuiji ," *Wushi nian huimou – Xin Zhongguo de chengshi guihua*, PP. 47-50

[41] Wang Wenke, "Guanyu chengshi jianshe 'si guo' he 'san nian bu gao chengshi guihua' de wenti," *Wushi nian huimou – Xin Zhongguo de chengshi guihua*, PP.43-44

to the end of 1960, the number of industrial enterprises all over China increased to 1,423, and their employee number reached 343,000 – the numbers were respectively 722 and 148,000 at the end of 1957.[42] Simultaneously, many cities were newly set up and urban population drastically went up. Facing this situation, the MBE brought forward the call "adapting the great leap forward of industrial construction with the great leap forward of urban construction" in 1958.[43] A number of cities started to make or modify their master plans and zealously expanded their urban construction. The mode of "great leap forward" was then presented in the field of urban construction. According to a speech delivered by Minister of the MBE Liu Xiufeng, there were 91 cities and more than 1,100 towns had worked out their preliminary plans in this year.[44]

In July, the MBE convened a symposium on urban planning in Qingdao. In the final speech, Liu Xiufeng talked about the work of urban planning on following ten aspects: doing urban planning and urban construction with an overall point of view; the combination of different-scale cities, primarily developing small cities, and building satellite towns around big cities; gradually constructing modernized cities based on actual situations; the standards and quotas of urban planning; comprehending beauty on the basis of utility and economy; short-term planning versus long-term planning; utilizing and renovating old cities; town planning and construction; planning and construction of rural areas; and lastly, carrying out urban construction with "greater, faster, better and more economic results."[45]

Generally speaking, the Qingdao symposium still adhered to the modest line of urban construction. However, in the blindly optimistic mood of the Great Leap Forward, it heightened the key quota-targets of urban planning. For example, it brought forward to use 4 to 6 square meters as the quota of per capita living area and 30 to 60 square meters as the quota of per capita residential land-use, which were respectively fixed to less than 4 square meters and less than 35 square meters in January 1958.[46] Meanwhile, in order to suit the needs to build a large amount of new industrial projects, a fast planning method was introduced in this meeting. This method was then

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[42] *Dangdai Zhongguo de chengshi jianshe*, P.72
[43] Ibid. P.71
[44] Liu Xiufeng, "Chongfe fayang qunian dayuejin de jingyan, wei shixian jinnian geng da geng hao geng quanmian de yuejin er douzheng," *JZ, Iss.7/1959*, P.2
[45] See, Zhao Shixiu, "Woguo chengshi guihua liangge 'chuntian' de huiyi ," *Wushi nian huimou – Xin Zhongguo de chengshi guihua*, PP.21-22
[46] See *Dangdai Zhongguo de chengshi jianshe*, P.73

largely adopted in town planning, some of which were done in days without any geological and other natural materials, and some even without relief maps.[47]

In reality, the mood of exaggeration and hastiness overwhelmed the moderation in the work of urban planning. On the high tide of the Great Leap Forward, many provinces and autonomous regions modified the master plans of their capitals as well as their big and middle cities made during the first Five-Year Plan. Following the industrial target of the Great Leap Forward, the scales of most new plans were excessively large and the standards were excessively high. For example, the new urban plan of Xi'an enlarged the scale of the city to a population of 2.2 million, and at the same time, it adopted Soviet quotas such as per capita 72 square meters residential land and 9 square meters living area. For Xiangfan, a city in Hubei Province with a population of 100,000, an exaggerated plan based on a population of 1.2 million was made.[48]

In April 1960, the MBE convened another symposium on urban planning in Guilin, which was actually a denial of the previous Qindao meeting.[49] It raised the target of "constructing the cities of our country to modernized socialist new cities in the main within approximately ten to fifteen years." The standards brought forward at this meeting were extremely high. For example, it proposed to plan main roads of 80 to 100 meters in width for the metropolises, 60 to 80 meters for large cities, and 40 to 50 meters, or 60 meters for special cases, for middle cities. It also brought forward to "gardenize" the cities and requested systemization of urban green spaces.[50] After the Guilin Symposium, some cities came up with unrealistic slogans, such as "struggle hard for three years to mainly change the urban visage" and "change within three years, greatly change within five years, and totally change within ten years."[51] The vogue of exaggeration became increasingly aggravated in urban planning and construction.

As the Central Committee of CCP began to adjust economic targets in the second half of 1960 when the national economic slumped into severe difficulties, the over-optimism of urban construction vanished, and urban

[47] Ibid., PP.73-75
[48] Ibid., P.75
[49] Wang Kai, "Woguo chengshi guihua wu shi nian zhidao sixiang de bianqian ji yingxiang," *Guihuashi, 4/1994*, P.23
[50] *Dangdai Zhongguo de chengshi jianshe*, P.76
[51] Ibid.

planning was to meet its downfall soon. In September, the State Capital Construction Commission took over the Bureau of Urban Planning, which had been separated from the Bureau of Urban Construction since the beginning of this year, as well as the Urban Design Institute of the MBE. Thereafter, urban planning was fully under the administration of state economic departments. During the cancellation of the State Capital Construction Commission, the State Planning Commission and the State Economy Commission successively took the responsibility.[52] In November, a national meeting re-mentioned the problem of urban planning as being "excessively big in scale, excessively high in land occupation, excessively hurried in pursuing newness, and excessively high in standard," and declared that "urban planning will not be done for three years." Thus urban planning had to meet the calamity after its upsurge. As the result, institutions of urban planning all over China were largely cut down, and personnel of urban planning were greatly reduced. In January 1962, the Bureau of Urban Planning and the Urban Design Institute were put under the leadership of the State Planning Commission. Their work was limited to investigation and research rather than making urban plans.

In 1963, it seemed that the work of urban planning would be resumed. In this year, the State Council convened a national meeting on urban work. The summary of the meeting stated that "in order to improve urban facilities step by step in a planned way, each big and middle city should draw out the immediate plan and modify the master plan." In 1964, the Bureau of Urban Planning (under the State Economy Commission) worked out a new set of quotas of urban planning on the basis of new investigations, and in the same year, the master planning for the steel base Panzhihua was drawn out to match for the construction of the "Third Line"[53].

When the "design revolution" was launched in 1964, problems of urban planning were reiterated again, leading to another tide of denial on urban planning. During the "design revolution," not only planning personnel were criticized, but also planning institutions were further cut down. The Urban Design Institute, which was the only special institution for urban planning in China, was dismantled. Hundreds of urban planning cadres of this institution

[52] Zhao Shixiu, "Woguo chengshi guihua liangge 'chuntian' de huiyi ," *Wushi nian huimou – Xin Zhongguo de chengshi guihua*, P.31

[53] The term "third line" refers to the vast strategic rear regions of China. Proceeding from the needs of preparation for the possibility of war, in the early 1960s the Central Committee and Mao Zedong proposed that the different regions of China be classified into first, second and third lines according to their respective strategic importance.

were dismissed within one afternoon.[54] When the State Capital Construction Commission was reestablished in 1965, it didn't contain any bureau-level department for urban planning. Although the Bureau of Urban Planning was later set up, it only had a manning quota of thirty people. Moreover, this bureau's task was limited to investigation and research, and no more included the work of making urban plans or providing operational guidance of urban planning to localities. So that, urban planning in China almost ceased to exist except the name.[55]

This situation became even worse in the following Cultural Revolution, in which the whole administrative organization of urban construction and urban planning was demolished and most of its personnel were transferred. It was not until 1971 that the work of urban planning was gradually resumed, and the second "spring" of urban planning would not come until the 1980s, when the policy "Reform and Open" brought a blooming development of urban construction in China.

Generally speaking, urban planning was indispensable to urban construction, especially when a large amount of new projects were to be built. However, the Soviet urban planning model did not well suit China's condition when it was copied to the country. The quotas of the Soviet urban planning were too high for China. Although a compromise could be made by lowering the quota values for the immediate construction, it was still difficult to cut down the investment, especially in infrastructure and public facilities constructed according to master plans, even efforts had been exhaustively made. In addition, the land consumption by the mater plans influenced the agriculture output. All the problems were critical during the 1950s and 60s, because the first priority was given to industrial construction while urban construction was treated as a subordinate aspect. If the investment in industrial construction couldn't be ensured, it would be impossible for the overall economic plans to be accomplished. Therefore, a large investment in urban construction was unendurable. When the economy developed smoothly, the problems would be not so evident, but once the economic situation turned to the adverse direction, they became very serious.

Such problem was particularly extrusive during the Great Leap Forward. First, the vogue of exaggeration of the movement made the urban planning

[54] Wang Wenke, "Guanyu chengshi jianshe 'si guo' he 'san nian bu gao chengshi guihua' de wenti," *Wushi nian huimou – Xin Zhongguo de chengshi guihua*, P.46
[55] See, *Dangdai Zhongguo de chengshi jianshe*, P.88-89

extremely unrealistic. Thereafter, the fiasco of the movement drove China's economy into stagnancy and made it impossible to carry on the urban plans made in the past. The urban plans became something useless, thus it became evitable for urban planning to die out. The gap between long-term planning and immediate construction would always accompany China's urban construction, although the work of urban planning could be gradually resumed since the economic situation in China taking a favorable turn in the 1970s.

CHAPTER 6 • INDUSTRIALIZATION AND STANDARDIZATION TO THE QUANTITATIVE DEMAND

6.1 "Increasing Production while Practicing Economy"

As discussed in Chapter 4, China's building industry was very backward before 1949. It merely occupied 1.1% of the national income in 1933, while in comparison, agriculture and industry respectively occupied 62% and 10.3%. Even in 1934, when its output reached the highest level, the net output value of the building industry was merely 1.4% of the national income.[1] Since the founding of the PRC, especially since 1953 when the first Five-Year Plan was started, a large-scale economic construction was gradually launched in order to industrialize China's economy. Accompanying with it, the process of urbanization made progress. The urban population in China grew yearly, so did its proportion in the national population, and the building industry was confronted with a rapid development.

Table 6-1: Urban Population, 1949-60[2]

Year End	Urban Pop. (million)	National Pop. (million)	% of National Pop.
1949	57.65	541.67	10.6
1950	61.69	551.96	11.1
1951	66.32	563.00	11.8
1952	71.63	574.82	12.5
1953	75.66	587.96	13.2
1954	81.55	601.72	13.6
1955	82.85	614.65	13.5
1956	89.15	627.80	14.2
1957	99.49	646.53	15.4
1960	130.73	660.25	19.8

[1] *1953-1957 Zhonghua renmin gongheguo jingji dang'an ziliao xuanbian guding zichan touzi he jianzhuye jua*, P.577

[2] Chan Wing Kam & Xu Xueqiang, "Urban Population Growth and Urbanization in China Since 1949: Reconstructing a Baseline," *The China Quarterly, No.104, Dec./1985*, P.597

In the first Five-Year Plan, the Soviet-aided 156 industrial projects formed the core of the national economy. Since then, the corresponding urban construction and non-industrial civil building construction developed very fast. The total output value of the building industry grew from merely 0.4 billion *yuan*[3] in 1949 to 24.8 billion *yuan* in 1960, and the proportion of it in the national economy rose from 0.7% to 9.2%. Simultaneously, the output of design and survey was growing, respectively from 21 million *yuan* and 25 million *yuan* in 1953 to 129 million *yuan* and 128 million *yuan* in 1957, 5.1 times and 4.1 times of the former.

Table 6-2: Total Output Value of Building Industry, 1949-1965[4]

Year	Total output of society (billion yuan)	Total output of building industry (billion yuan)	% of the total output of society
1949	55.7	0.4	0.7
1950	68.3	1.3	1.9
1951	82.0	2.4	2.9
1952	101.5	5.7	5.6
1953	124.1	8.5	6.8
1954	134.6	8.2	6.1
1955	141.5	8.6	6.1
1956	163.9	14.6	8.9
1957	160.6	11.8	7.4
1958	213.8	20.2	9.4
1959	254.8	23.5	9.2
1960	267.9	24.8	9.2
1961	197.8	9.0	4.5
1962	180.8	7.4	4.1
1963	195.6	9.7	4.9
1964	226.8	15.1	6.7
1965	269.5	17.7	6.6

[3] The currency in this chapter was calculated in new RMB that started circulate on Mar. 1, 1955
[4] See *Zhongguo jianzhu nianjian 1984-1985*, P.543

Table 6-3: Net Output Value of Building Industry[5]

Year	National Income (billion yuan)	Net Output Value of Building Industry (billion yuan)	% of National Income
1949	35.8	0.1	0.3
1950	42.6	0.5	1.1
1951	49.7	0.9	1.8
1952	58.9	2.1	3.6
1953	70.9	2.8	3.9
1954	74.8	2.6	3.5
1955	78.8	3.0	3.8
1956	88.2	5.5	6.2
1957	90.8	4.5	5.0
1958	111.8	6.8	6.1
1959	122.2	7.6	6.2
1960	122.0	7.9	6.5
1961	99.6	2.5	2.5
1962	92.4	3.2	3.5
1963	100.0	4.0	4.0
1964	116.6	5.0	4.3
1965	138.7	5.3	3.8

Table 6-4: Output Value of Design and Survey[6]

Year	Output Value of Design and Survey (million yuan)		
	Design	Survey	Total
1953	21	25	46
1954	42	44	86
1955	56	66	122
1956	116	110	226
1957	129	128	257
Sum	364	373	737

[5] Ibid.
[6] See *1953-1957 Zhonghua renmin gongheguo jingji dang'an ziliao xuanbian guding zichan touzi he jianzhuye jua* , P.502

In the preface of *Jianzhu sheji shi nian* (*Architectural Design in 1949-1959*), a pictorial published in 1959 by the ASC for celebrating the ten-year anniversary of the PRC, a group of numbers illustrated the great quantity of building construction during 1949 to 1959:

> During last ten years, more than 528 billion square meters of various kinds of buildings were constructed. … We have designed a large amount of industrial buildings, and approximately, their floor area was more than 170 million square meters. During 1953 to 1958, the number of the important industrial enterprises put into production was 1,037, and that of middle or small-scale factories and mines was hundreds of thousand. … In cities and industrial areas, we have constructed more than 350 million square meters of (non-industrial) civil buildings. ……[7]

According to the same material, the floor area of residential buildings directly invested by the state during 1953 and 1958 was nearly 136 million square meters, and the newly increased area exceeded the summation of the built area of the former time. Up to 1958, the newly increased building area for high education was more than 11.7 million square meters, and that for high schools and normal schools (not including technical schools) reached 17.7 million square meters, each proximately three times of the original area before 1949. The new floor area for primary schools exceeded 4 million square meters.

The amount of various types of cultural facilities constructed during the decade increased to two to ten times, including 790 cinemas, 1,729 theaters, 867 public libraries, 339 museums and 11 television towers. In 1958, the number of hospitals and sanatoriums reached more than 5,600, which was four times of that in 1949, and the data of large- or middle-scale palestras were 4,000 and eight times. The additional floor area of office buildings during 1953 and 1958 was 21.7 million square meters. Other new public facilities such as hotels, shopping centers, railway stations, airports and so forth were constructed in large quantities as well.[8]

In “Growth of Construction Industry in Communist China”, published in the 22nd issue of *The China Quarterly* in June 1965, the author presented the statistic data of floor areas of the new buildings constructed during 1950 to

[7] Translated from *Jianzhu sheji shi nian*, Introduction, P.1
[8] Ibid., PP.20-22

1958, as shown in Table 6-5. Although the data differs a bit from those described in the previous pictorial, the annual list reveals the increasing output of China's building industry during this period. The statistic data of the total floor areas of various types of buildings constructed in different periods between 1950 and 1965 is shown in Table 6-6, which is quoted from *Zhongguo jianzhu nianjian 1984-1985*.

Table 6-5: New Buildings in 1950-1958[9]

(1000 ㎡ of floor area)

Year	New Civil Buildings					New Industrial Building	Total New Building
	Residence	School	Hospital	Other Civil Building	Total Civil Building		
1950	2,510	540	451	1,605	5,106	3,059	8,165
1951	4,600	1,280	574	2,903	9,357	5,865	15,222
1952	7,510	2,820	943	4,004	15,277	7,336	22,613
1953	13,420	4,220	718	3,492	21,850	14,535	36,385
1954	13,270	4,500	718	3,118	21,606	26,165	47,771
1955	14,460	3,710	595	4,779	23,544	21,548	45,092
1956	25,230	5,040	1005	12,673	43,948	25,153	69,101
1957	28,160	5,430	738	14,724	49,052	17,599	66,651
1958	26,420	6,050	1,558	11,993	46,021	60,979	107,000
sum	135,580	33,590	7,300	59,291	235,761	182,239	418,000

Table 6-6: New Buildings in 1950-1965[10]

(1000 ㎡ of floor area)

Year	Plant	Warehouse	Office	Residence	School	Hospital	Total
1950-1952	3,170	3,030	2,700	14,620	4,640	1,850	46,590
1953-1957	22,390	26,780	17,190	94,540	23,850	5,830	266,400
1958-1962	105,150	45,930	18,930	110,120	33,220	5,760	381,110
1963-1965	18,650	13,270	5,170	42,71	11,450	2,640	108,500

[9] See Chao Kang, "Growth of Construction Industry in Communist China," *The China Quarterly*, Iss.*22, April-Jun./1965*, P.139

[10] See *Zhongguo jianzhu nianjian 1984-1985*, P.551

In general, building construction in China during 1949 to 1965 achieved a fast development. As one of the main branches of the national capital construction, it was attached great importance by the CCP government since the founding of the PRC. At the end of 1952, when China was pacing from economic recovery and the Korean War to a large-scale economic undertaking, the importance of capital construction was heightened to the degree of first priority. The construction force, which was realized as the weak point in comparison with the scale of construction, was then strengthened though transferring and recruiting a large quantity of construction workers as well as design personnel into it. Simultaneously, corresponding administrative organization was set up, as discussed in Chapter 4. In addition, in order to achieve the fast development in the building industry to suit the overall economic situation, a series of modest measures and policies were framed, aiming at "increasing production while practicing economy."

To a centralized planned economy, the definition of design standards was very important. Such efforts were made since the beginning of the 1950s. In June 1952, the State Finance and Economy Commission issued a prescript on housing of the employee in state-operated enterprises, defining the standard of housing allocation as four square meters per person and twenty square meters per family. Based on local conditions, it prescribed per square meter cost of floor area for housing in various cities and regions, from 36 *yuan* to 65.6 *yuan*.[11]

In 1953, China began to import Soviet standards, which, as mentioned in last chapter, took per person nine square meters of living area as the basis for housing design and urban planning.[12] In the Soviet Union, per person nine square meters was taken as the minimal hygienic index, which could guarantee the minimal volume of air for physiological needs as well as the minimal space for the equipment of furniture and the activities of the inhabitants.[13] Because the nine-square-meter quota and other quota values were too advanced in comparison with China's condition, the attempt to adjust the Soviet standards was then carried out. In housing design, the per capita living floor area quota was fixed to four to five square meters – about

[11] See *1949-1953 Zhonghua renmin gongheguo jingji dang'an ziliao xuanbian jiben jianshe touzi he jianzhuye juan*, PP.649-651

[12] "Living area" included the area of bedroom and living room, while kitchen, toilet, aisle and staircase were excluded.

[13] Zhao Fengshi, "Dui chengshi guihua ding'e de ji dian yijian," *JZ(internally published), Iss.1/ 1954*, P.28

a half of the Soviet standard – and for a time being, several families would share a housing apartment. Other floor area quotas of the Soviet Union, such as those for kitchen, toilet, bathroom, and closet, were all copied with a little reduction. Similarly, the living floor area quota for dormitory was fixed to 3 to 3.5 square meters.

The effort of lowering Soviet quotas was presented in the paper "Chengshi jianshe ji xiang ding'e de cankao ziliao" ("References of Several Quotas of Urban Construction"), published in the second issue of *JZ* in 1954 by the Department of Information of the Bureau of Urban Construction of the MBE. As discussed in Section 5.2, this paper suggested using per capita 6-square-meter living area for long-term urban panning instead of the 9-square-meter quota, and in addition, it brought forward a series of lowered area quotas for public buildings.

During 1953 to 1954, the costs of important public buildings and office buildings were greatly high, resulted from "big roofs" and ornaments at "national form" buildings. For example, the cost of Asian Students' Sanatorium was over 300 *yuan* per square meter and that of the Geological Palace in Changchun was 230 *yuan*.[14] If the original foundation were included, the latter would reach 300 *yuan* per square meter, much higher than the stated quota – 125 *yuan*.[15] In February 1955, the prevailing "big roof" architecture was criticized at the Conference of Design and Construction, and then the Anti-Waste Movement was launched in the area of architectural design and building construction. In succession, design institutes modified a large amount of blueprints to cut out roofs and ornaments to save investment.

However, to the administration of economic planning, the costs of non-industrial civil buildings, or "non-productive buildings," were still too high, because such buildings were not regarded as the "main aspect of capital construction." In June 1955, Vice Premier Li Fuchun delivered his report "Lixing jieyue, wei wancheng shehuizhuyi jianshe er fendou" ("Strictly Enforce Economization and Strive for Accomplishing the Socialist Construction") at a meeting participated by chief cadres from various governmental departments and nongovernmental organizations,

[14] See Wan Li , "Guanyu sheji gongzuo de jige wenti," JZ, *Iss.3/1955*, P.19

[15] *1953-1957 Zhonghua renmin gongheguo jingji dang'an ziliao xuanbian guding zichan touzi he jianzhuye juan*, PP.1083-1084. The Geological Palace was built on the foundation of an unrealized building.

delegates of the NPC, members of the CPPCC who were in Beijing, leaders of Beijing and Tianjin, as well as delegates of various special conference in Beijing. This report raised a series of measures to lower the cost of construction, and above all, required to greatly cut down the costs of non-productive buildings. For example, it demanded to cut the per-square-meter costs of college classroom buildings and office buildings from 100 *yuan* to 45-70 *yuan*; that of housing, from 90 *yuan* to 20 or 60 *yuan* respectively for single-story adobe buildings and three-story buildings; that of generic warehouses, from 70-80 *yuan* to 40-50 *yuan*; and that of railway stations, from 80-130 *yuan* to 30-70 *yuan*.[16] It stated as well that any high-standard non-industrial civil building must get the approval from the State Council if it would exceed the new cost standard. For special laboratories, research institutes, and depositories, the corresponding ministries could make special standards but the standards must get approved by the State Council. The Vice Premier even prescribed definite rates of cost reducing for various building construction in 1955, such as 10% for the projects which would be started in June, and 15% for those constructed after June. In addition, he proposed to construct more single-story buildings and semi-permanent multi-story buildings in isolated factories and mines, as well as in suburban or peripheral areas of cities, to lower the costs.[17]

After the meeting, new quota targets of housing, office building, classroom building, mess hall, and warehouse were soon decided. In July, the Chief Bureau of Design of the MBE mustered corresponding people to study out the area quotas of dormitory, apartment, and office in North China region, based on which, standardized design for a part of such buildings were rapidly worked out. In the new standardized design, the per capita living area quotas of apartment building and dormitory were definitely fixed to 4 - 5 square meters and 3 - 3.5 square meters, and for office building, the per capita working area quota was cut from 5 square meters to 3.5 square meters, which included the spaces of accessorial rooms.[18] In order to reduce the overall floor area of non-industrial civil buildings, the standardized design cut down the areas of accessorial parts, such as those of kitchens, toilets and circulation parts.

[16] Renmin ribao Editorial, "Jianjue jiangdi fei shengchanxing jianzhu de biaozhun'," *JZ, Iss.7/1955*, P.5
[17] See Li Fuchun, "Lixing jieyue, wei wancheng shehuizhuyi jianshe er fendou," *JZ, Iss.7/1955*, PP.10-11
[18] Zou Zhiyi, "Tantan xin biaozhun de bangonglou sheji," JZ, Iss.8/1955, P.16

In the area of architectural design, the policy "utility, economy and, if possible, beauty" was reiterated and stressed after the Anti-Waste Movement, and became an infrangible rule for architectural activities. This policy would be traced back to the principle "utility, firmness and economy" that Vice Chairman Zhu De raised in 1949.[19] Similar parlance was present in a regulation for capital construction issued by the regional government of Northeast China in 1950, which outlined design policy as "utility, economy, endurance and safety."[20] After the establishment of the MBE, the policy for architectural design was discussed, and due to the insistence of some architects and the support from the Soviet expert Baragin, it was reframed as "utility, safety, economy, and proper consideration of beauty."[21] In the Anti-Waste Movement, the clear definition of the policy as "utility, economy and, if possible, beauty" was put forward and explained by Li Fuchun in the 1955 speech on strictly enforcing economization, according to which, the aspect of beauty was subordinate. Li Fuchun stated, "The 'if possible, beauty' based on the policy of utility and economy means neatness and simplicity, rather than extravagance (luxury)."[22]

To lower the cost of building construction, a series of technical measures were executed in practice, from the design to the construction. Such measures had been already studied by some design institutions and popularized by the government since the early 1950s. In the second issue of *JZ* in 1954, a paper by North China Design Company on economization in design was published, which was introduced by the MBE as the reference of design for other design institutions. This paper summarized 48 items of measures on lowering building cost, covering almost every aspect of building construction, including those concerned with architectural design, structural design, and facility design, as well as construction details and components.[23]

Since 1953, due to the introduction of cheaper structural systems and more accurate structural calculations, as well as the measures in design and

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[19] Tao Zongzhen, "Xin zhongguo 'jianzhu fangzhen'de tichu yu qishi," *Nanfang jianzhu, Iss.5/200*5, P.4
[20] See *1949-1953 Zhonghua renmin gongheguo jingji dang'an ziliao xuanbian jiben jianshe touzi he jianzhuye juan*, P.283
[21] See Tao Zongzhen, "Xin zhongguo 'jianzhu fangzhen'de tichu yu qishi," *Nanfang jianzhu*, Iss.5/2005, P.5 and *1949-1953 Zhonghua renmin gongheguo jingji dang'an ziliao xuanbian jiben jianshe touzi he jianzhuye juan*, P.384, P.385
[22] Tao Zongzhen, "Xin zhongguo 'jianzhu fangzhen'de tichu yu qishi," *Nanfang jianzhu, Iss.5/200*5, P.6
[23] See Design Company of North China (1954), "Zai jianzhu sheji zhong zenyang lixing jieyue," *JZ(internally published), Iss.2/1954*, PP.13-14

construction, the cost of building construction went down, particularly in some specific types of structures. For example, the average costs of brick-concrete mix-structured buildings were respectively 18.75% and 31.25-43.75% lower in 1953 and 1954 than that in 1952.[24] But the effect in average cost of overall building construction was not so obvious before 1955: it was approximately 75 *yuan* per square meter in 1953, and 74 *yuan* in 1954; for housing, it was respectively 69 *yuan* and 70 *yuan*.[25]

Since the second half of 1955, in order to satisfy the new cost quotas raised by Vice Premier Li Fuchun, the Soviet design principle "caring for people" was substituted by the political demand that design should "materialize the state policies on construction and investment."[26] After the Li Fuchun's speech, the MBE issued a series of detailed measures on lowering the cost of ongoing or coming building construction. The measures concerned many aspects, such as reducing the height between floors by 20 centimeters; replacing individual bath rooms and toilets with shared ones; substituting single-layered windows for double-layered ones; and removing equipments of water, electricity, heating, fire protection, and other facilities as much as possible. In addition, cheaper materials were used to replace the more expensive ones, and folk materials such as adobe were encouraged to build non-load-bearing walls.[27] At the same time, because single-story housing buildings were much cheaper than multi-story ones due to the large application of folk materials such as adobe, bamboo, and straw, and because they could be easily built, the MBE's measures attached great importance to this kind of buildings, notwithstanding the problem of larger land consumption.[28]

Through the various efforts, the costs of non-industrial civil buildings dropped distinctly since 1955. The average cost decreased from 70 *yuan* or more per square meter in 1954 to 60 *yuan* in 1955.[29] But the technical measures also caused some problems. As a means of controlling the costs, new standardized design was hastily made and distributed. Due to the rough

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[24] Wan Li , "Guanyu sheji gongzuo de jige wenti," *JZ, Iss.3/1955*, P.18

[25] *1953-1957 Zhonghua renmin gongheguo jingji dang'an ziliao xuanbian guding zichan touzi he jianzhuye juan*, P.938

[26] See Wang Tangwen, "Youguan biaozhun sheji de jige wenti," *JZ, Iss.8/1955*, P.14

[27] MBE, "Guanyu caiqu jishu cuoshi xiugai dangqian sheji yi jiangdi jianzhu zaojia de zhishi," *JZ, Iss.7/1955*, PP.15-16. It contains 78 technical measures for lower the cost and were also took in the standard design in 1955.

[28] It was 53-42% cheaper than multi-story buildings. See Zhai Dalu (1955), "Bianzhi pingfang jianzhu fang'an de yixie tihui," *JZ, Iss.8/ 1955*, P.15

[29] See Table 6-7

regional division and incomprehensive considerations, these blueprints couldn't be well applied in diversified localities. For example, sometimes the folk materials introduced in some design couldn't be fully supplied in different places; and usually the introduction of new techniques couldn't suit the material supply and the construction condition of a locality. The standardized design also had problem in suiting old urban plans, most of which had been made based on earlier standardized design. Moreover, due to the change of design as well as the cancellation of many projects, the overstock of construction materials became extremely graveness.

Table 6-7: Average Costs of Non-Productive Buildings in 1953-1956[30]

(y*uan*/㎡)

	1953	1954	1955	1956	Average
Non-Productive Buildings	75	74	60	44	60
Residence	69	70	60	42	55

Although the problems were soon recognized and problematic measures were revised in the following years, the direction and tactics of reducing building costs, especially the costs of non-industrial civil buildings, were established. Measures of decreasing floor heights, adopting cheaper materials and construction techniques, reducing the areas of accessorial parts, as well as increasing the proportion of single-story houses were frequently invoked.

In the beginning, because industrial construction was regarded as the core of national capital construction and most of the large-scale industrial enterprises were designed by the Soviet Union, lowering the costs of industrial buildings was not so largely pursued in comparison with the undertaking of non-industrial buildings. Although economizing industrial construction was also called for in 1955, concrete corresponding measures were not systematically requested until 1957, when the first Five-Year Plan was nearly accomplished and the design institutions in China were ready to conduct the design work for industrial construction. In this year, the MBE

[30] 1953-1957 Zhonghua renmin gongheguo jingji dang'an ziliao xuanbian guding zichan touzi he jianzhuye juan, P.938

issued *Temporary Measure for Lowering the Standards of Industrial Buildings in 1957*, bringing forward the concerned guideline. Following it, investigations were carried out, and a series of concrete measures on lowering industrial building costs were studied out and popularized. These measures concerned with various aspects, such as decreasing plant areas, increasing building densities, lowering standards, compressing the areas of welfare quarters, and using cheaper components and materials. Study on architectural design for welfare quarters to decrease their areas and lower their standards was then largely commenced.

The pursuit to decreasing the cost of building construction was also seen in the aspects of technical design and construction technology. In the early 1950s, it was noticed that approximately in average, the load values used in the structural calculations in China were 50% higher than those prescribed by Soviet criterions, and the adopted permitted stresses of various building materials were 20% lower.[31] Thus Soviet criterions were soon translated and adopted in China's design practice. Some other "advanced experiences" of the Soviet Union, such as a kind of triangular truss, prestressed prefabricated concrete components, the theory of plasticity for structural calculation, brick masonry structure, and site vertical design, were learned and applied.[32] In the 1950s, prestressed prefabricated concrete was extensively used in building construction to replace steel that China was lack of. The structural calculation based on destruction phases, learnt from the Soviet Union as well, substituted the calculation based on allowed stress, saving 20% of steel. Since 1956, the calculation based on ultimate stress was adopted, saving 5% more of steel.[33] The concrete shell structure, which largely emerged since 1958, was a continuity of this approach.

Besides the effort of lowering building costs, increasing the speeds of construction and design was pursued. At the beginning of the 1950s, the problem of "the construction cannot catch up with the economic plan, the design cannot catch up with the construction," particularly the latter part, was serious. In order to speed up building construction and design, the government began to make an effort to reinforce state-operated construction enterprises and design institutions. Meanwhile, administrative measures such as strengthening plan management and carrying out labor emulation

[31] *1949-1953 Zhonghua renmin gongheguo jingji dang'an ziliao xuanbian jiben jianshe touzi he jianzhuye juan*, P.380

[32] The triangular truss was called "Sulian renzi wujia" 苏联人字屋架.

[33] See Wang Dajun, "Jianzhu kexue jishu de juda fazhan," *JZ, Iss.19/1959*, PP.25-26

were invoked. In building construction, industrialization was commenced, and in the design area, standardized design and repeatedly usage of blueprints was conducted.

The year 1958 was a particular period for China's building construction. The Great Leap Forward Movement launch in this year drove the country to a radical direction. In order to achieve an exaggeratedly high speed, the "technical revolution" was called on in the building industry. Thus all sorts of implements and technologies welled up in construction sites, regardless of whether they were advanced or unrefined. In the design area, the procedure and the depth of blueprints were all simplified, and to the extreme, the so-called "assembled drawing" – namely pasting the parts cut from other drawings to make new drawings – was popularized in design institutions. At the same time, in order to overcome the shortage of main construction materials, a series of "new" substitutes were introduced. For example, fiberglass was used to replace rebar, high-pressure glass tube was used to replace steel tube, sand or lime was used to replace cement, magnesite was used at doors and windows to replace wood, and so on. A typical instance was a building without using steel, wood, cement or brick, constructed in Harbin in September 1958.[34]

Due to accidents happening at many construction sites, an effort to rectify the rashness in building construction was made at the end of 1958. It gradually restored the broken procedures, criterions, rules and regulations in design and construction to reestablish the order. But the direction was turned again in 1964, when Chairman Mao delivered his call of "learning from Daqing." Thereafter, the so-called *gandalei* building – a kind of compacted earth house that the workers of Daqing oilfield dwelled – was advocated. In despite of low living condition and safety problem, the low-cost temporary single-story houses, which were largely built in Daqing by the workers themselves, saved a large amount of state investments. Following Mao's call, a great deal of earth structures was built all over China. The pursuit of "increasing production while practicing economy" went to the extreme.

[34] See. Lai Jifa, "Jiji de shengchan he tuiguang shiyong xinxing jianzhu cailiao" , *JZ*, *Iss.23/1958*, PP.2-3

6.2 The Industrialization of Building Construction

At the beginning of the 1950s, prefabricated construction was unknown in China, and normally all the construction work was done in situ. At the same time, because the construction enterprises were more used to manual work, the utilization ratio of machinery was very low, and sometimes, construction machines were even idled.[35] When the first Five-Year Plan started, the importance of industrialized construction as it could ensure the quality and the technical requests, and especially, could increase construction speed, was articulated, and industrialized construction was firstly adopted to build Soviet-aided projects.

The significance of industrialized construction was stressed after the Soviet meeting on architecture and construction convened in Moscow in November 1954, of which the basic theme was to promote the industrialized construction. In the subsequent meeting in China in February 1955, same theme was brought forward to architectural circles and construction enterprises. In the final speech of this meeting, MBE Minister Liu Xiufeng stated:

> Developing prefabrication and mechanized construction, as well as adopting prefabricated concrete components and structures, can quicken the speed of construction, ensure the quality of construction, save material and money, lower the costs of projects, and reduce heavy physical labor, so that, it can win great effects in economy. Implementing prefabricated and mechanized construction can also reduce the chaos at construction sites, in favor of well-ordered constructing.[36]

The minister accented that the implementation of industrialization in the Soviet Union was the "unalterable direction of the development of our building industry." The meeting also emphasized standard design and stressed the role of standard design in promoting industrialized construction, besides its other advantages.

However, the situation in China was different from that in the Soviet Union. In comparison with the latter, in China, the production ability of machinery

[35] *1953-1957 Zhonghua renmin gongheguo jingji dang'an ziliao xuanbian guding zichan touzi he jianzhuye juan*, P.552
[36] Ibid., P.9

and the supply of liquid fuel for heavy machines were much lower while the supply of labor was ample. In addition, due to the scarcity of hoisting equipments, the high mechanical expense, and the low production capacity of construction components, the cost of prefabricated construction was normally higher than that of cast-in-situ construction at that time. Similarly, mechanized assembly with large-size masonry blocks was usually more expensive than manual assembly with small-size masonry blocks.[37]

In such situation, China adopted a modest strategy to develop industrialized construction. Mechanized construction was executed to build the most important projects such as foreign-designed factories, momentous projects, and high-rise buildings, where the construction couldn't be put up only by manual work. If manual work was competent, it would be appealed to as much as possible, especially in the construction of non-industrial civil buildings. Due to the limited investment, only a few permanent prefabrication factories would be built, despite large-scale permanent prefabrication factory was better in production and more economical in long-range than provisional ones. Many of the provisional prefabrication factories would be built on a low level. To save the investment, only indispensable and large mechanical equipments and those for composing integrated sets with existing equipments would be purchased from other countries, while small and simple machines would be manufactured in China and extensively used.

In *Decision on Reinforcing and Developing the Building Industry*, disseminated in May 1956, the State Council confirmed the strategy and disposed a practical plan to advance the industrialization of building construction. The decision required the construction of key industrial projects, especially those not able to be built by manual work or those built in the places where labor supply was insufficient, to implement factory fabrication and mechanization for heavy work within five to seven years. For the construction of small-scale factories and non-industrial civil buildings, the time was prolonged to twelve years, and manual work would be relied on in a considerably long time. This document also assigned missions to the State Construction Commission, the State Planning Commission, and the First Ministry of Machinery Industry, as well as other concerned administrative departments. The overall development of industrialization, the construction of component bases, the production of

[37] Jin Oubu, "Lixing jieyue, fangdui sheji zhong de langfei xianxiang," *JZ, Iss.5/1955,* P.10

construction machinery, and the increase of machine repair factories, would be planned by these departments. In addition, the State Construction Commission and the corresponding ministries were required to identify the degree of fabrication and mechanization of each project when the project's preliminary design was approved. The State Construction Commission was assigned the work of organizing design institutions to carry on the study of standardization and rapidly compile catalogues and drawing books of standardized components.

With the promotion and planning by the governments, the industrialization in building construction paced forward since the second half of the 1950s. The notion of industrialization was comprehended in three aspects: the standardization of design, the factory production of materials and components, and the mechanization of construction. The development of factory production and mechanization is discussed in following paragraphs, and that of design standardization will be discussed in next section.

The main progress of factory production in China during the 1950s and 60s was made in the area of prefabrication of concrete components. The technique of prefabricated construction was learnt from the Soviet Union during the first Five-Year Plan. While heavy and big concrete components were still cast in situ, various plants, workshops and stations were founded on construction sites to process reinforcing bars and reinforced concrete and to produce light and small components such as doors, windows and molding boards. Divorced from construction sites, these plants, workshops and stations developed into independent factories and production bases.

Due to the limited investments, only a few high-standard permanent factories were built. For easy transportation of materials and productions such as metal components, electrical and sanitary equipments, as well as construction machinery, those permanent factories were centrally built on regional level, and permanent factories of timber processing were mostly built in big cities. At the same time, factories of prefabricated concrete components were differently built according to the conditions. Only regional level factories that supplied productions for a big-range of construction sites were built as permanent ones with advanced facilities and high-level mechanization. The city-level factories for the needs of individual cities and their peripheries were built with low-level mechanization or semi-mechanization, and if condition permitted, they would be built as open-air factories. In the places where the quantities of

construction were relatively small and not to be further expanded, temporary open-air factories with indispensable machinery were built. Overall, in the construction of prefabrication bases, more emphasis was attached to temporary factories of concrete components. Although it was once accentuated to build more permanent factories of prefabricated concrete components at the end of 1955 and the beginning of 1956, the modest line of developing prefabrication was followed in principle during the first Five-Year Plan.[38]

By the end of the first Five-Year Plan, a number of prefabrication factories had been built. In the MBE system, the number reached 73, among which 40 were newly built and most of them were built during 1955 and 1956. Meanwhile, the ratio of prefabricated construction (the value of prefabricated components in total workload value) in 1957 reached 23%.[39] Prefabricated construction was applied at most parts of buildings, except foundations and walls. Prefabricated column, beam, truss, purlin, roof panel and so forth became normal in building construction.

In 1958, confronted with the fast speed of construction, in situ prefabrication came forth again. At the same time, it was thought that the condition for building permanent or semi-permanent prefabrication factories in many places became ripe, because long-range plans of state and local economic construction had been sketched, transportation, especially railways, had been improved, and equipments for building prefabrication factories could be domestically produced. It was regarded possible to unify the planning and construction of construction bases in various regions after the reorganization of the system of building industry. Nevertheless, the tactic of building prefabrication factories brought forward this time was still modest: it still stressed adequate scale and low standard, in favor of open-air prefabrication, fast setting cement, and natural curing.[40]

At the end of the 1950s, prefabrication made further progress in China. New technologies were witnessed one after the other in many new experimental projects. The Minzu Hotel in Beijing is a representative case. The 12-story and 34,000-square-meter edifice is China's earliest high-rise building built with a prefabricated concrete frame structure. It reflected the maturity of

[38] See Liu Xiufeng, "San nian lai de huigu he jinhou de gongzuo," *JZ, Iss.6/1957*, P.3
[39] Liu Xiufeng, "Guzu ganjin, lizheng shangyou, geng duo geng kuai geng hao geng sheng de wancheng guojia jianshe renwu," *JZ, Iss.8/1958*, P.3
[40] See, Ibid., PP.11-12

prefabrication in China's building construction. Prefabrication was largely applied in housing construction as well. All-prefabricated houses built with large-scale blocks, large panels, or vibrated-brick wall panels constantly emerged in big cities such as Beijing and Shanghai.

Mechanized construction, as another aspect of industrialization, made progress during the 1950s and 60s, at a certain degree. In order to build the key industrial projects, which were designed by Soviets with the mode of prefabricated construction, a batch of construction machinery was purchased from abroad, especially in 1955 and 1956. Together with the machines taken over from old construction enterprises, the basis of mechanized construction was then established. Mechanized construction was first applied in earthwork, foundation engineering, and component installation. Since the middle of the 1950s, China began to domestically manufacture foreign machine copies and self-designed machines, while still purchased heavy machines from foreign countries. Meanwhile, small and simple machines became increasingly popularized. But construction machinery was still insufficient, and because of that, mechanized construction could only be applied mainly to build industrial projects.

Table 6-8: The Amount of Machine Owned by Building & Installation Enterprises 1953-1956[41]

Year	1953	1954	1955	1956
Excavator	45	112	159	286
Bulldozer	336	384	529	691
Carry Scraper	172	206	314	570
Tractor	103	162	215	231
Crane	513	955	1376	2123
Motorlorry	3237	5238	5871	6735
Concrete Agitator	1676	2249	2443	2908

[41] See *1953-1957 Zhonghua renmin gongheguo jingji dang'an ziliao xuanbian guding zichan touzi he jianzhuye juan*, P.589

Since the end of the first Five-Year Plan, mechanized construction could cover the main stages of key industrial projects. In the MBE system, for example, in earthwork, concrete mixing, component hoisting, and vertical transporting, the ratios of mechanized construction respectively arrived at 30%, 81%, 80%, and 36% in 1957.[42] While in the construction of mass non-industrial civil buildings, the level of mechanization was all along very low. Such construction was executed by manual work on the whole except vertical transporting, which would use a few simple machines.

As mentioned at the beginning of this section, the utilization ratio of machinery in building construction had been relatively low. Since the middle of the 1950s, measures such as fixing annual output targets of machines and implementing double-shift machine operation were carried out to heighten the utilization ratio. In addition, better organization of mechanized construction was sought, and a responsibility system of using and maintaining machines was set up. However, the problem of low utilization ratio was not well solved. Later in 1964, it was still reiterated by the MBE's Vice Minister Yumin in a report, who spoke at length about the measures for heightening the utilization ratio.[43]

At the end of the 1950s, it was thought that modern machinery should not be taken as the only way to improve the level of mechanization. Raw machinery, small and light machinery were all regarded as important approaches. The tactic of simultaneously developing mechanization, semi-mechanization, and the amelioration of implement to gradually promote the level of mechanization was established. An upsurge of the amelioration of manual implement was witnessed during the Great Leap Forward. On the sites of key construction projects in the twenty-three provinces[44], a large quantity of "ameliorated" implements, such as handcarts and chain wheels, were extensively applied to substitute shoulder poles. According to a material published in July 1958, there emerged approximately 3,800 types of such ameliorated implements, new implements, and new construction machines during April and May of this year.[45] The MBE even held an exhibition in Shanghai in June to popularize these implements. This trend soon immerged following the failure of the

[42] Liu Xiufeng, "Guzu ganjin, lizheng shangyou, geng duo geng kuai geng hao geng sheng de wancheng guojia jianshe renwu," *JZ, Iss.8/1958*, P.3
[43] See, *Zhongguo jianzhu nianjian 1984-1985*, P. 46
[44] Including provinces, Centrally Administered Municipalities, and autonomous regions
[45] Liu Xiufeng, "Zhengzhi guashuai, shixian 'liang can yi gai', Da nao jishu geming," JZ, Iss.13/1958, P.4; JZ, Editorial, "Jianzhuye de jishu geming bixu kuaimajiabian," *JZ, Iss.13/1958*, P.8

Great Leap Forward. Afterwards, ameliorating manual implements was not anymore blatant, but it was actually followed up, together with the strategies of developing industrialization established since the middle of the 1950s.

6.3 The Development of Standard Design

Same as urban planning, the idea of "standard design", namely, the work to provide standardized design, was brought from the Soviet Union. In the Soviet Union, the policy of industrialized construction was raised at the First and Second Construction and Architectural Conferences of the Soviet Communist Party. The advantage of industrialized construction was regarded as it could quicken construction speed, lower cost, and save labor. Industrialized construction required standardization of design, mass production of building components, and systematic organization of construction.[46] Soviet standardized design was surely a product of the planned economy. For example, the quota-target system, formulated by the state, provided the basis for the standardized design. By fixing construction prices and per capita or per family floor spaces, the state could precisely determine the scale and the output of the construction. This was particularly important to the centrally controlled economy, under which the state was the sole investor. Somehow, standard design was the core of industrialized construction, because it provided the basis for planning and construction, as well as the design for producing specific building components.

Standard design for building construction was differentiated into three levels, respectively for buildings, units, and components. In China, standard design on building level for non-industrial civil architecture during the 1950s and 60s covered apartments, dormitories, kindergartens, schools, refectories and offices, and it was early started since 1952. Building-level standard design was conducted for industrial buildings as well. In the early 1950s, most of the key industrial projects were design by the Soviets, and China's standard design for industrial buildings mainly aimed at standardized components. But meanwhile, it also included the design for some universal standardized plants. As Chinese architects and engineers gradually got familiar with industrial architectural design, standard design for various types of plants, such as fertilizer factories, oil refineries, textile mills and cold stores, was worked out. In order to be more flexible, standard design on unit level were

[46] Lü Junhua, Rowe P.G.& Zhang Jie, *Modern Urban Housing in China 1840-2000*, P.124

adopted for some buildings. For example, in standardized housing design, the buildings were broken down into units based on staircases, while in the design for hospitals, schools and so forth, the buildings were taken part into functional units such as nursing units and classrooms. With different combination of the units, a building was composed. Component-level standard design made building components standardized, serialized and generalized. It was the basis for standardized design and production. In China, component-level standard design was conducted firstly and largely in plant design, and a series of atlases of standardized components and construction details, especially for the construction of industrial buildings, were compiled during the 1950s and 60s.[47]

Standard design in China was firstly commenced in the region of Northeast China for mass non-industrial civil buildings. In 1952, as an attempt to overcome the shortage of design force and to solve the problem of low level and quality in construction and design, standard design was initiated by the regional government.[48] Under the guidance of Soviet experts, more than twenty sets of standardized design for general apartments, dormitories, bathrooms, office buildings, and warehouses, as well as more than ten sets of standardized blueprints for facility structures, were made in this year. By 1953, the total floor area of the buildings constructed according to standardized design in this region had reached more than 600,000 square meters, accounting for more than 20% of the overall construction task.[49]

Due to its importance to the planned economy, standard design was gradually promoted by the central government. At the end of 1953, the State Planning Commission issued a direction to the "macro-regions," requiring them to rapidly make out standardized design for apartments and dormitories in order to construct such buildings with united regional standards. In succession, design institutions in each region began to establish special departments on standard design. These departments soon made and published a good many working drawings for various standardized buildings. In May 1954, the MBE disseminated *Temporary Measure for Adopting the Working Drawings of Standard Design*, prescribing a series of measures on the usage of those drawings.[50]

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[47] Up to today, the standard design institutions still publish the atlases for citations in working drawings.
[48] See *1949-1953 Zhonghua renmin gongheguo jingji dang'an ziliao xuanbian jiben jianshe touzi he jianzhuye juan*, PP.383-384
[49] *Dangdai Zhongguo de jianzhuye*, P.258
[50] See. MBE, "Guanyu shiyong biaozhun sheji shigongtu de zanxing guiding," *JZ (internally published), Iss. 2/1954*, P.23

In general, standard design did not get fast progress in the beginning, when its advantage of saving design labor was mainly acknowledged. Design institutions did not attach much importance to it, so that they only deployed a small quantity of design personnel on the work. In comparison with individual architectural design, architects and engineers were less interested in making standard design. Because there was no unified administration in the governmental system, the work of standard design was usually repeated or overlapped. The made standardized design was usually too diversified so that it often caused problems in construction. Moreover, due to the lack of design criterions and fixed quota-targets, it was not well-founded to undertake standard design. This situation was turned around in 1955.

In November 1954, as mentioned many times, the Soviet Union convened the conference on architecture and construction to promote industrialized construction and standard design. Following the meeting, China launched the Anti-Waste Movement in the fields of architecture and building construction, and on January 20th, 1955, the MBE issued a directive, requiring the concerned people to study the documents of the Soviet conference. Later in February, the MBE convened a meeting attended by more than 370 people from architectural design institutes and construction enterprises. The meeting sharply criticized the "revivalist" approaches in the past years and at the same time, reviewed and highly emphasized the standard design. The MBE required the design institutions to immediately enrich force on standard design, and criticized architects and engineers who did not like to conduct standard design as being infatuated with capitalist masterwork-oriented thought.

In the final speech of the meeting, Minister Liu Xiufeng raised the following aims of the standard design: standardization of design dimensions, standardization of building materials, standardized components and details, and standardized design for buildings.[51] The MBE took the responsibility to frame area quotas, economic targets, and technical qualifications as the precondition of standard design, and the Chief Bureau of Design under the MBE was disposed with the corresponding work.[52] After the meeting, the work of standard design was soon carried through in the MBE system.

The first progress was the definition of the modular system. At the end of February and the beginning of March in 1955, the Chief Bureau of Design

[51] Liu Xiufeng, final speech at the Working Conference of Design and Construction, JZ, Iss.03/1955, P.7
[52] See Ibid., PP.7-8

convened two meetings to discuss the module system with chief engineers and other concerned people from various design institutions. Following the Soviet Union, the result of the meeting took ten centimeters as the basic module (M0), despite it was inconsistent with the size of the largely used brick. It preliminarily defined the multi-module sequence for non-industrial civil buildings, which was based on the increment of twenty centimeters (2M0) (see Table 6-9), while left the sequence for industrial buildings for further study.

Table 6-9: Multi-module Sequence for Civil Building Framed in 1955

Dimension		Increment
Plan	＜500cm	20cm
	＞500cm	40cm
Height	＜400cm	20cm
	400-600cm	40cm
	＞600cm	60cm

In June 1955, the central government launched the movement “Strictly Enforcing Economization”, which demanded to greatly cut the costs of non-industrial civil buildings and framed a series of new quota-targets for various types of such buildings. Subsequently, the MBE issued detailed measures on lowering the costs of ongoing and coming building construction.[53] In July, the Chief Bureau of Design mustered design personnel to study out the area quotas for dormitory, apartment and office buildings in North China region, and the design institutions of the region rapidly worked out the standard design for a part of such buildings on the level of preliminary design. In Northeast China and the drainage area of the Yangzijiang River, new standard design was also carried to the same stage according to new cost quotas.[54] Standard design for mass non-industrial civil building was soon made in other regions as well. Meanwhile, the design of standardized components for universal prefabricated concrete-structure single-story plants based on six-meter column distance

[53] See MBE, “Guanyu benbu jibenjianshe lixing quanmian jieyue de zhishi,” *JZ, Iss.7/1955*, PP.13-14, and MBE, “Guanyu caiqu jishu cuoshi xiugai dangqian sheji yi jiangdi jianzhu zaojia de zhishi,” *JZ, Iss.7/1955*, PP.15-16 for the measures.

[54] Yan Zixiang, “Genju zhongyang lixing quanmian jieyue de zhishi zuzhi jianzhu sheji gongzuo,” *JZ, Iss.8/1955*, P.12

was conducted. At the beginning of 1956, the preliminary design was approved, thereafter, the working drawings were published.

By October 1955, under the leadership of the State Construction Commission, the MBE and other corresponding administrative departments had worked out various new economic quota-targets as well as the standardized plans for whole sets of non-industrial civil buildings. The foundation of standard design was then established. Since 1956, standard design became a routine work of design institutions, and standardized design for various civil buildings was yearly published.

Further effort on promoting standard design was witnessed in 1956. In May, the State Council issued *Decision on Reinforcing Design Work*, which attached great importance to standard design and regarded standard design and repeated usage of blueprints as "an important measure of shortening design time, ensuring design quality, quickening construction, and creating the conditions for industrializing building industry."[55] In the second section of this document, the State Council assigned missions of standard design. Firstly, it required the concerned ministries to sort out and catalog the materials of standard design from the Soviet Union, and design institutions to select and catalog economical and reasonable design that could be reused, while it assigned the State Construction Commission the responsibility to collect and compile those materials. Secondly, it required design institutions to make plans to increase the utility ratio of standard design for the following years. Thirdly, it demanded design institutions to make an effort to accomplish standardized design for various non-industrial civil buildings before 1958, in order to construct most housing and public buildings with standardized design since the year. Fourthly, it asked the concerned ministries to yearly make the plan to progress the work of standard design, and assign them concrete tasks of organizing various standardized design in 1956 and 1957. Fifthly, it burdened the State Construction Commission the responsibility of organizing, managing and supervising standard design, and demanded the commission to establish a special library for standard design within 1956, which would be further developed to a special design institute. Lastly, the State Council required each of the large-scale design institutes to set up a special department focusing on standard design.[56]

[55] *Zhongguo jianzhu nianjian 1984-1985*, P.15
[56] See, Ibid.

Organized by the State Construction Commission, standard design was systematically conducted in 1956 and 1957. Within the two year, the MBE system, which was in charge of industrial building construction, compiled a set of drawing booklets of standardized components and fittings for general single-story plants. The ministry also disseminated *Temporary Method for Making, Approving and Using Standardized Design* in 1956 to strengthen the administration. The Ministry of Urban Construction system, which was in charge of urban construction and non-industrial civil buildings, worked out standardized design for various types of mass non-industrial civil buildings, such as apartments, dormitories, schools, kindergartens, nurseries, hospitals, and offices. In addition, the MBE system made a batch of standardized electrical design, while departments and institutions under the MBE, the First Ministry of Machinery Industry, the Second Ministry of Machinery Industry, and the Ministry of Power Industry worked out that of heating and ventilation.[57] The goal that the State Council expected in May 1956 was mostly achieved.

At the very start, standard design for industrial architecture was behind that for non-industrial civil architecture. According to a material issued by the State Construction Commission in April 1955, by that time only some cotton textile mills under the Ministry of Textile Industry had been constructed with standardized design, and a few of other industrial ministries had just started the study on standardization or only had made a plan for progressing standardization.[58] During the first half of the 1950s, most of the industrial buildings were designed individually. At the same time, due to the lack of design labor, especially the personnel for industrial design, the problem "design cannot catch up with construction" was particularly serious in industrial construction. For example, the design institutions in the MBE system could only deliver approximately 60% of the planned blueprints before 1956.[59] This problem directly hindered the industrial production, which, for China's economic construction at that time, was of utmost importance.

In face of such situation, the MBE, which took most responsibilities of the design and construction of industrial buildings, began to promote standard design and reuse of blueprints in 1956 to fasten the design speed. By that

[57] *Dangdai Zhongguo de jianzhuye*, PP. 259-260
[58] See *1953-1957 Zhonghua renmin gongheguo jingji dang'an ziliao xuanbian guding zichan touzi he jianzhuye juan*, P.708-711
[59] Yan Zixiang, "Jiasu sheji jindu, baozheng sheji zhiliang," *JZ, Iss.1/1956*, P.4

time, the Soviets-designed blueprints for the key industrial projects had established an advantaged condition for the standard design. Because most drawings of the industrial equipments and industrial buildings at that time were supplied by the Soviet Union and designed in same module system with Soviet advanced rules and regulations, it was advantaged to translate them into standardized design. Most of the standardized components in the design from the Soviet Union could be used with a little modification. In addition, many existing drawings of plants and accessorial buildings such as warehouses and transformer substations could be reused.

At the beginning of 1956, the MBE required the design institutions in its system to collect and sort out blueprints in order to reuse them as much as possible to avoid repeating design. This was regarded as the most effective measure for speeding up design.[60] The MBE also demanded every design institution to establish a special department in charge of the work of collecting, sorting, and exchanging materials concerning standardized design, as well as checking the status of its application and generalization. Moreover, the Chief Bureau of Design convened several conferences for exchanging standardized design, and the departments in charge of quota-targets and planning under the Chief Bureau assumed the responsibility to supervise the status of application and generalization of standardized design.

With these measures, standard design for industrial buildings was accelerated. At the beginning of 1956, the Chief Bureau of Design translated seventeen sets of Soviet standardized design for machinery factories and collected blueprints of over 400 standardized components.[61] The translated Soviet standardized design was soon spread, and the work of appropriately cataloging standardized components based on Soviet catalogues, as well as the work of making China's own standard design for industrial buildings, was subsequently initiated. In order to follow Soviet advanced technologies, the modular system of Soviet industrial architecture was fully adopted in the standardized design.

[60] Yang Ziwei, "Fandui baoshou sixiang, jiakuai sheji jindu," *JZ, Iss.2/1956*, P.17

[61] The Soviet Union had compiled the standard design for machinery factories into 26 sets, 17 of which were obtained by China by that time. See. Liu Xiufeng, "Jiaqiang guanli, tigao jishu, wei wancheng geng da de jiben jianshe renwuer fendou," *JZ, Iss.6/1956*, P.4; and MBE, Chief Bureau of Design, "Guanyu chongfu shiyong xiancheng tuzhi de guiding," *JZ, Iss.4/1956*, P.33

By April 1958, design institutions in the MBE system had worked out 15 booklets of standardized components, 24 booklets of standardized fittings, 91 booklets of standardized blueprints of heating and ventilation, and 4 booklets of drawings of standardized doors and windows, as well as 174 sets of standardized design for non-industrial civil buildings. By the same time, in the MBE system, over 10,000 sets of standardized design copies had been supplied, and the average rate of applying standardized design in the construction of non-industrial civil buildings had reached 50% or so.[62]

Although the role of standard design in promoting industrialization was realized since 1955, its function as saving design labor was all along the great concern. In this sense, standard design was always juxtaposed with "repeated usage" of blueprints, especially when standardized design had not been sufficiently worked out. At the beginning of 1956, the Chief Bureau of Design colleted more than 9,000 drawings that could be repeatedly used.[63] In February, it disseminated a prescript on reusing the blueprints, and expected the measure could save 70-80% of labor in non-industrial civil building design, 30-50% in plant design, and 40-60% in the design of administration quarters.[64] Because the design and construction tasks were very heavy in this year, standard design and repeated usage of blueprints was much more emphasized. It was even stipulated that the design shouldn't be newly conducted as long as corresponding standardized design or reusable blueprints existed. In addition, the Chief Bureau of Design stipulated the ratio of applying standardized design or reusable blueprints. It fixed the overall ratio in 1956 as 50%, and those for plant sections, administration quarters, and welfare (living) sections in 1956 as 30-50%, 40-60% and 70-80%, in 1957 as 40-55%, 60-75%, and 80-90%.[65]

In 1958, China witnessed the movement of Great Leap Forward, during which a large quantity of middle- and small-scale industrial buildings were planned to be quickly built. In this situation, standard design and repeated usage of blueprints, besides other measures, was continuously stressed. By August, design institutions under the newly-unified MBE had

[62] Liu Xiufeng, "Guzu ganjin, lizheng shangyou, geng duo geng kuai geng hao geng sheng de wancheng guojia jianshe renwu," *JZ, Iss.8/1958*, P.15
[63] Detailed see Chen Jingxian, "Nuli zuo hao chongfu shiyong xiancheng tuzhi de gongzuo," *JZ, Iss.4/1956*, P.34
[64] MBE, Chief Bureau of Design, "Guanyu chongfu shiyong xiancheng tuzhi de guiding," *JZ, Iss.4/1956*, P.33
[65] Yan Zixiang, "1955 nian kancha sheji gongzuo de jiben zongjie he 1956 nian gongzuo de guihua yu cuoshi," *JZ, Iss.4/1956*, P.27

approximately complied 500 sets of standardized design and selected 150 sets of drawings that could be reused or taken as reference. But the Chief Bureau of Design still regarded that these design and drawings could not catch up with the needs of construction, because these design and drawings were not diversified enough, especially not well done for middle- and small-scale factories. The design institutions were then pushed to further reinforce standard design. Again, the chief bureau stipulated the ratios of application of standardized design as 70% for residential buildings, 60% for public buildings, 50% for general plants, 80% for industrial service buildings and structures, 80% for small- and middle-scale material factories, and 90% for the structures at building industrial bases.[66] In this year, the design institutions under the MBE totally work out over 3,600 sets of standardized design and spread over 1,800 sets.[67]

Meanwhile, in order to strengthen the administration and the publication of standardized design, the MBE began to establish a nation-wide network. Following the removal of the State Construction Commission as well as the mergence of the Ministry of Urban Construction and the Ministry of Building Material in February 1958, the MBE took over the responsibility of standard design as well as the Institute of Standard Design from the former State Construction Commission. The institute was a special institution in charge of compilation and management of universal standardized design in China. After the handover, the MBE soon founded branches of the institute in the "macro-regions", and set up "stations" of standard design in the provinces to take the responsibility of local standard design.

Afterwards, with the recognition of central and local government leaders as well as the efforts of the specialized institutions, standard design increasingly got progress. According to incomplete statistics, the standardized design accomplished during 1958 to 1960 was 6.3 times as much as that during the period of the first Five-Year Plan, and that in 1960 was 7.9 times more than that in 1957.[68] But the large quantity of standardized design caused the problem of disunity. The too many kinds of components had made the design not so standardized. Therefore, the work

[66] MBE, Chief Bureau of Design, "Lizheng gao sudu, chao'e wancheng jinnian renwu, tiqian jinxing mingnian de kancha sheji gongzuo," *JZ, Iss.18/1958*, PP.28-29
[67] Liu Xiufeng, "Chongfe fayang qunian dayuejin de jingyan, wei shixian jinnian geng da geng hao geng quanmian de yuejin er douzheng," *JZ, Iss.7/1959*, P.17; and Wang Dajun (1959), 'Jianzhu kexue jishu de juda fazhan', *JZ, Iss.19/1959*, P.26
[68] MBE, Bureau of Design, Department of Standard Design Management, "Genghao de fahui biaozhun sheji de zuoyong," *JZ, Iss.11/1961*, P.20

of unifying standardized design was carried out, and it got progress in the winter of 1959, when thousands types of components were unified to approximately 500 types.

At the beginning of the 1960s, as China entered the period of economic adjustment, the work of standard design became stagnant. The Institute of Standard Design and its regional branches were removed. Confronted with the great drop of the investment in the capital construction, only investigation and theoretical research could move on. Besides the results of various investigations on housing and other civil buildings, the unification of modular system got some progress.

As discussed at the beginning of this section, the modular system for non-industrial civil buildings was defined in 1995. In this system, the basic module was ten centimeters, and the multi-module sequence was based on the increment of twenty centimeters. The multi-module sequence for industrial buildings was not defined at that time. In reality, most of the key industrial projects in the first Five-Year Plan were designed by Soviets, and the increment of the multi-module sequence in the design was 30 centimeters. This was followed by Chinese designers and became the convention of industrial architectural design. In November 1961, the Bureau of Science and Technology of the MBE convened a special conference to unify the two systems. At the meeting, using 30 centimeters instead of 20 centimeters as the increment of unified multi-module sequence was basically agreed, although some dimensions based on 20 centimeters, such as 340 centimeters for bedroom width, were still kept in designing non-industrial buildings. The unification of modular systems would certainly solve the problem that components of industrial buildings and those of non-industrial buildings had not been compatible, and it would benefit component production. Mostly, the reason for adopt the modular system of industrial buildings as the unified system was that the standardization of industrial building components had been much more progressed in whatever the design or the production. Because 30 centimeters approximates one foot, which was the multi-module increment in the British system, it also regarded as a favorable condition for international exchange and cooperation.[69]

[69] "Guanyu 'Jianzhu tongyi moshuzhi xiugai gongzuo zuotanhui' de zonghe baodao," *JZ, Iss.2/1962*, P.10

The work of standard design was resumed in 1964, when a nation-wide collaborative commission joined by fifteen production ministries and a special department under the MBE were established to take the responsibility of the work. During 1964 to 1965, over 200 sets of nation-wide universal standardized design were made, as well as a batch of standardized design for apartments, dormitories, schools, kindergartens and other non-industrial civil buildings made by local design institutions.[70] These standardized design even absorbed new technologies, building structures, materials and facilities which had come into forth since the Technical Revolution in 1964. However, the resumption was transitory. As the Culture Revolution came into action, the work of standard design ceased for years.

[70] *Zhongguo jianzhu nianjian 1984-1985*, P.349; *Dangdai Zhongguo de jianzhuye*, P.260

CHAPTER 7 • THE DESIGN AND CONSTRUCTION OF URBAN HOUSING

After the founding of the PRC, socialist public ownership within a planned economy was established. By acquiring privately owned houses and by developing public properties, the majority of urban housing gradually became public owned. Under the socialist planned economy, China developed a complicated urban housing welfare system, whereby the State kept control of housing development and readjusted policies in the light of situations reflected in the national economy. With this system, two types of housing tenure appeared in cities: houses managed by enterprises or institutions, and publicly owned houses managed by urban housing management departments of local governments.[1]

The state policy "production first and livelihood second" kept urban housing at a low level. As far as planning and design were concerned, the objective was to keep housing construction costs and standards of provision under control and, in order to develop rapidly, the state propagated standard design for housing. With the promotion by the state, standard housing design made progress since 1952, especially after 1955. At the beginning of the 1960s, most of the housing projects were already constructed according to standardized design.[2] However, although industrialization was an objective of this approach, it didn't make much progress, being restricted by prevailing levels of economic and industrial development, as well as by less than favorable levels of investments. Moreover, because of active state involvement, urban housing development – including planning and design – was only able to make progress when the national economy was prosperous. When the national economy met difficulties, housing development slumped accordingly.[3]

Nevertheless, the quantity of housing construction was very large since the founding of the PRC, although the increase of housing construction could never catch up with the needs resulted from the accretion of urban

[1] See Lü Junhua, Rowe P. G. & Zhang Jie, *Modern Urban Housing in China 1840-2000*, P.105
[2] MBE, Bureau of Design, Department of Standard Design Management, "Genghao de fahui biaozhun sheji de zuoyong," *JZ, Iss.11/1961*, P. 21
[3] See Ibid. PP.105-106

population. The floor areas of housing with the state investments completed during the periods of economic recovery (1949-1952), the first Five-Year Plan (1953-1957), the second Five-Year Plan (1958-1962), and 1963-1965 respectively reached 14,620, 94,540, 110,120, and 42,710 thousand square meters, occupying about 50% of the overall floor area of non-industrial civil buildings.[4] In this chapter, the development of the PRC's urban housing will be discussed, and besides other aspects, the evolvement of housing plans is much concerned.

7.1 The Urban Housing in 1949-1957

During the period of economic recovery in the early 1950s, the CCP government concentrated its efforts of urban construction on ameliorating the existing conditions of residence and infrastructure. To ease the shortage of housing, many semi-temporary, low-rise, and dormitory-like apartments were quickly constructed in newly built industrial cities and industrial areas on cities' outskirts. As the purpose was to construct apartments that would accommodate as many families as possible, and as quickly as possible with a limited budget, the simplest design that would facilitate the construction process was adopted.[5] Figure 7-1 shows the plan of a typical apartment building in Beijing built at that time. With the shared kitchen and toilet located at the middle or the end, as well as an inner corridor connecting each room, such apartments plan didn't present many differences in comparison with a dormitory plan.

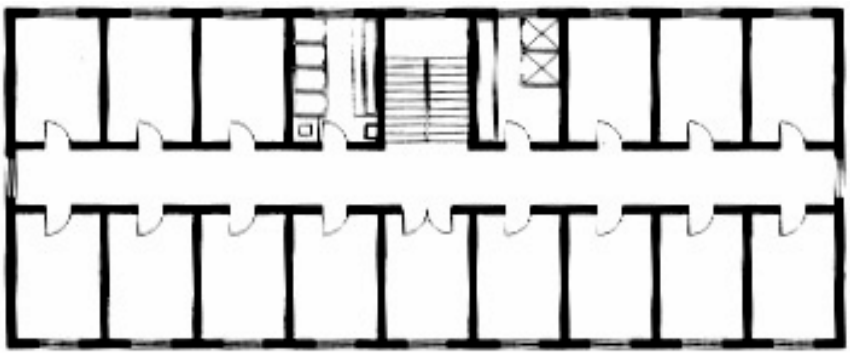

Figure 7-1 A housing Plan in Hepingli Residence, Beijing

[4] See Table 6-6 and *1953-1957 Zhonghua renmin gongheguo jingji dang'an ziliao xuanbian guding zichan touzi he jianzhuye juan*, PP.708-711

[5] Lü Junhua, Rowe P. G. & Zhang Jie, *Modern Urban Housing in China 1840-2000*, P.121

In Shanghai, a type of apartment buildings copied and developed from old "*linong*" houses was built. One of such buildings normally had two or three stories each containing two to six units, and each unit could accommodate two or three families (Figure 7-2). In *Jingji Zhuzhai*, a republication with some modifications and supplements in the early 1950s of a same-titled book on low-cost housing published in 1930, several types of "workers' apartments" and "workers' dormitories" were introduced. Figure 7-3 and Figure 7-4 are typical plans of such apartments.

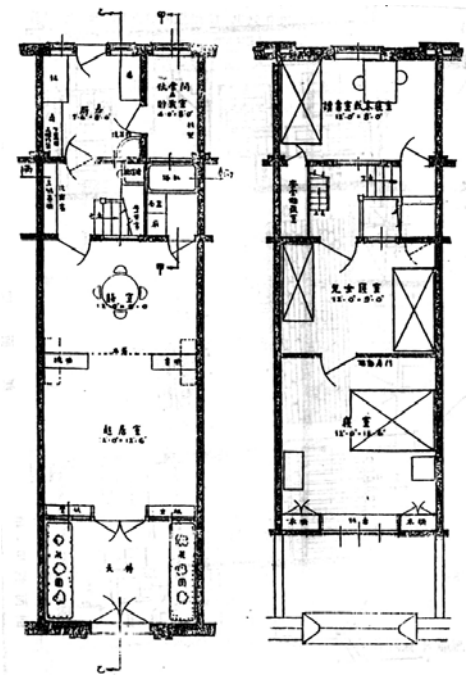

Figure 7-2 A house plan in Shanghai in the early 1950s

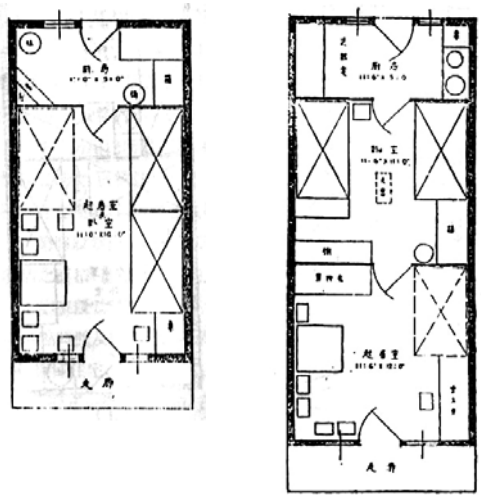

Figure 7-3 workers' apartments in *Jingji Zhuzhai*

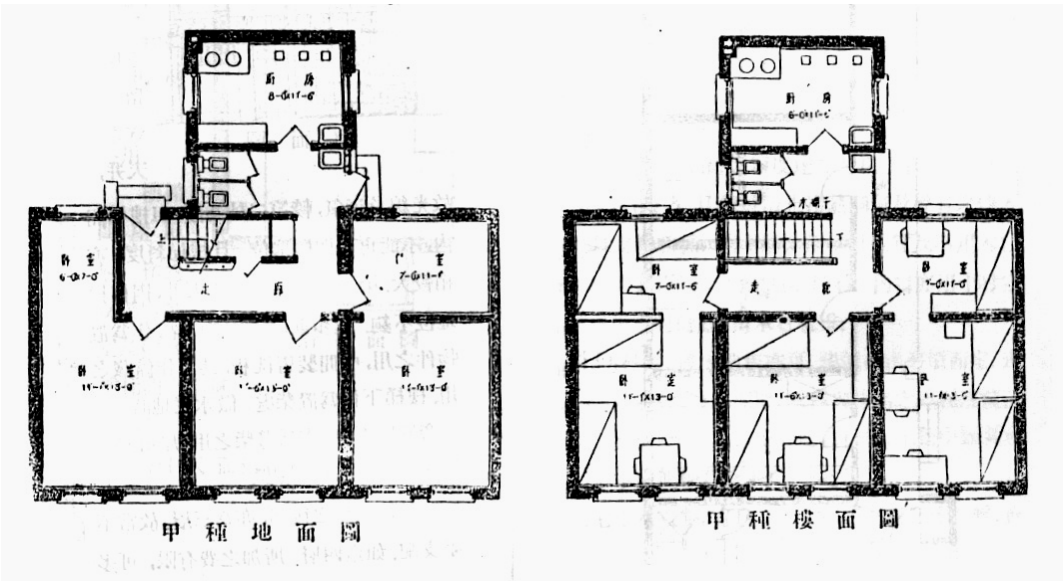

Figure 7-4 workers' apartments in *Jingji Zhuzhai*

Since 1952, standard design for mass non-industrial civil buildings was initiated in China under the guidance of Soviet experts and in imitation of Soviet experiences. As discussed in Section 6.3, standardized design was a product of the planned economy, because through making standardized design for various types of buildings with fixed quota-targets, the state could well controlled the input and output of building construction. In housing design in the PRC, two economic-technical indicators were fundamental. The first one was the quota of per capita living area, namely the average area of living space that one person would occupy, including the areas of bedroom and living room while excluding those of toilet, kitchen, corridor and staircase. By fixing per capita living area, the scale of construction and the living condition could be controlled. The other fundamental indicator was Value K – the proportion of living space in the total floor area. Obviously, Value K was crucial in controlling the overall floor area as well as the overall cost of housing construction. In practice, Value K was more strictly controlled in housing design than the quota of per capita living area, because the latter could varied in localities and could be adjusted in the phase of allocation.

In the Soviet Union, the quota of per capita living area was targeted for nine square meters, but this value was too high for China. Based on the condition, per capita four to five square meters, which is about a half of the Soviet target, was adopted in China's housing design, and the principle "rationally design and irrationally use," which means two or more families would share an apartment, was raised as the adaptation of the Soviet standard. Value K was also adjusted to 50% for housing design in most areas of China, relatively higher than the 41-44% of the Soviet Union.[6]

The 301 and the 302 Housing in Northeast China were representative cases of early standardized housing design in China. Both of them were somewhat copies of Soviet standardized housing design: each apartment on a plan was comprised of several rooms, connected by a long inner corridor. The area of each room was eighteen to twenty square meters (3 x 6 meters or 3.25 x 6 meters in axis dimensions), which, according to the Soviet standard, would accommodate two people. However, when "irrationally used," one room would be shared by four to five people, leading to much inconvenience. Moreover, because the inner-corridor housing plan, copied from the Soviet Union, had not considered the differences in geography and climate between

[6] Zhao Fengshi, "Dui chengshi guihua ding'e de ji dian yijian," *JZ(internally published), Iss.1/1954,* P.31

the Soviet Union and China, it could not provide the residents with sufficient sunshine and ventilation. This problem was more serious when each of the apartments was shared by two or more families. However, as standard design was popularized in the early 1950s, such plans were widely adopted. Such apartments became a dominant form in the early development of urban housing in China, and the aforementioned problems were largely overlooked.[7]

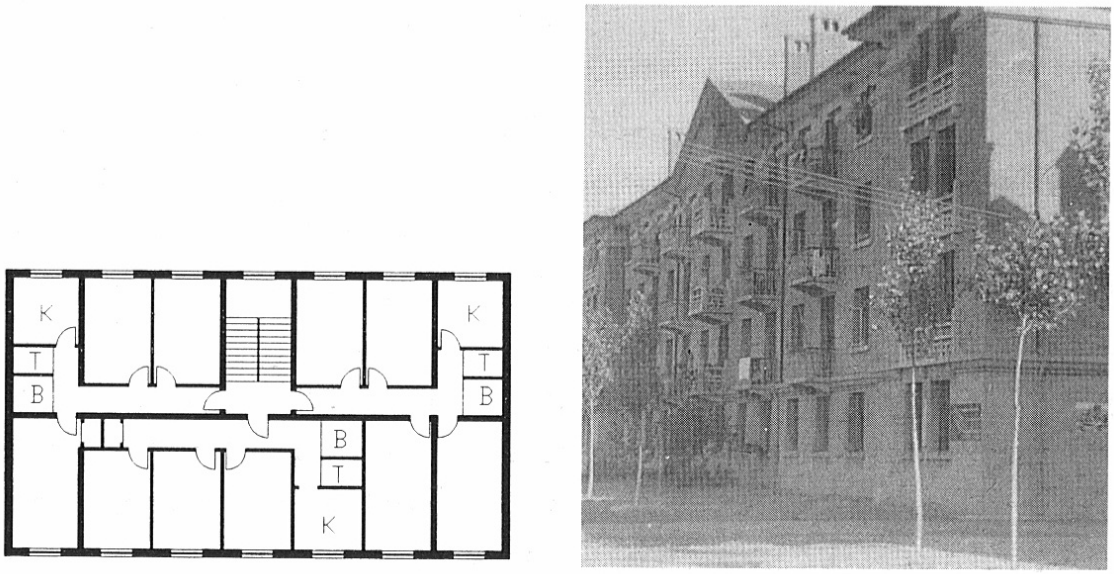

Figure 7-5 The 301 Housing

In June and July 1955, following the decision by the central government on lowering the costs of non-industrial civil buildings, a batch of standardized housing design was urgently made to satisfy the new cost limitation. "Rationally design and irrationally use" was then negated, and the standard design began to be more adaptive to China's situation. For example, the 303 and the 305 Standardized Housing for North China was made during this period, and the former was designed on the basis of the 301 Housing. In the 303 Housing's plan, the seven-bay structure of the 301 Housing was kept, while the apartments were replaced by arrayed rooms, and each of the bedrooms would be occupied by one family. On a floor, the kitchens and the toilets located at the ends of the north row were shared by the families, so were the corridor and the staircase. The size of the bigger bedroom was 3.4 by 5.2 meters, which was more convenient for furniture disposition, and the usable area was approximately sixteen square meters, which could accommodate a four-people family. In order to lower the cost, the height

[7] Lü Junhua, Rowe P. G. & Zhang Jie, *Modern Urban Housing in China 1840-2000*, P.127

between floors was reduced from 3.25 meters to 3 meters. By limiting the areas of kitchens and toilets to a very low standard and by removing the definition of apartments to decrease corridors, the Value K of the 303 Housing was highly increased.

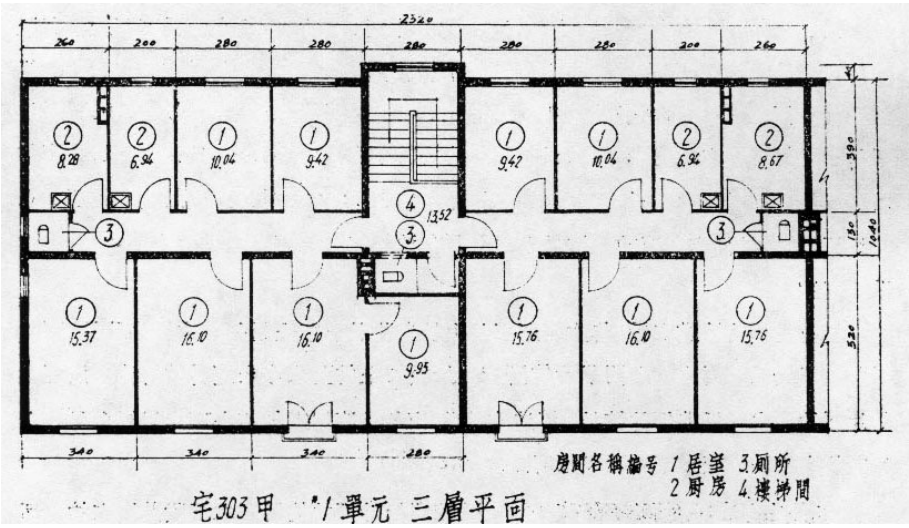

Figure 7-5 Plan of the 303 Housing

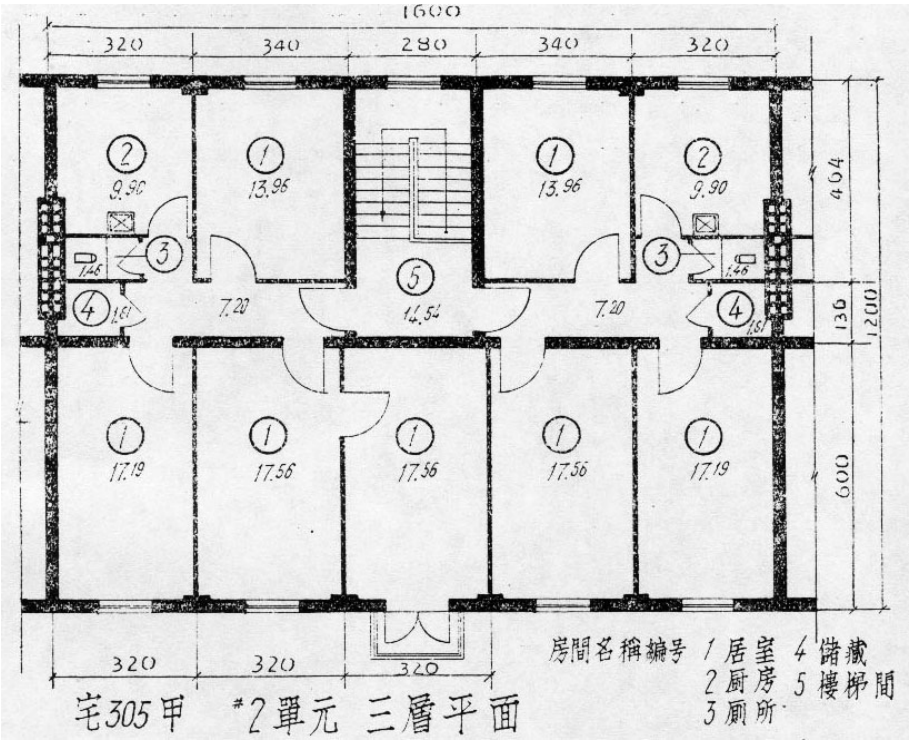

Figure 7-6 Plan of the 305 Housing

As a representative instance of the standardized apartments designed in the middle of 1955, the 303 Housing embodied the typical problems of the design at that time. For example, in order to heighten Value K, the areas of

the kitchens, toilets and the width of the corridor (1.1 meters) became too small. At the same time, the organization of rooms had not taken into account the possibility of apartment division, which would happen when living conditions got improved in the future. Actually, the 303 Housing reverted to the dormitory-like apartment buildings that had been largely constructed at the beginning of the 1950s. Nevertheless, it anticipated some change in housing design, in the aspect of adapting to China's climate and the living habits. For example, by reducing the size of the north rooms and by locating the toilets and kitchens at the north side, it accommodated more people in the rooms facing south. Such improvement was important, because residing in south rooms is a living habit of Chinese people.

In December 1955, a meeting of appraisal entrusted by the State Construction Commission was convened by the Chief Bureau of Urban Construction of the MBE in order to select and popularize good design schemes for residential buildings. The criterions for the selection included the decision by the central government on lowering the costs of non-industrial civil buildings, *Economic Indexes of Civil Building in 1956*, and *Temporary Indexes of Multi-Story Housing, Dormitory and Office in 1956*, the latter two promulgated by the State Construction Commission in 1955. The last document had targeted the ratios of two-room, three-room and four-room apartments, and set the ratio of two-room apartment to be the highest. It also stated that the Value K of housing must exceed 53%. At the meeting of appraisal, twenty-five design institutions from various ministries and provinces delivered 56 sets of schematic design for apartments and 72 sets for dormitories. In parallel with the meeting, an exhibition of the schemes was staged to ask concerned experts and the public for comments and suggestions, and an investigation at several residential districts in Beijing was conducted to collect comments and requirements and to take a census of the living status. In addition, an economic analysis of existing residential buildings was studied out. On the basis of the preparative work, the judging panel elected 26 schemes (11 apartments and 15 dormitories), which would be further developed to the standardized design of 1956. The meeting of appraisal and the exhibition established a precedent of selecting schemes for housing design – a precedent followed all along to today.

Among the selected schemes, apartment units featured seven bays with an inner-corridor – a composition inherited from the 301 and the 303 Housing – still occupied a relatively large proportion. Most of them were designed as end units, each comprised of four two- or three-room small apartments,

rather than the old three-apartment units. In the design for middle units, five-bay and six-bay plans were largely presented, and the effort to reduce the size and decrease the number of north rooms continued. At the same time, in order to suit the residential layout of perimeter block neighborhood, which was still prevailing in residential planning, corner units were carefully designed.

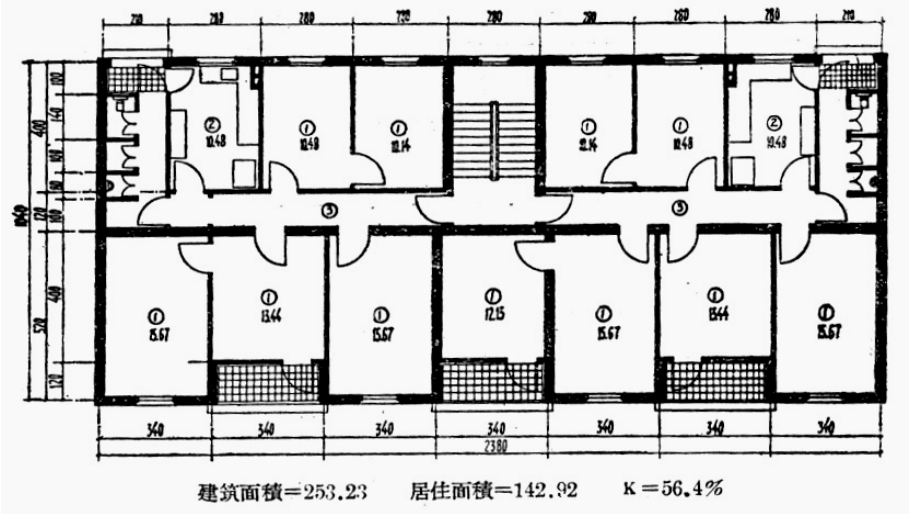

Figure 7-8 An Apartment Plan Design by the Design Company of Guangdong Province at the 1955 Meeting of Appraisal

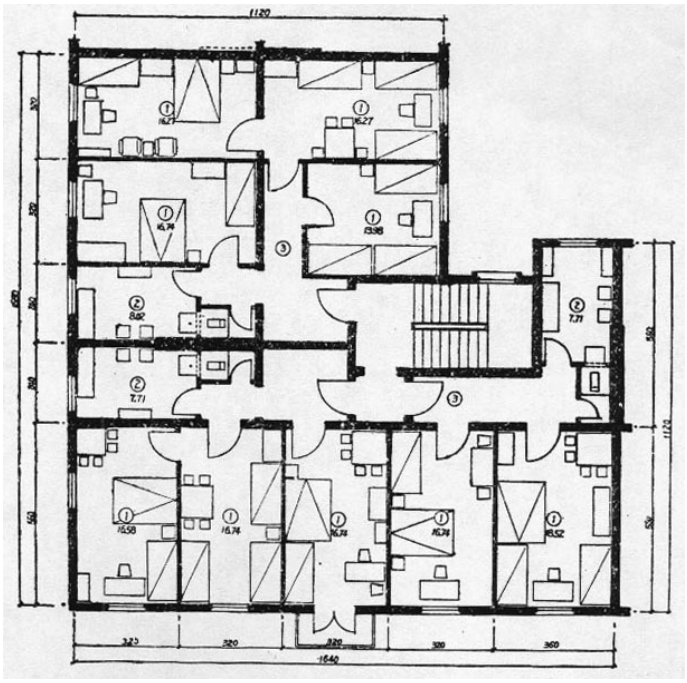

Figure 7-7 A Corner Unit submitted by the Chief Bureau of Design of the MBE

To a certain extent, the housing design at the end of 1955 initiated the revision of Soviet standardized design. The investigation in December

revealed the problems of old housing design and the demands of the residents, although it only covered a small range of residential districts. It showed that most families had four to five members, and 47% to 70% of families resided in one room. The residents desired family separation and expected a big room plus a small room (one and a half rooms) for a family. Moreover, south room was welcomed. The investigation also indicated that people preferred a separated kitchen for one family, and accepted a shared one used by two families as well as a shared toilet. The comments collected at the exhibition showed the principle criticisms on the standard design as: dogmatic emulation of plans from the Soviet Union, not enough consideration on matters related to inhabitants' livelihoods, and inconvenience in the utilization and allocation of space.[8] The discussions following the meeting criticized the idea "rationally design and irrationally use" as well as the layout of perimeter block neighborhood copied from the Soviet Union.[9] Afterwards, on the basis of the collected opinions and new studies and explorations in housing design practice, new types of housing plans emerged, notably open-corridor apartments.

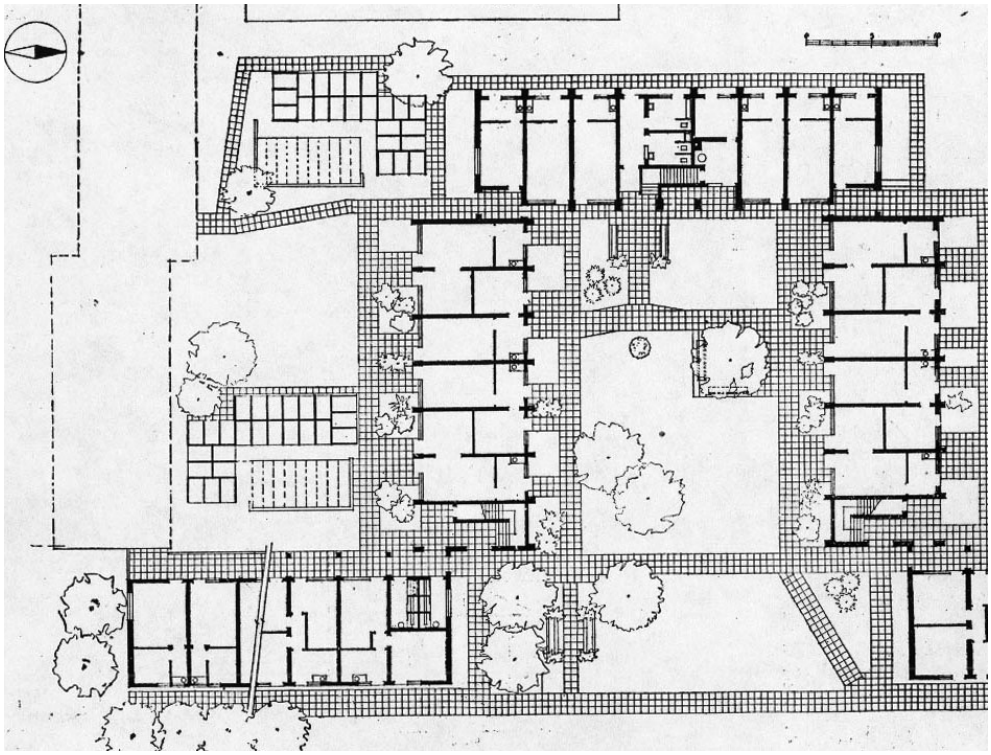

Figure 7-8 First Floor Plan, Youanmen residential block, Beijing, 1955, Hua Lanhong

[8] Li Yiguang(1956), "Muqian zhuzhai biaozhun sheji suo cunzai de yixie wenti ji taolun," *JZXB, Iss.2/1956*, P.99

[9] See. Zhang Kaiji, "Guanyu zhuzhai biaozhun sheji yixie wenti de shangque," *JZXB, Iss.3/1956* & Ji Ping, "Guanyu juzhu jianzhu buzhi fang'an de taolun ," *JZXB, Iss.2/1956*

In 1955, Hua Lanhong designed a small experimental residential block at Youanmen district in Beijing, which consisted of nine two-story apartment buildings. At the residence, most of the apartments were designed as each consisted of one and a half bedrooms plus a kitchen, and the others were one-room apartments, each containing a kitchen. The toilets were shared by the residents. The characteristic of this housing design rested with the open corridors connecting each apartment on a floor. With the open corridors and the shallow depth of buildings, each family could enjoy sunshine and ventilation. The smaller but more-room apartments with separated kitchens offered much convenience within the area quota-targets, only the Value K of the residential block was lower than the targeted value. In 1955, Youanmen Experimental Residence was praised by the Polish architects' delegation, who visited China in September and October (see Section 3.1).

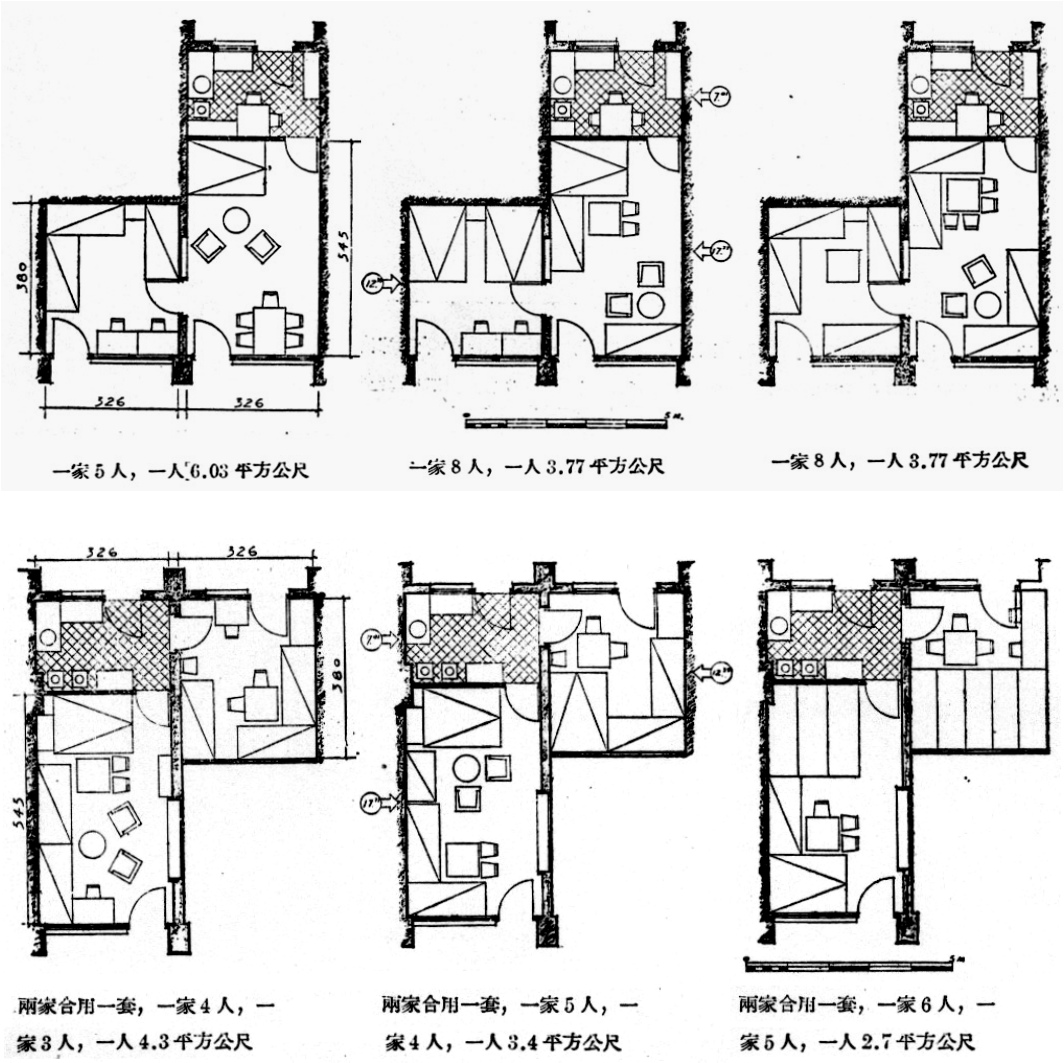

Figure 7-9 Apartment plans for different allocation, Youanmen residential block

Open-corridor schemes were presented as well at the meeting of appraisal at the end of 1955. What Figure 7-13 shows was an example submitted by the Chief Bureau of Design of the MBE. Later in 1956, open-corridor housing plan was praised in the discussions concerning housing design, which concluded its advantages as: maximally solving the problem of orientation, inheriting the advantages of traditional architectural form, ensuring ventilation, and being flexible in apartment composition; while the shortage pointed out was that it could not ensure quiet and sanitation.[10] On the lower Value K, the advocators argued that the control of Value K could only heighten living areas but should not be used as the only factor for economical control, which could be achieved by other means.[11] Besides, Peng Yigang and Qu Haoran from Tianjin University made a special study on open-corridor housing design. They worked out a series of plans as well as façade design for such housing. In practice, Beijing Xingfucun Neighborhood design by Hua Lanhong in 1957, for example, was a representative instance of this type in this period.

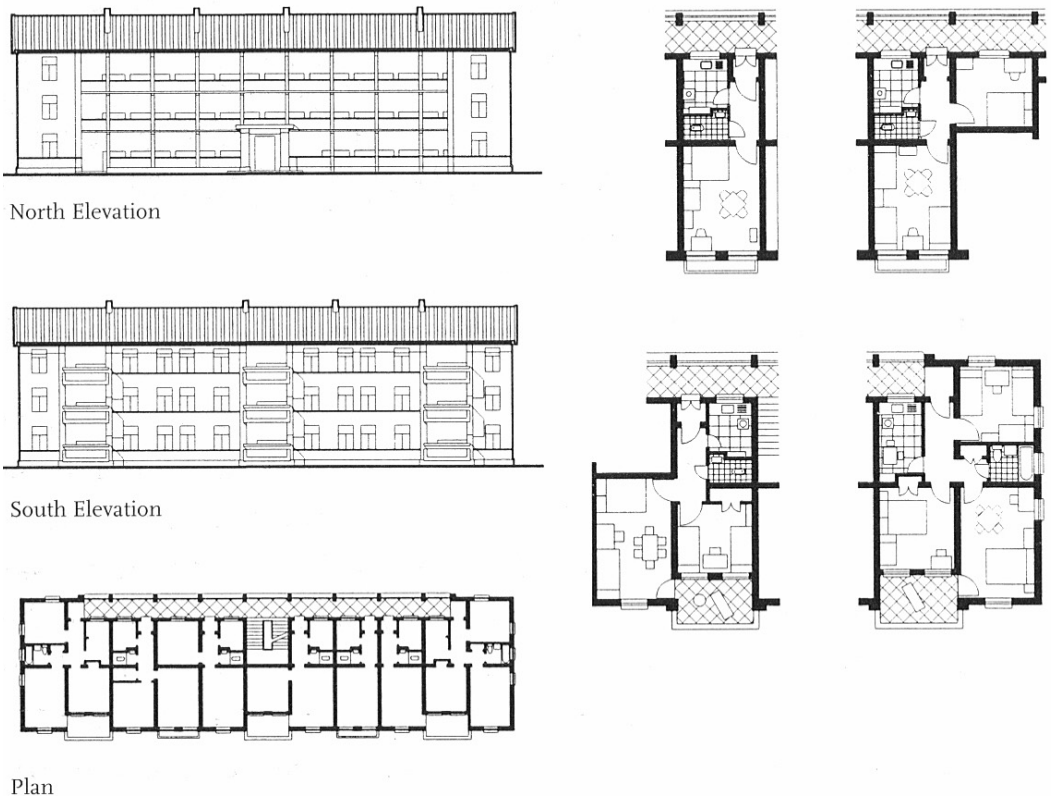

Figure 7-10 Open-corridor apartments at Xingfucun Neighborhood

[10] Li Yiguang(1956), "Muqian zhuzhai biaozhun sheji suo cunzai de yixie wenti ji taolun," *JZXB, Iss.2/956*, PP. 100-101
[11] See Ibid., P.101 & Hua Lanhong, "Guanyu zhuzhai biaozhun sheji fang'an de fenxi," *JZXB, ISS.3/1956*, P.110

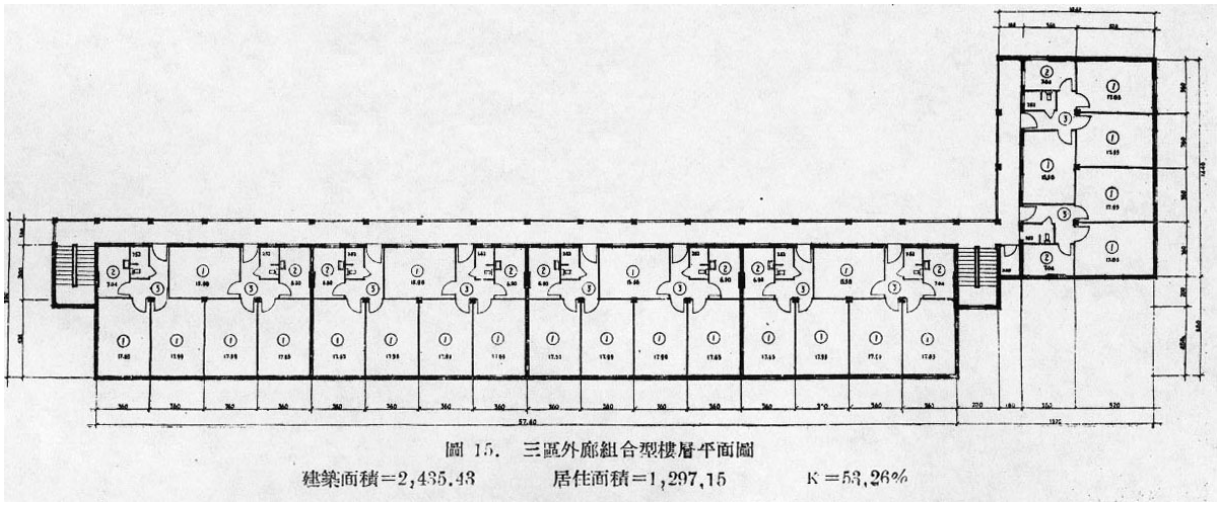

Figure 7-11 An open-corridor housing plan by the Chief Bureau of Design of the MBE

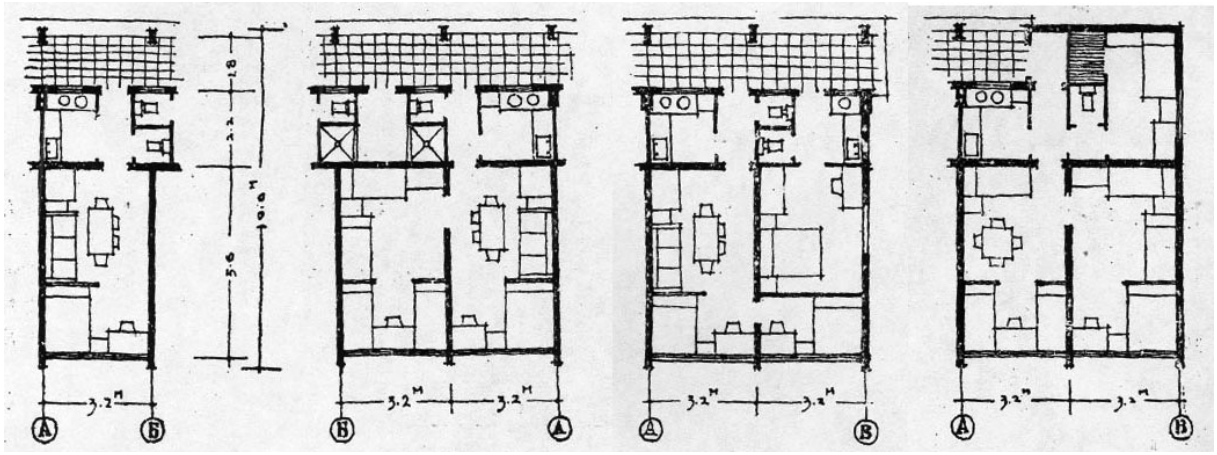

Figure 7-12 Peng Yigang and Qu Haoran's design of Open-corridor housing plan

Due to the restriction of the investment for housing construction under the state economic policies and the serious shortage of housing supply caused by fast and continuing increase of urban population, the inconvenience resulted from "rationally design and irrationally use" became increasingly serious. The extreme situation was that, according to an investigation at that time, there were eight people lived in a room of fifteen square meters, and five people crowd in a space of eight square meters.[12] Therefore, solving the problem became urgent. Since 1957, studies were commenced on small-area apartments, with an attempt to release the crowding in big rooms and to provide each family a small but separated apartment. The representative study was done by Song Rong and Liu Kaiji, who published a paper in the 8th and 9th issues of *JZXB* in 1957. In their housing schemes, they took average per apartment 36-square-meter floor area, which at that time was the

[12] See Song Rong & Liu Kaiji, "Guanyu xiao mianji zhuzhai sheji de tantao," *JZXB, Iss.8/1957*, P.34

area standard for a family, as the basis of design. They predefined per capita living area as 3.8-4.8 square meters and Value K as larger than 50% to control the living condition and the investment efficiency. [13] Most importantly, they translated the concept of "room" to sixteen square meters, so that a "two-room" apartment would contain three to four smaller physical rooms. Based on this definition, they, approximately, reduced the size of a bedroom from sixteen square meters to 13.5 or 5.5 square meters. In order to efficiently and well use the spaces, they carefully draw furnishing on their design plans, and made perspective and axonometric drawings to check the results. The authors brought forward that the ratios of various-sized apartments, which values were also fixed by the government at that time, could be controlled by differently composing the units in the overall plan instead of allocating various-sized apartments in the unit plans. For example, by adopting this tactic with their schemes, the ratio of the one-room apartments in total apartments could be diversified from 0% to 62.5%, and that of the one-and-a-half-room apartments could vary from 0% to 55.8%. [14]

Figure 7-13 Small-area apartment design, Song Rong and Liu Kaiji

[13] Song Rong & Liu Kaiji, "Guanyu xiao mianji zhuzhai sheji de tantao," *JZXB, Iss.9/1957*, P.93
[14] Ibid.

During the second half of the 1950s, as the focal point of China's housing construction policy shifted from long-term planning to short-term planning, small-area apartments became dominant in housing design. Meanwhile, as the study on small-area apartment developed, a tendency of using the spaces to the utmost came into forth. Such design aimed at accommodating one family in a small room to further decrease the per capita living area quota. An example was presented in the paper "Guanyu xiao mianji zhuzhai sheji de jinyibu tantao" ("A Further Discussion on the Design of Small-Area Housing") by Ye Zugui and Ye Zhoudu, published in the second issue of *JZXB* in 1958. By comparing different disposals in an eight-square-meter room as well as in a fifteen-square-meter one, the authors raised that the number of people living in the former could be increased from two to four or five, and that in the latter could be increased from four or five to six or seven. In addition, they suggested further decreasing the height between floors, lowering the living area quota and the cost quota, increasing Value K, and increasing building density to save the investment of building construction.[15] During the Great Leap Forward, some housing design was made with the standard of per capita 3.6-square-meter living area, although the quota-target of per capita living area as 4 square meters was reiterated at the Shanghai Symposium in 1959.

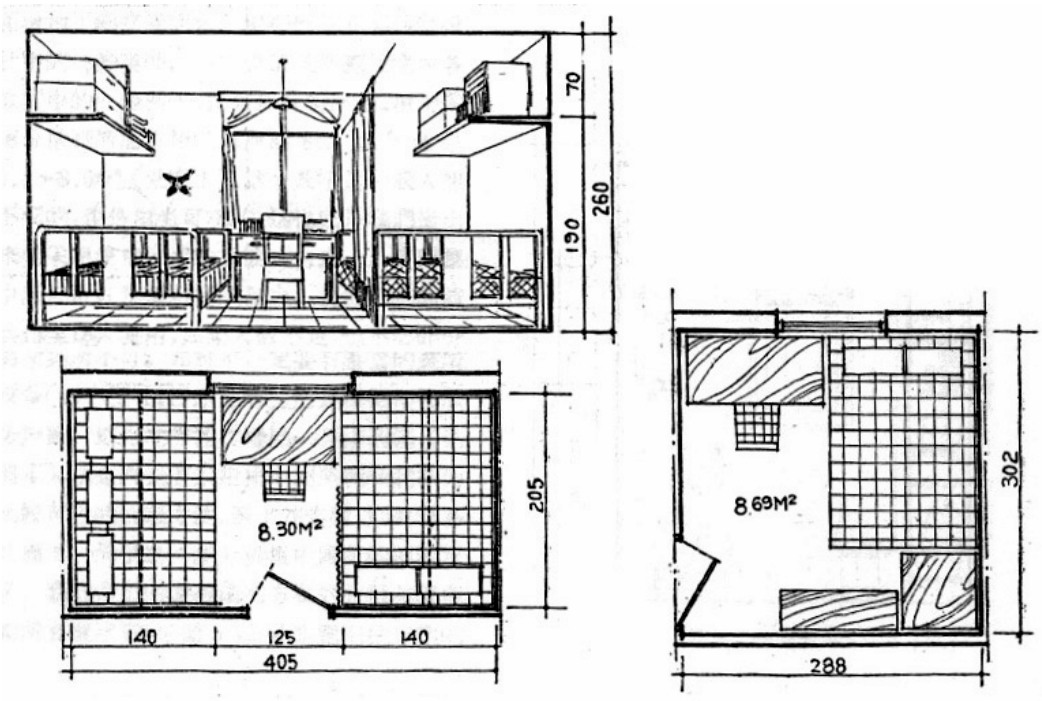

Figure 7-14 Ye Zugui and Ye Zhoudu's study on an 8-s.q.m-room

[15] See, See Ye Zugui & Ye Zhoudu, "Guanyu xiao mianji zhuzhai sheji de jinyibu tantao," *JZXB, Iss.2/1958,* PP. 30-31, P.36

In July 1957, entrusted by the State Construction Commission, the ASC organized a competition of schematic housing design. On the basis of the preliminary selection in 37 cities, in which approximately 1,200 sets of schemes were collected, 654 sets of design were brought together at the meeting of appraisal in Beijing in December, and 47 of them were rewarded. In the competition, open-corridor schemes and small-area ones were largely presented, in which some new evolvements were notable. Some design, for example, by connecting two short inner corridors with a short open corridor formed by adopting a horizontal one-flight staircase, the problem of bad ventilation in inner-corridor compositions and the problem of noise in open-corridor ones were well balanced (see Figure 7-17). The transformation of open-corridor was also presented, such as in the schemes shown in Figure 7-18, 7-19 and 7-20. Another remarkable feature was the fade-out of perimeter block neighborhood layouts, which was basically substituted by parallel layouts.

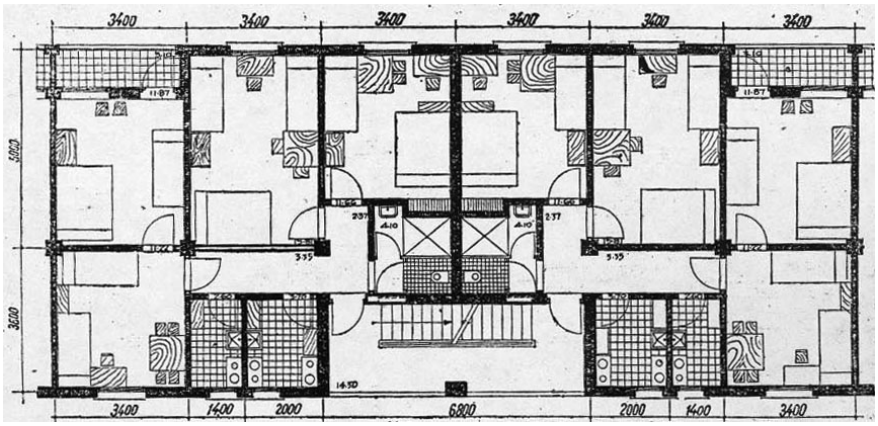

Figure 7-15 A housing plan at the competition of schematic housing design in 1957, Industrial Architectural Design Institute of Middle-South China

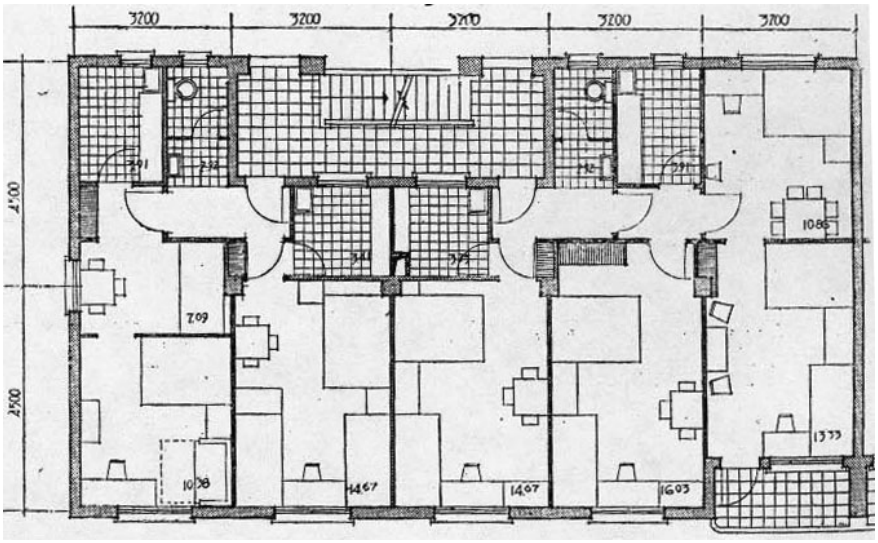

Figure 7-16 A housing plan at the competition of schematic housing design in 1957, Industrial Architectural Design Institute of East China

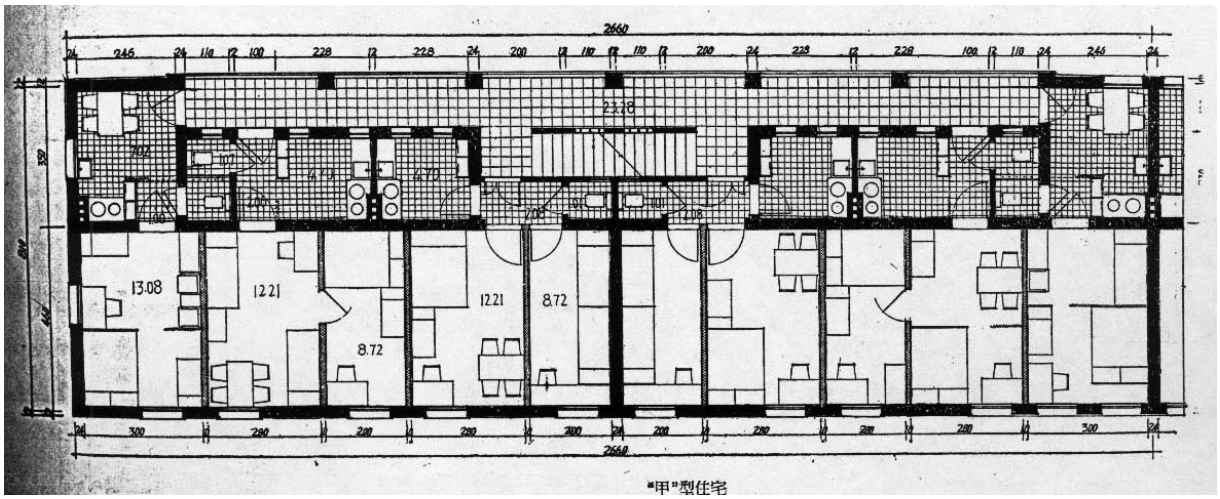

Figure 7-17 A housing plan at the competition of schematic housing design in 1957, Civil Architectural Design Company of Fujian Province

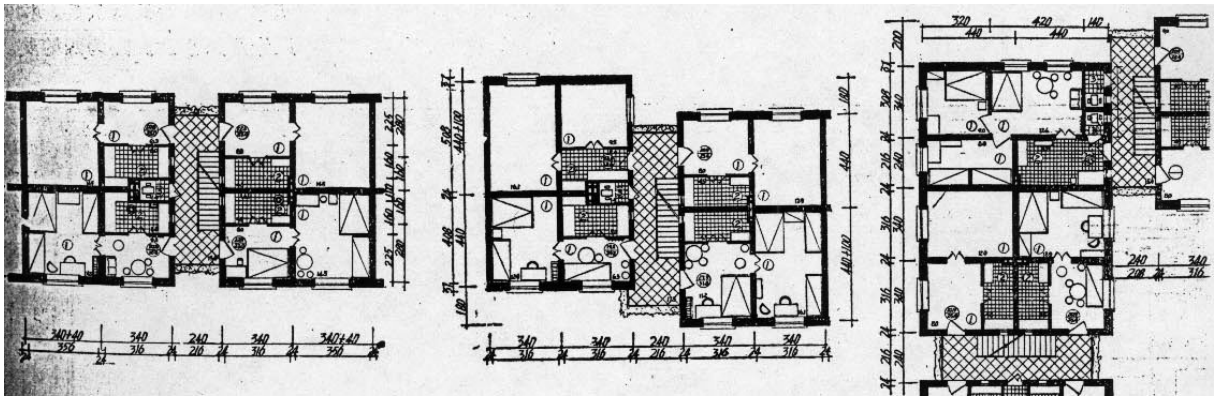

Figure 7-18 Housing plans at the competition of schematic housing design in 1957, Liu Hetian

7.2 The Diversification and Localization of Urban Housing Design

Since 1959, each province, municipality and autonomous region took over the responsibility of organizing its own standard housing design from the State Construction Commission. This marked a shift from unified standardized design to paying more attention to local conditions.[16] The housing types were then increasingly enriched by the researches and the practical explorations, even during the period of economic recovery at the beginning of the 1960s. The first progress was the evolvement of corridor apartments. New housing plans featured short open-corridor, horizontal stair, or open-inner-combined corridor came into forth one after the other, as shown in Figure 7-21, 7-22, and 7-23.

[16] Lü Junhua, Rowe P. G. & Zhang Jie, *Modern Urban Housing in China 1840-2000*, P.156

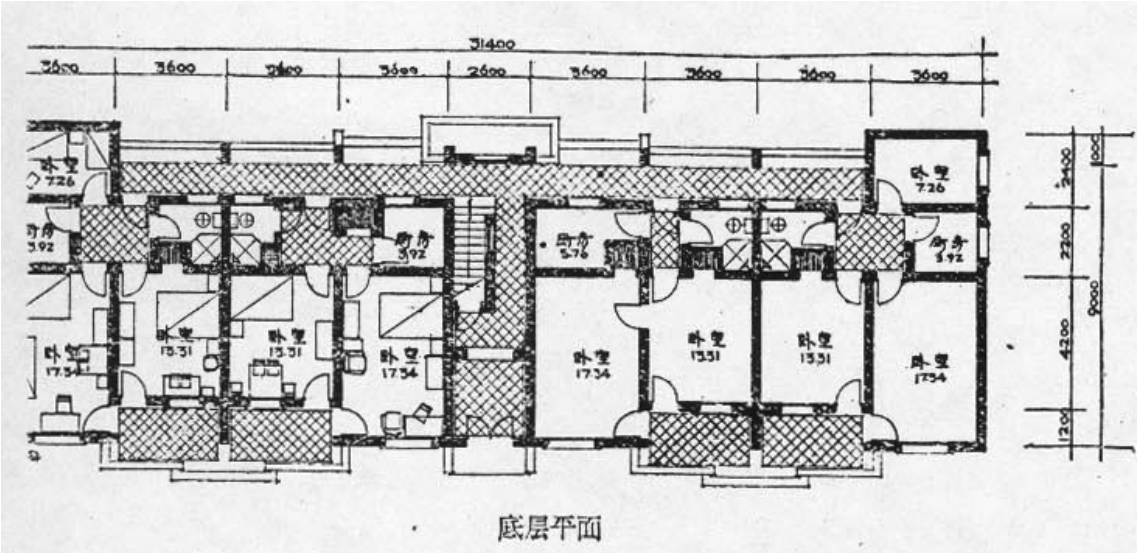

Figure 7-19 A "short open-corridor" housing plan, 1959-1960, Industrial Architectural Design Institute of Zhejiang Province

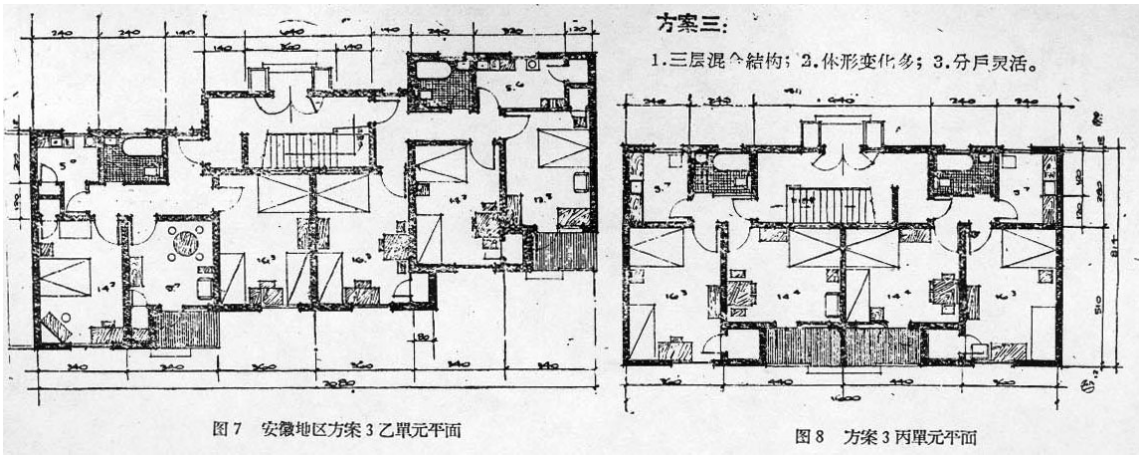

Figure 7-20 Housing plans with horizontal stairs, 1959-1960, Design Institute of Anhui Province

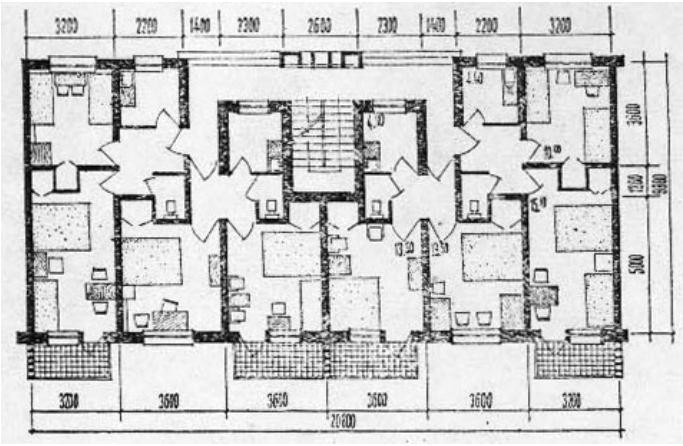

Figure 7-21 A housing plan with open-inner-combined corridor

In north China, the long inner-corridor was shortened, leading to the short inner-corridor housing unit, especially the prevailing 2-2-2 unit, as shown in Figure 7-24.[17] Other modifications were made as well to avoid the problems caused by the inner-corridor. Figure 7-25 shows an example, a T-shaped plan allowing natural lighting and ventilation. In some design, by enlarging its width, the inner-corridor was transformed into small living rooms, as shown in Figure 7-26.

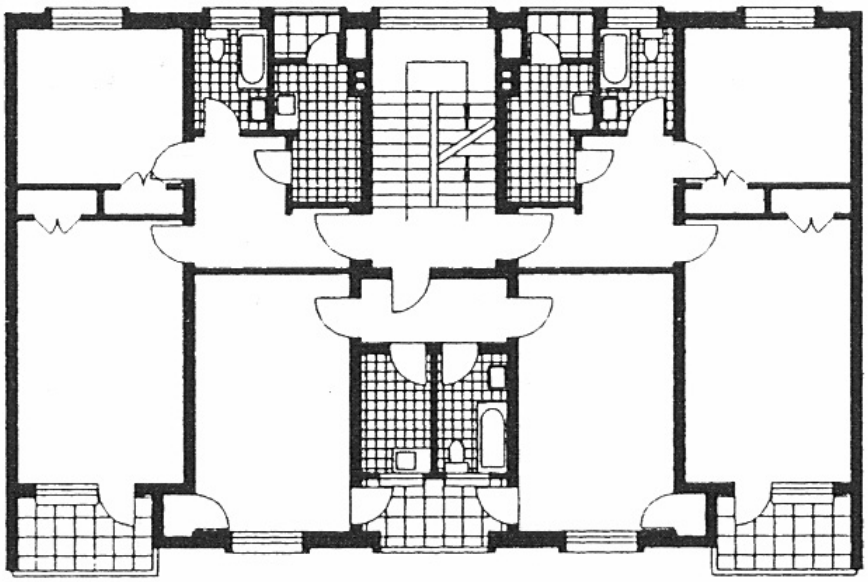

Figure 7-22 A 2-2-2 Unit Plan with a short open corridor

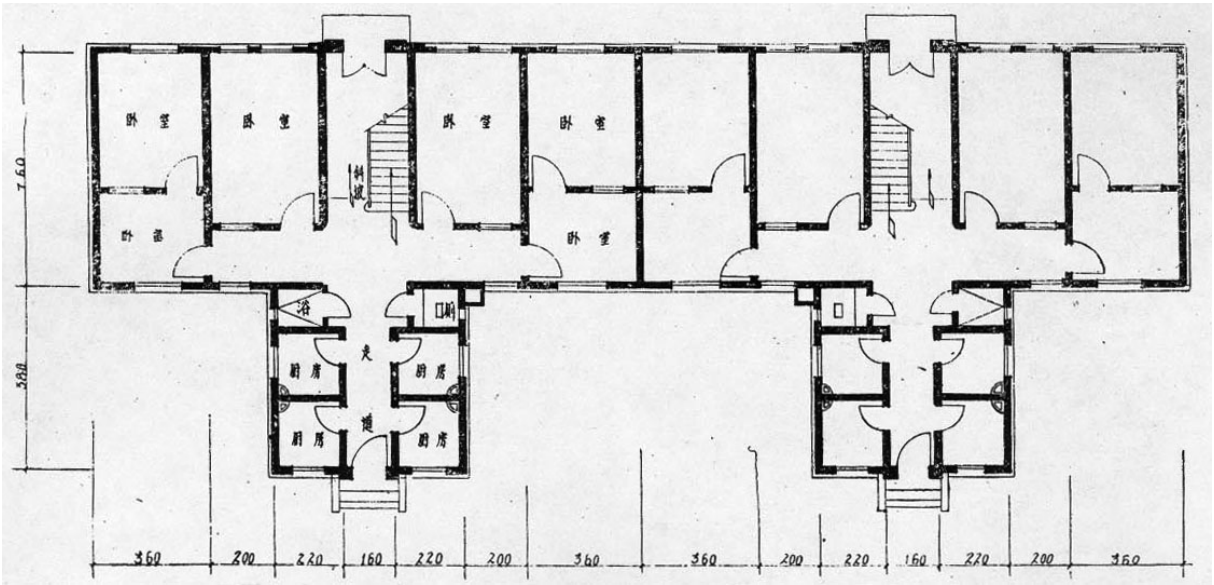

Figure 7-23 A housing plan by the Bureau of Construction of Hunan Province, 1959-1960

[17] i.e. three two-bedroom apartments served by one staircase

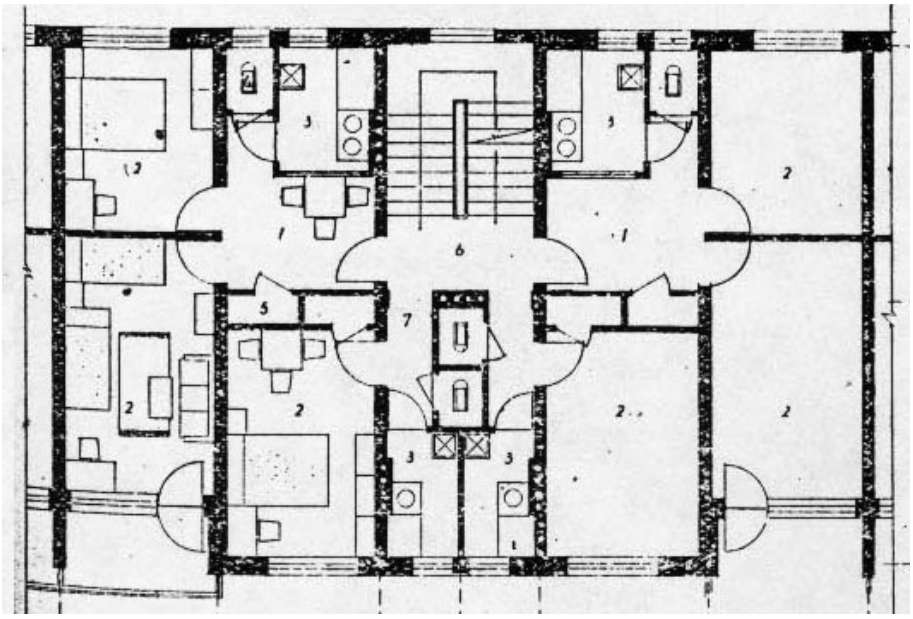

Figure 7-24 A housing plan by Industrial Architectural Design Institute of North-East China, 1959-1960

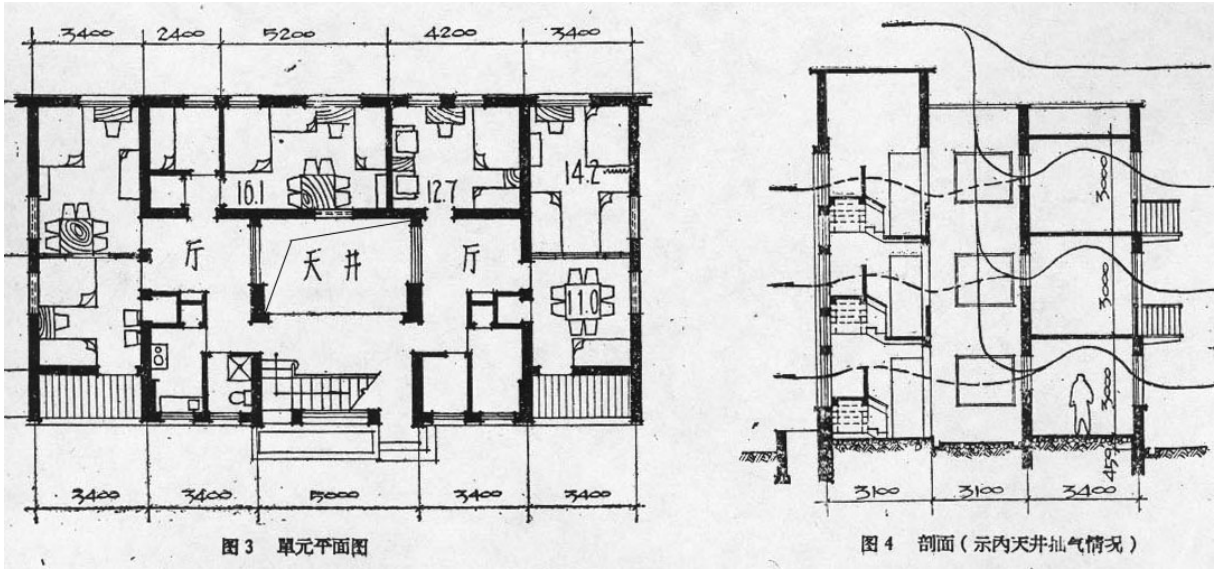

Figure 7-25 A small inner-courtyard housing plan by Industrial Architectural Design Institute of Middle-South China, 1959-1960

In the hot areas, a new unit plan featured small inner-courtyard emerged in the 1960s. The first study and practice of this type was done in Wuhan, and an example is shown in Figure 7-27. Due to the flexibility and adaptability, small inner-courtyard apartments were spread and developed fast in China, especially in the south areas, where this type of housing soon became prevailing.

Another new unit type was the so-called skip-corridor apartments, in which only the even (or odd) -numbered floors have common corridors connecting

staircase, and the inhabitants on the odd (or even) -numbered floors used private stairs to reach the common corridors. This design was firstly presented in a paper by Shanghai Civil Architectural Design Institute and Shanghai Housing Research Institute, published in the 7th issue of *JZXB* in 1959. Such unit plans were developed from *linong* houses that had been largely distributed in Shanghai before 1949. However, because the supplemental staircases would lead to inconvenience and the waste of spaces, this type was not extensively adopted. Figure 7-29 shows one example of such housing – an apartment building in Taiyuan built in 1961.

Since the end of the 1950s, detached flats came into forth. Allowing opening on the long outer walls, this type of housing plans could achieve better lighting and ventilation, even with large depth. Mostly, detached-flat buildings were invoked to break the monotony usually caused by the arrays of bar-shaped apartment buildings and to enrich the spaces of housing blocks. Later, detached flat plan was integrated with inner yard to improve the lighting and ventilation at the central part.

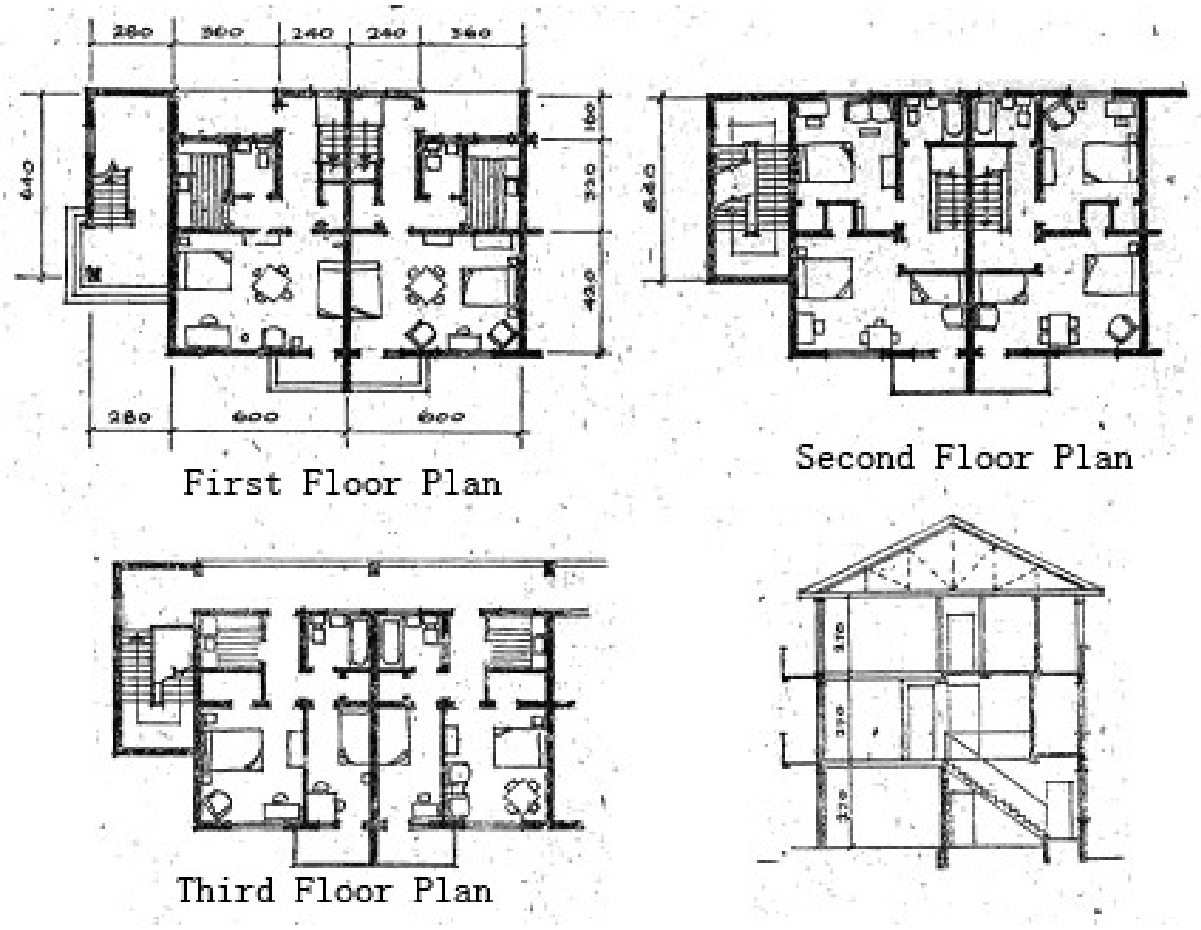

Figure 7-26 A skip-corridor apartment building by Shanghai Civil Architectural Design Institute and Shanghai Housing Research Institute

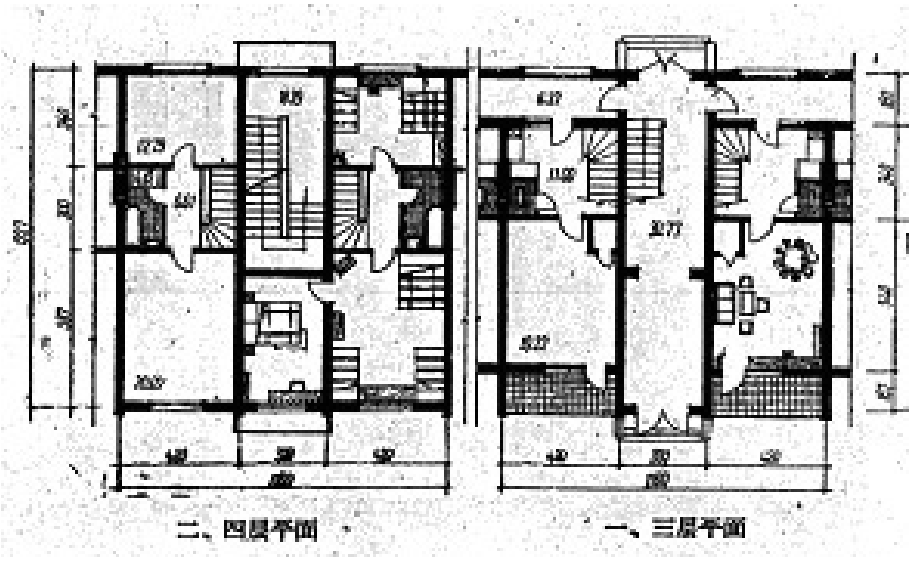

Figure 7-27 A Standardized skip-corridor apartment building in Taiyuan, Shanxi Province, 1961

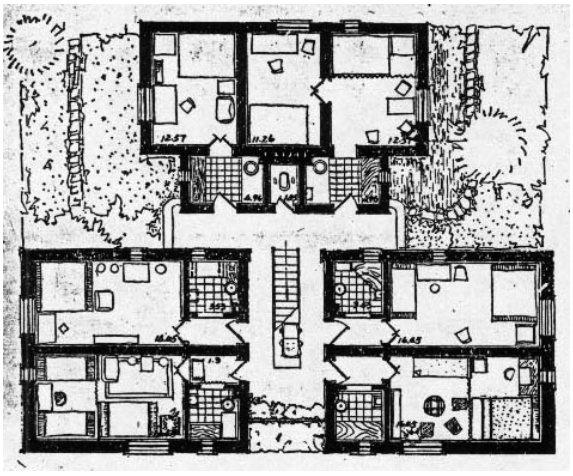

Figure 7-28 A detached flat housing plan at the competition of schematic housing design in 1957, Liu Hetian

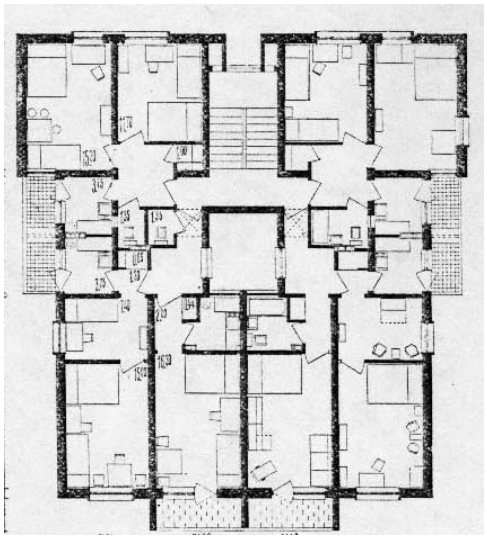

Figure 7-29 A detached flat housing plan with inner-courtyard present at a housing competition in Beijing in 1963

7.3 The Approach of Low Cost vs. the Pursuit of High Technology

As discussed, saving the investment on non-industrial construction to ensure industrial construction was all long the policy of the CCP government during the 1950s and 60s. Therefore, lowering the costs of non-industrial civil buildings, especially that of housing, was always required, because urban housing construction occupied the largest proportion of non-industrial

civil building construction. Since the early 1950s, especially after 1955 when enforcing economization was called for by the central government, a series of measures for reducing per square meter building cost, such as decreasing the height between floors, adopting cheaper materials and construction techniques, were executed in housing design, besides the measures for lowering other quota-targets.

In comparison with multi-story apartment buildings, single-story houses built with raw materials and low technologies were much cheaper. According to a document, the average per square meter cost of brick-concrete-structured buildings, such as almost all of the multi-story housing, was 60 *yuan* in 1956, while that of brick-timber-structured buildings, such as almost all of the single-story housing, was 40 *yuan*.[18] The average cost of temporary single-story housing was even lower. Therefore, since the middle of the 1950s, increasing the proportion of single-story housing was invoked to lower the per square meter building cost.

As mentioned at the beginning of Section 7.1, many single-story houses were constructed during the recovery period in the early 1950s. When China imitated the urban planning and the standard design of the Soviet Union, multi-story (three or more-story) buildings became the main type of housing construction, while single-story and two-story hosing was regarded as the accessorial type. It was proposed that for long-term planning, multi-story buildings, two-story buildings, and single-story buildings would respectively occupy 70%, 20% and 10% of the whole floor areas.[19] In the early stage of standard design, most apartment and dormitory buildings were three-story, and some were four-story.[20] This situation was changed in 1955, when government decided to take measures to drastically lower the costs of non-industrial civil buildings. In the Li Fuchun's 1955 speech on strictly enforcing economization, the Vice Premier required single-story buildings to be extensively constructed, as he said:

> Single-story buildings should be constructed to the most in the areas where only several factories or mines would exist. Two-story housing

[18] *1953-1957 Zhonghua renmin gongheguo jingji dang'an ziliao xuanbian guding zichan touzi he jianzhuye juan*, P.936

[19] See. Zhao Fengshi, "Dui chengshi guihua ding'e de ji dian yijian," JZ(internally published), Iss.1/1954, P.30; MBE, Bureau of Urban Construction, Department of Information, "Chengshi jianshe ji xiang ding'e de cankao ziliao," *JZ, Iss.2/1954*, P.37

[20] Zhao Fengshi, "S Dui chengshi guihua ding'e de ji dian yijian," *JZ(internally published), Iss.1/1954*, P.30

> and three-story office buildings could be constructed in such areas only when it would be irrational in economy to build single-story buildings or when too much cultivated land would be occupied. In far suburbs, single-story buildings and multi-story buildings could be mixed. Semi-temporary multi-story buildings would be more constructed in near suburbs.[21]

Thereafter, a batch of design for single-story housing was soon worked out. Because the main objective of constructing more single-story buildings was to cut down the costs, the standard adopted by the design was very low. For example, only shared faucets or wells were equipped, ditches or ceramic pipes were used for drainage, and *kangs* (heatable brick beds) or heating walls were used as heating facilities. At the same time, "modern" outdoor facilities were not provided, quakeproofing was deferred, and local construction materials were largely invoked. As the compensation for the hard living condition, the areas of bedrooms, kitchens and courtyards were allowed to be somewhat larger than those of multi-story apartments.[22]

Promoted by the government, single-story housing was largely constructed during the first Five-Year Plan, and its overall area almost caught up with the built area of multi-story housing.[23] Meanwhile, the debate on how many single-story buildings ought to be build was raised, because they had some inevitable problems, such as consuming more land, increasing the investment for extended pipes, consuming more wood. To find a rational proportion of single-story buildings in overall building construction became an important concern of the State Statistics Bureau, the Chief Bureau of Urban Construction, and the State Construction Commission. These departments initiated a series of studies in 1957 and thereafter reached consensus on this question. It was agreed that in principle, multi-story housing would be mostly constructed in super cities (population large than 1,000 thousand), both multi-story housing and single-story housing would be constructed in big cities (population between 500-1000 thousand), single-story housing would be more constructed in middle-scale cities (population between 100-500 thousands), and it would be the overwhelming majority in small cities (population less than 100 thousands). The concrete

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[21] Translated from Li Fuchun (1955), "Lixing jieyue, wei wancheng shehuizhuyi jianshe er fendou," *JZ, Iss.7/1955*, P.10

[22] See Yan Zixiang, "Genju zhongyang lixing quanmian jieyue de zhishi zuzhi jianzhu sheji gongzuo," *JZ, Iss.8/1955*, P.13

[23] *1953-1957 Zhonghua renmin gongheguo jingji dang'an ziliao xuanbian guding zichan touzi he jianzhuye juan*, P.953

ratios of the two types of housing would be decided by localities according to local conditions. In addition, because two-story housing which had been built in a small quantity at that time was thought to be as cheap as single-story housing, to construct more two-story housing became another common view.

In the 1957 competition of schematic housing design, single-story housing occupied nearly a half of the rewarded design. These schemes focused on adopting local construction techniques and folk construction methods, and some of them were featured local styles in their plan compositions or forms.[24] For example, the schematic design for single-story housing in Beijing area by Bi Chun strongly embodied the characteristic of the vernacular architecture in north China, by the introduction of courtyard and brick façades, as well as the roof construction familiar at vernacular houses (see Figure 7-32).

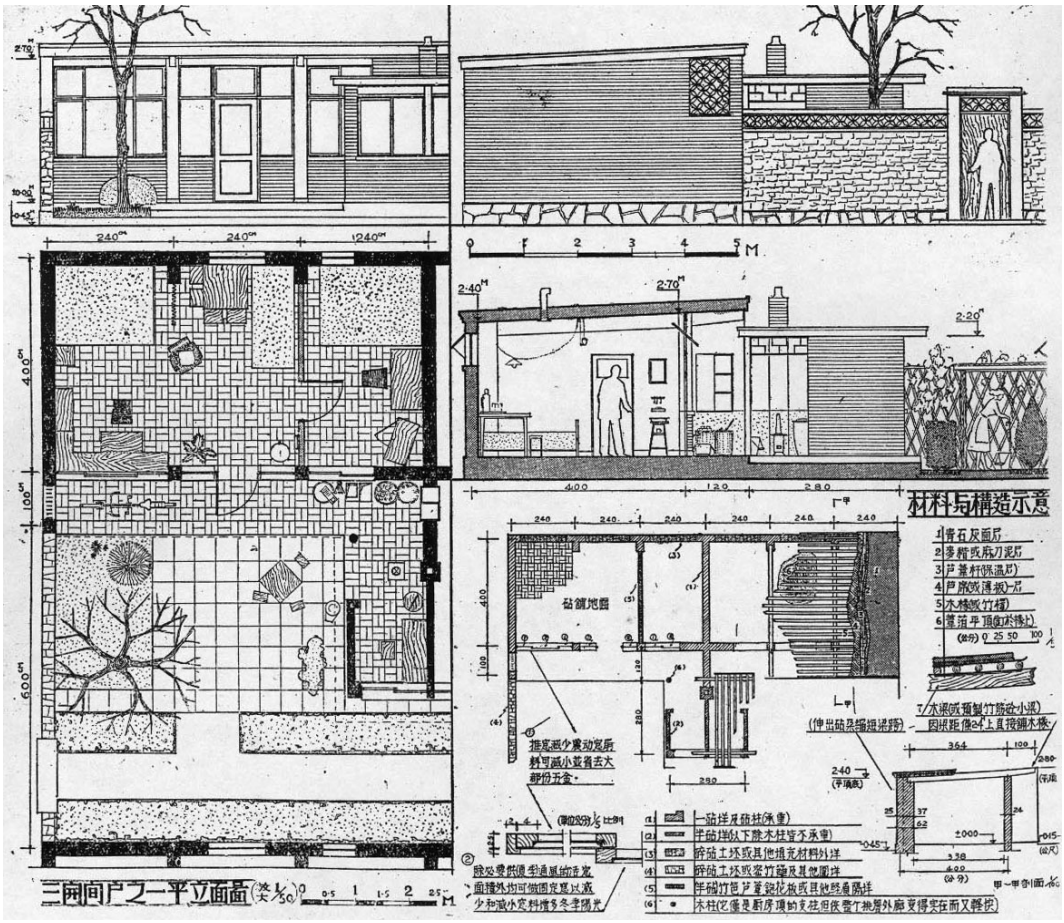

Figure 7-30 A design of single-story housing for Beijing at the competition of schematic housing design in 1957, Bi Chun

[24] *JZXB*, Editor Group, "Quanguo changkuang zhigong zhuzhai sheji jingsai jieguo de baodao," *JZXB , Iss.3/1958*, P.1

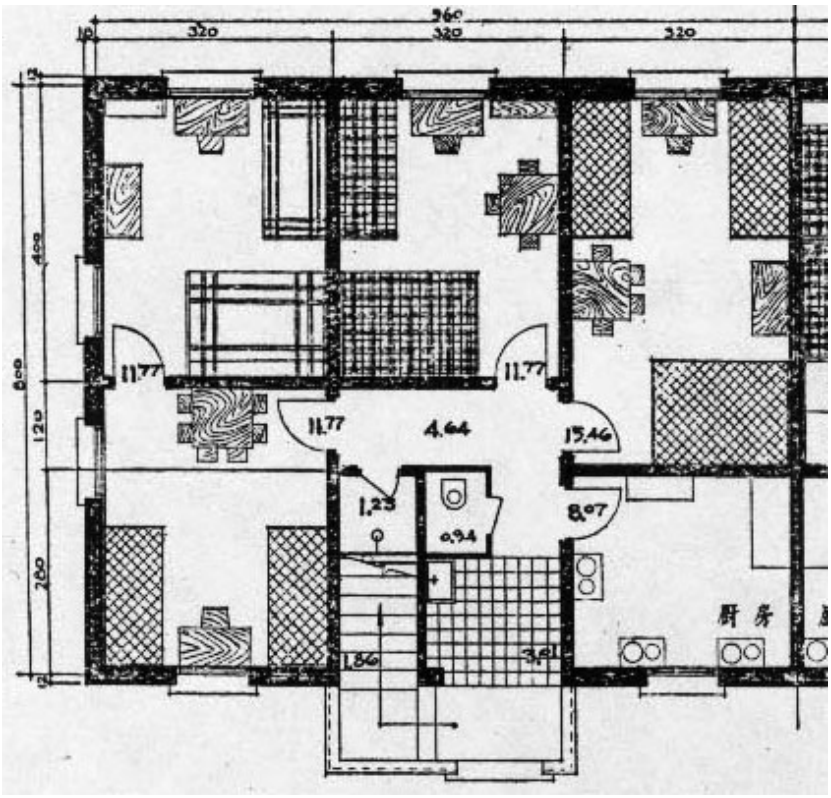

Figure 7-31 A design of two-story housing at the competition of schematic housing design in 1957, Industrial Architectural Design Institute of Middle-South China; - a shower was set under the staircase

Two-story housing schemes occupied a big part in this competition as well. Although most of the two-story housing schemes were not much different from three-story housing and most of them exceeded the prescribed economic targets of two-story housing, the attempts of utilizing the spaces at staircases were remarkable, as presented in Figure 7-33. After 1957, the study on two-story housing made certain progress. The paper "Er ceng zhuzhai ji jiefang sheji wenti de tantao" ("A Study on the Design of Two-Story Housing and Neighborhood") by Huang Baoqing and Lü Junhua, published in the fourth issue of *JZXB* in 1958, conducted a comparative study on various types of two-story housing with experimental plan schemes. The one-flight staircases in both of the inner-corridor plans and the open-corridor plans formed the key feature of their design (see Figure 7-34). In actuality however, two-story housing, except the simply built ones, was not expectedly cheaper than three or four-story housing, therefore it was not well progressed in design and practice.[25]

[25] According to Huang Baoqing and Lü Junhua's preparation based on the housing design by the Beijing Municipal Architectural Design Institute, the costs of two-story houses with heating system in 1954was 117% of that of four-story houses, and the costs of two-story houses without heating system in 1958 was 104% of the latter. (See *JZXB, Iss.3/1958,* P. 86)

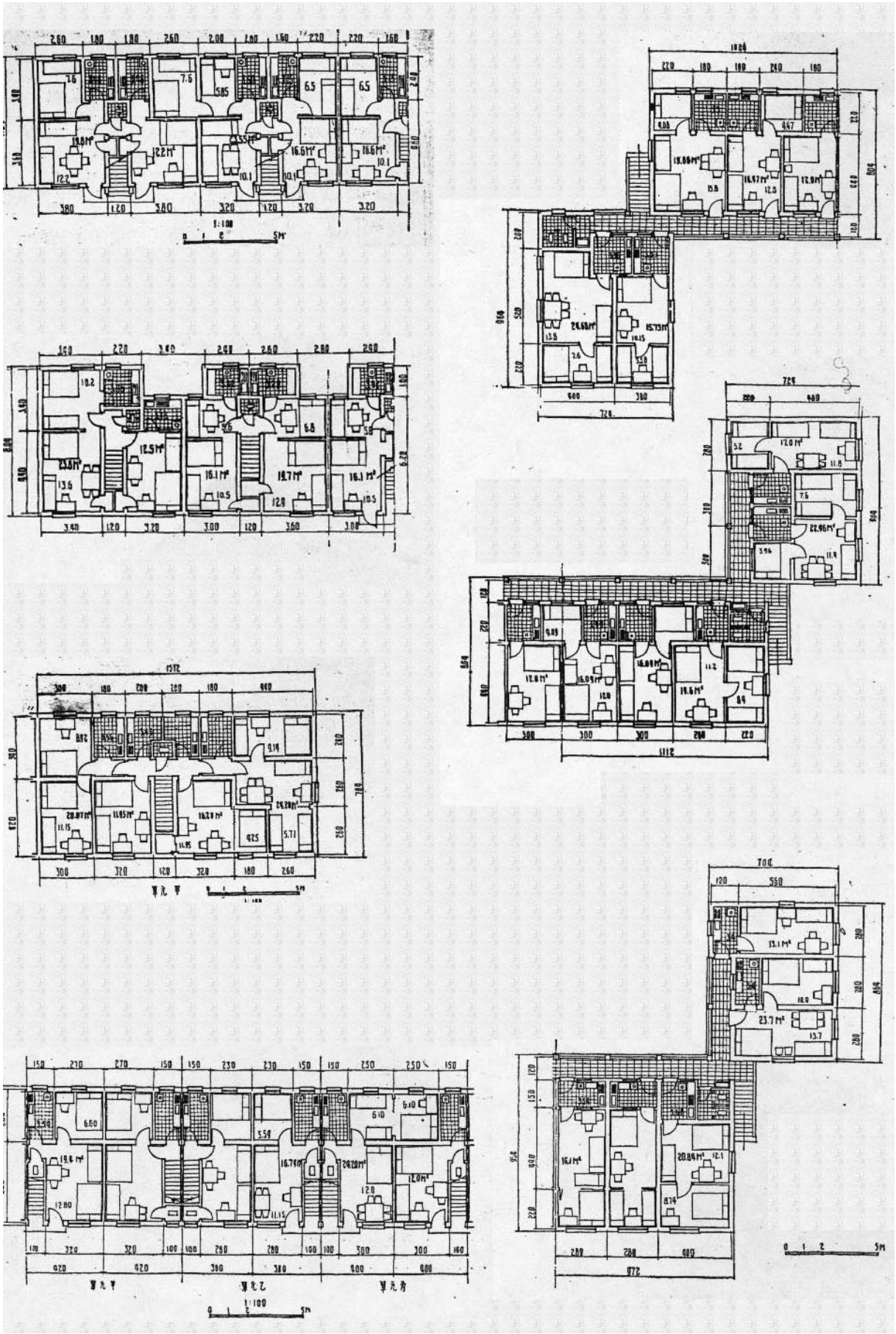

Figure 7-32 Huang Baoqing and Lü Junhua's design proposals for two-story housing

Since 1955, lowering cost was always the key concern in housing design. This orientation was carried to the extreme during the Great Leap Forward. The effort to decrease the costs of housing construction mainly included three aspects. [26] Firstly, some design further depressed buildings' standards and tried to utilize spaces to the utmost. For example, in such design, the height between floors was decreased to 2.6-2.5 meters, the spaces of toilets and kitchens were reduced or even removed, and cheaper constructions such as simple windows and doors as well as earth floors were adopted to substitute normal constructions. Secondly, some design resorted to "new techniques", such as small concrete beams and bricks instead of concrete floor slabs. Lastly, some design extensively adopted raw local materials and technologies, such as bamboo-weaved walls and adobe arches. In April 1958, a conference convened by the MBE became a national exhibition of those housing design. According to a later published introduction of the conference, with such design, per square meter cost of three or four-story housing could be decreased to 35 *yuan*, that of single-story or two-story housing would be 20 *yuan*, and that of simply-constructed single-story or two-story housing would be 15 *yuan.*[27]

The pursuit of lowering housing construction cost reached the high tide in 1960, when the so-called *gandalei* houses emerged in Daqing oil field. In order to solve the problem of housing shortage in the early time of building Daqing oil field, *gandalei* – a raw local technique of constructing houses with compacted earth, familiar in northeast China – was adopted to rapidly build the workers' housing. During June to September 1960, near one million square meters of *gandalei* houses were constructed by the workers themselves. Notwithstanding the low living condition, these temporary single-story houses saved a large amount of investment and thus achieved the policy of "more, faster and cheaper" in housing construction. Thereafter, the way of housing construction in Daqing oil field was propagate as "the sprit of *gandalei.*" As Mao Zedong called for "learning from Daqing" in 1964, "the sprit of *gandalei*" was advocated all over China, and in building construction, a great deal of such *gandale* houses and the varieties were extensively built.

[26] See, MBE, Chief Bureau of Design, Department of Local Design, "Dayuejin zhong juzhu jianzhu sheji fang'an jieshao," *JZXB, Iss.6/1958*, P.1

[27] See Ibid., PP.1-6. The prices are doubtable because they were declared in the exaggeration in the Great Leap Forward.

Figure 7-33 "*gandale*" houses at Daqing oil field, 1960s

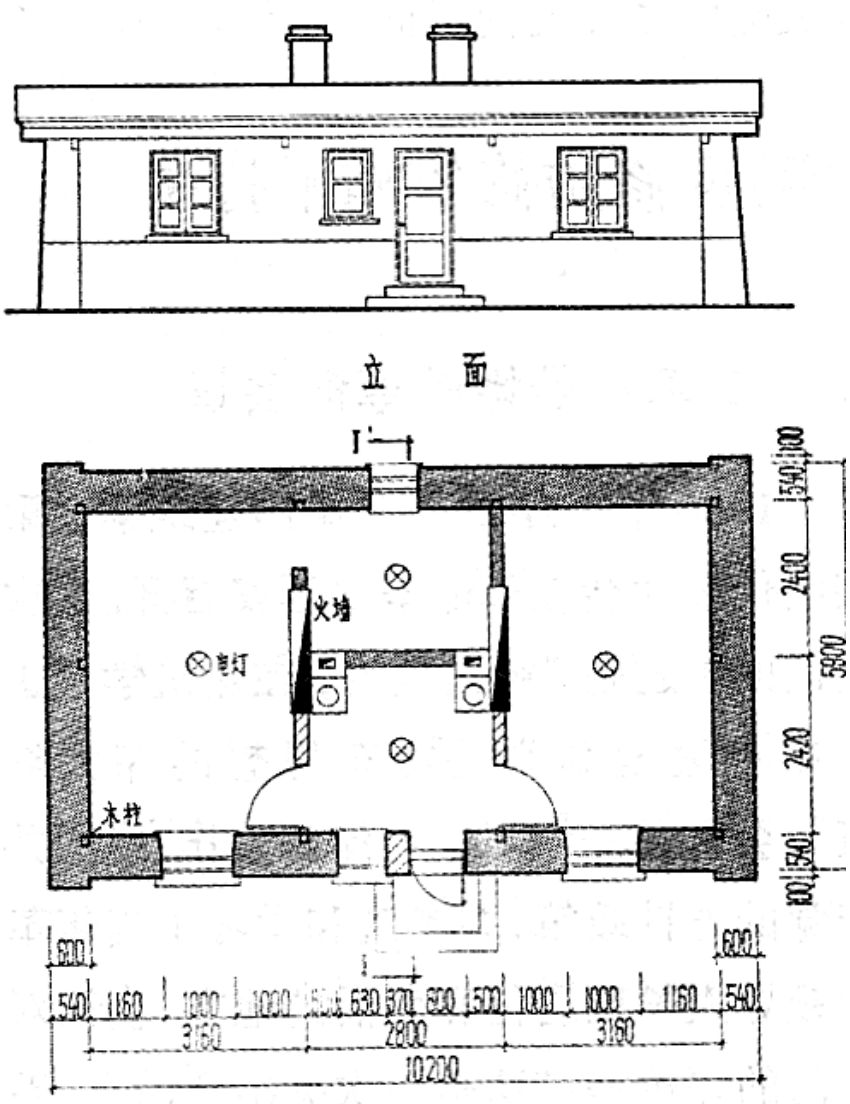

Figure 7-34 "Gandalei" housing designed by local design institute in Daqing, 1965

Overall, under the policy "production first and livelihood second," the urban housing construction in China during the 1950s and 60s was kept at a low level. The efforts to control the investment for housing construction shaped the major feature of housing design. However, the direction of industrializing China's building construction, which gave the first priority to industrial construction, still influences the housing construction.

During the early 1950s, mechanized construction in China could only be carried out in the construction of the most important projects, and the factory prefabrication mostly aimed to providing components for constructing plants. The industrialization of housing construction made some progress in the standardization of housing design, and a small quantity of housing were built with the mode of prefabricated construction. Precast concrete components, such as floor-slabs, stair cases, small beams, lintels, and windowsills, began to emerge in housing construction. Most of the components were made with simple equipments in open-air manufactories affiliated to construction enterprises. In 1956, the State Council issued *Decision on Reinforcing and Developing the Building Industry*, regarding developing prefabricated concrete components as the main means to accomplish industrialization.[28] Thereafter, a number of prefabrication factories were built in many provinces, which increasingly produced prefabricated components for housing construction, although the production scales and levels were not comparable to those in industrial construction.

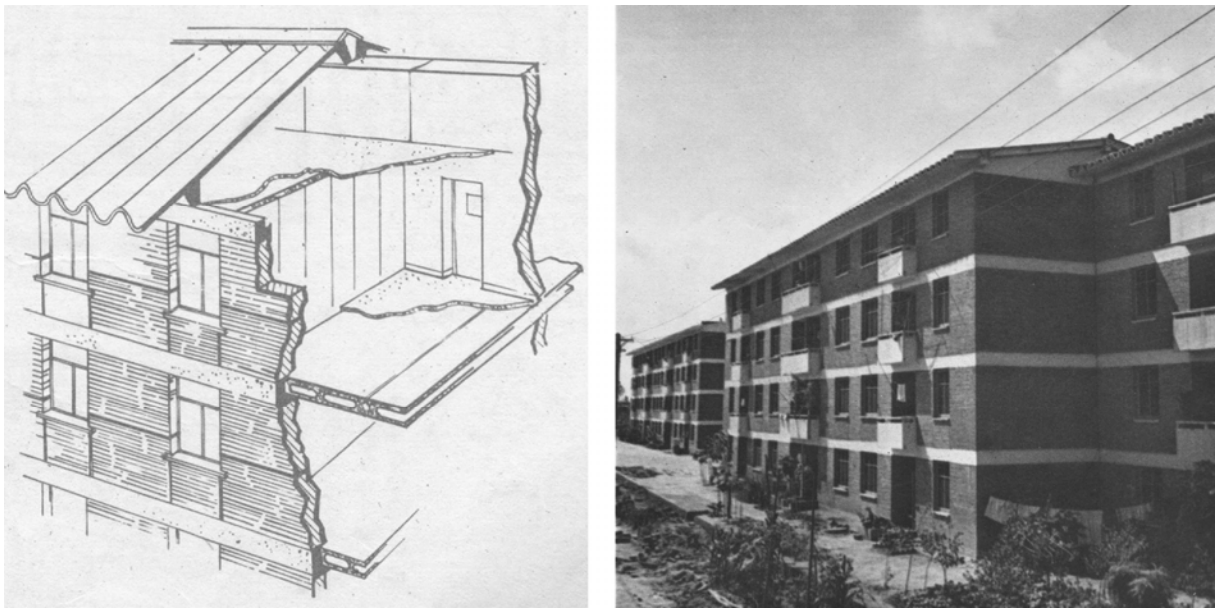

Figure 7-35 Prefabricated housing in Beijing, 1958, built with block bricks, prefabricated concrete floor slabs, and prefabricated concrete wave-shaped roof tiles

[28] *Zhongguo jianzhu nianjian 1984-1985*, P.135

From 1958 on, along with the technical tendency in overall building construction, prefabricated housing construction made a great progress. Since this year, Beijing Architectural Design Institute designed a series of experimental projects of total prefabricated housing construction. At these projects, block bricks, vibrated-brick wall panels, and thin-webbed wall panels welled up, and by the end of 1963, the overall floor area of such housing in Beijing had reached 50,000 square meters.[29] In order to carry out the research on prefabricated housing construction, a special research team joint by Beijing Architectural Design Institute, Tsinghua University, and Beijing Institute of Building Engineering was established in 1960. In Shanghai, total prefabricated housing drastically developed as well. Since 1959, it built a number of experimental projects with block bricks and vibrated-brick wall panels, in 1960, it began to popularize universal concrete blocks in building construction, and in 1964, began to construct several experimental projects with large wall panels. Since 1958, the experiences and new explorations of various prefabricated housing design and constructions in Beijing, Shanghai and other cities were largely introduced in various periodicals. Those papers presented a number of researches and applications of new technologies, such as cross wall load-bearing system, as well as prefabricated housing built with block bricks, large wall panels, and vibrated-brick wall panels.

Generally speaking, the experimental projects since 1958 only occupied a small proportion in the overall housing construction. The undertaking of total prefabricated housing reflected the eager desire of rapidly accomplishing modernization of China's industry in the Great Leap Forward Movement. The explicit goal of it was to master the new building technologies to achieve the fast speed of building construction, while the implicit one still rested with the economic aspect. Adopting those new technologies would save construction materials, because, for example, the walls could be made thinner. More importantly, the new technologies could substitute new materials for the conventional bricks, which were made with clay, so that they would reduce the consumption of farmland and accordingly ensure the agricultural output. In a word, the economic significance of the undertaking would be tremendous. The explorations on new building technologies were carried on, even during the period when China was confronted with great economic difficulties. Interrupted during the upsurge of the Cultural Revolution however, these explorations were

[29] Lu Cangxian, "Zhendong zhuan ban zhuzhai de sheji yanjiu," *JZXB*, Iss.1/1964, P.4

picked up again and further developed in the 1970s and especially the 80s, when many cities witnessed the erections of a great amount of total prefabricated housing projects.

CONCLUSION

As discussed at the beginning, the goal of this thesis is to make clear the process as well as the background of China's architectural development during 1949 to 1965. With this goal, I carried out the study and discussed various aspects of the development. In the first part of the thesis, I have analyzed the evolvement and different approaches of China's prominent architecture during this period, and examined in detail some interesting points, such as Liang Sicheng's advocacy of historicist architecture and the debates around the modernity versus nationality of China's architecture. I have also traced back to the early development of modern China's architecture to clarify its consequence to China's post-1949 architecture. In the second part, I have studied various aspects directly related to the architectural development as well as the housing development as a case study of the mass-produced "small architecture". These aspects are often ignored by architectural research, but they are close related to the social-economic situation and therefore indispensable for a veracious perspective.

There are still some aspects not fully discussed in this thesis. One aspect is the development of industrial architecture. Although how the architects and the engineers played their roles in this architecture is of my interest, I decided to leave it to further study due to the lack of references. Similarly, the design of ordinary non-industrial civil architecture, which was most likely conducted along the line of standard design, has not been fully examined except housing design. Another aspect not concretely discussed is the role and contribution of Soviet experts, while based on available records and references, some of their activities have been presented in this thesis.

This study was concluded with the year 1965, the eve of the Cultural Revolution, which was launched by Mao Zedong in 1966 and then became a nation-wide disaster. The Cultural Revolution touched every political and economic aspect in the PRC, as well as the lives of Chinese people. It destroyed the social, political and economic systems that had been mostly established in the 1950s in imitation of the Soviet Union, as well as the system of building industry. During 1966 to the beginning of the 1970s – the upsurge of the Cultural Revolution – large quantities of architects and engineers were sent to countryside for labor work, so that the architectural

activities almost ceased. Most architectural works during this period made an effort to symbolize slogans of the time by decorating buildings with emblems – a tactic largely presented in Soviet socialist realist architecture during the 1930s to 50s as well as on the Chinese Revolution Museum and Chinese History Museum, built in Beijing at the end of the 1950s. Besides the emblems, these buildings were featured with colonnades, with some similarity to the façade of the Great Hall of the People.

At the beginning of the 1970s, the turmoil was somehow relaxed and the national economy was recovered to a certain degree. Following the amelioration of foreign relations especially the relationship with the United States, a number of hotels, railway stations and airports were built in some big cities and scenic cities. This leaded to the resumption of architectural activities and the reemergence of various pre-1966 architectural approaches. In Guangzhou, in order to suit the needs of foreign trade, a number of new buildings were constructed. In Guilin, many new garden buildings were erected in parks. Supported by the local leaders, “Lingnan style” made further progress in the two cities and gradually spread to all over China. The technical tendency emerged at the end of 1950s was followed as well. At railway stations, airports and gymnasiums, new structure systems were largely applied.

When the conclusion of the Cultural Revolution was formally declared at the end of the 1970s, China paced its way to “opening and reform”. The approach of modern architecture, which had ceased since 1953 and was brokenly appealed for during the 1950s and 60s, became a main theme in the architectural practice. As symbols of modern architecture, high-rise hotels, large-glassed buildings and so forth were erected in succession in China. At the same time, the notion “socialist new style” raised at the end of the 1950s was vindicated and extensively discussed, simultaneous with a new round of pursuing national-form architecture. The predicament between modernization and nationalism continuously confused Chinese architects.

Following the success of the “opening and reform” policy in the economic areas, China’s architecture become increasingly diversified. Besides the modern architecture and the national-form architecture, the European continent style architecture became prevailing in the real estates in the 1990s. Nowadays, a number of prominent foreign architects are involved in the design for important buildings, and through them the most advanced architecture is introduced into China. On the other hand, some young Chinese architects undertake their individualized approaches in architectural

activities and, in a freer atmosphere of design, seldom of them choose to carry on the exploration on national-form architecture. However, the governmental officials are still and the capitalists are increasingly playing a leading role in the design market, and many of them are eager to demonstrate the achievements in their official careers or the successes in their businesses with splendid architecture, especially that designed by famous foreign architects. In this situation, there is still a long way to go to establish the distinction of the Chinese architects, if not the identity of the nation.

Since the beginning of the 1970s, the construction enterprises, design institutions, and the corresponding administrative organizations gradually resumed their work, started in localities. Thereafter, the centralized system of building construction was reestablished. The work of urban planning and standard design were gradually resumed as well, together with architectural activities. Meanwhile, the system was slowly evolved. In 1973, the CCP government decided to replace the system that the construction enterprises got financial allocations from the government according to the economic plan with the system that they got payments according to their workloads. For the design institutions, the system of charging design fee was resumed in 1980. Thereafter, the construction enterprises and design institutions began to rely on themselves, and gradually they were thrown into market competition. At the turn of the century, the reform of transforming state-run design institutions to private design companies started. This indicated the demise of the system of state design institute, which has played a very important role in the planned economy.

The development of architecture and building construction during 1949 to 1965 presented an aspect of the overall development of China, and apparently reflected the social-economic changes of the time. The first fundamental change took place in the early 1950s, when China established the system of planned economy following the Soviet model. In the area of building construction, a centralized administrative system as well as state-owned construction enterprises and design institutions was established, which collected construction and design forces and unified their operational modes. This system was advantageous to carry out the large-scale construction in the first Five-Year Plan but at the same time, it wrecked the flexibility of the building industry and design. The second important change happened around the end of the first Five-Year Plan, at which the government made an effort to balance the development of various aspects of the national economy and somehow decentralized the administrative system.

It brought changes in the area of building construction. Although the radical Great Leap Forward Movement failed and leaded to the stagnancy of the national economy and the building industry, the flexibility of the industry and the diversity of architectural design made certain progress. Another change was resulted from the Anti-Waste Movement in 1955. This movement specially asserted a great influence in most aspects concerning building construction and architectural design. Its stress on economization of the capital construction shaped the development of China's architecture in the later time.

Reviewing the history, some characteristics of the development of China's architecture during 1949 to1965 come to the forefront. Firstly, the Soviet's impact was very extensive. It involved almost all the aspects related to China's architecture of this period, such as the administrative system, the mechanism of design institution, the operation of urban planning, and the economic control of mass civil building construction. In the area of architectural design, at first, the Soviet theory of "socialist realism" promoted the "big roof" architecture against the modern architecture in China, and shortly, the criticism on Stalinist architecture initiated the Anti-Waste Movement and the criticism on "big roof" architecture. The revising puzzled the creative activities of China's architecture in the middle of the 1950s, and this puzzle became a knot not opened for a long time.

Secondly, the "big architecture" and the "small architecture" presented different traces of development. The former – the individually designed prominent buildings – involved a number of prominent architects. This architecture was more influenced by the ideology and more confused between modernization and nationalism. While the latter – the mass-constructed civil buildings – was mostly designed by nameless architects and engineers, and usually constructed according to standardized design. The ideological influence on them was less strong, and increasing production and lowing costs was the key concern.

Thirdly, the planned economy with a high centralized authority leaded to the monotony of architecture. In the area of building construction, this system demanded uniform standards so that it could not but throttled the diversity of architecture. Moreover, because the CCP's policies were not allowed to be argued even if they were self-contradictory, avoiding "mistakes" rather than innovation became the preference of the architects. So that, the imitations of published architectural works were largely witnessed in practice, and

diversified creative activities could only be seen discontinuously when the central authority and the ideological control were looser.

Lastly, the ideological concerns and the pursuit of national form as the national identity in architecture were basically confined inside the architectural circle. As shown in this thesis, the most important role in this direction was taken by some prominent architects. Imbued with the Confucian tradition of Chinese intellectuals, the architects consciously or unconsciously interpreted the CCP's policies into architectural activities, eventually leading to the bewilderment upon themselves. To the CCP's top leaders, the ideology of architecture was not so serious in comparison with that of literature, while the overall economic achievements of the party and the socialist China were more important. The evidences could be found in many events, such as the fact that the CCP's top leaders successively held out the criticisms on the Peace Hotel and Liang Sicheng, as well as the fact that they raised the statement of adopting all the achievements of any time and any country in architectural design.

On all accounts, the period between 1949 and 1956 laid the foundation for the PRC's architecture and building construction. As discussed in this thesis, the administrative structure, the mechanism of design institutions, and the methods of urban planning and standard design were all established during the early time of this period and thereafter, evolved along with the development of the PRC's politics and economy. Under a planned economic system, which had been adopted in China for decades until the 1980s, the centralized hierarchy of the administration of building industry was fundamental, because it could guarantee the mobilization and organization of the construction and design forces to accomplish the state economic plan. At the same time, urban planning and standard design were crucial for implementing the plan in the area of urban construction and building construction. They played an important role in controlling the investment and ensuring a systematical construction.

The architectural activities during 1949 to 1956 also established the basis for the development of PRC's architecture and, dropped a great impact to the process of the modernization of China's architecture. The pursuit of national form and the "socialist new style" during the period set up the main theme and also left the puzzlement for China's architectural activities. Various architectural approaches presented during the period were followed and further progressed afterwards.

Today, various aspects related to the architecture in the 1950s and 60s are getting far away, and most of the architectural works of that time have faded out from the concern of today's architects. As the planned economy has been substituted by the market economy, the corresponding system in the building construction is being fundamentally changed, and the architectural activities are becoming increasingly individualized. Nevertheless, some good aspects of the old system were inherited, such as the responsibility system for controlling design qualities, which still functions well in organizing design institutions; urban planning, which is still invoked to guide urban construction; and standard design, which is still conducted to publish standardized construction details to be cited in working drawings. Some beneficial precedents during the period were followed as well, such as the meetings of appraisal for selecting and popularizing housing design, as well as the rewarding of good architectural design for improving the overall design level. In general, the history of China's architecture after 1949 is still ignored. At least for Chinese architects, it is worthy to review the history and more importantly, to learn experiences and draw inspirations from the valuable legacy of that time.

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1-60 Central Hospital (Ibid. P.48)
1-61 Ministry of Foreign Affairs, Nanjing (http://user.xici.net/b605574/d34681264.htm)
1-62 Bank of China, Shanghai (Ze Denong, *Zhongguo jianzhushi tu shuo xiandai juan*, P.25)
1-63 Harbin Railway Station (*Harbin yin xiang (shang)*, P.110)
1-64 Office Building of China-Eastern Railway, Harbin (Ibid., P.113)
1-65 Sassoon House, Shanghai (*Daduhui cong zheli kaishi-Shanghai nanjinglu waitan duan yanji*, P.110)
1-66 Metropole Hotel, Shanghai (*Zhongguo xiandai meishu quanji-jianzhu yishu 1*, Pic.72)
1-67 Broadway Mansions, Shanghai (Ze Denong, *Zhongguo jianzhushi tu shuo xiandai juan*, P.12)
1-68 Joint Saving Society Building, Shanghai (*Zhongguo xiandai meishu quanji-jianzhu yishu 1*, Pic.101)
1-69 Grand Theater, Shanghai (*Zhongguo xiandai meishu quanji-jianzhu yishu 1*, Pic.124)
1-70 Le Dauphiné Apartments, Shanghai (http://virtualshanghai.ish-lyon.cnrs.fr)
1-71 Wu Tongwen's House, Shanghai (Ze Denong, *Zhongguo jianzhushi tu shuo xiandai juan*, P.16)
1-72 Picardie Apartments, Shanghai (http://virtualshanghai.ish-lyon.cnrs.fr)
1-73 Embankment Building, Shanghai (Ibid.)
1-74 I.S.S. Gasgoigne Apartments, Shanghai (Ibid.)
1-75 Leopold Building, Tianjin (Ze Denong, *Zhongguo jianzhushi tu shuo xiandai juan*, P.17)
1-76 Bo Hai Building Hotel & Offices, Tianjin (*Zhongguo xiandai meishu quanji-jianzhu yishu 1*, Pic.103)
1-77 Metropole Theater, Shanghai (*Zhongguo xiandai meishu quanji-jianzhu yishu 1*, P.36)
1-78 Lyric Theater, Shanghai (*Tong Jun wenji di'erjuan*, P.419)
1-79 Hengli Bank, Shanghai (Ibid. P.415)
1-80 Design of an apartment building at Xizang Road, Shanghai (Ibid., P.430)

1-81 Heji Apartments, Shanghai (Ibid., P.419)
1-82 National Commercial Bank, Shanghai (Ibid., P.419)
1-83 Obstetrical Hospital, Shanghai (http://www.shghj.gov.cn/bhjz_pic_show.aspx?picid=321)
1-84 Hongqiao Sanitarium, Shanghai (*Zhongguojianzhu* (*The Chinese architect*), Iss. 5, 1934, P.9)
1-85 Sin-Hua Trust & Savings Bank, Tianjin (*Zhongguo xiandai meishu quanji-jianzhu yishu 1*, Pic.75)
1-86 Majestic Theater, Shanghai (*Ibid.* Pic.125)
1-87 Department of Geology at Peking University (*Liang Sicheng quanji Vol. 9*, P.16)
1-88 Dormitory for Schoolgirls at Peking University (Ibid., P.17)
1-89 AB Buildings –Building A, Nanjing (*Nanjing minguo jianzhu yishu*, P.414)
1-90 Chekiang First Bank, Shanghai （*Tong Jun wenji di'erjuan*, P.453）
1-91 Central News Agency, Nanjing (*Yang Tingbao jianzhu lunshu yu zuopin xuanji*, P.90)
1-92 Yanhuiguan House, Nanjing (Ibid. P.87)

2-1 Makhorka Tobacco Pavilion of All-Russia Agricultural Exhibition, Moscow (Ikonnikov A., *Russian Architecture of the Soviet Period*, P.92)
2-2 USSR Pavilion at the 1925 International Exhibition of Contemporary Art and Industry, Paris (http://www.essential-architecture.com/PA/PA-032.htm)
2-3 The monument to the Third International by V. Tatlin (Ikonnikov A., *Russian Architecture of the Soviet Period*, P.84)
2-4 Palace of Labor, Moscow (Ibid., P.89)
2-5 Apartment House for the People's Commissariat of Finance, Moscow, (Brumfield W. C., *A History of Russian Architecture*, P.475)
2-6 Izvestia Newspaper Building, Moscow (Ibid., P. 471)
2-7 Pravda Newspaper Building, Moscow (Ikonnikov A., *Russian Architecture of the Soviet Period*, P.143)
2-8 Palace of the Soviets (http://en.wikipedia.org/wiki/Image:Palace-of-soviets.jpg)
2-9 Moscow State University (http://en.wikipedia.org/wiki/Image:52316532_b27574ec03_o.jpg)
2-10 Moscow Hotel, Moscow (Brumfield W. C., *A History of Russian Architecture*, P. 489)
2-11 Ukraine Hotel, Moscow (http://www.russia-travel.com/hotels/hotelDesc.php?city=Moscow&id=157&stars=4)
2-12 Mayakovskaya Metro Station, Moscow (Ikonnikov A., *Russian Architecture of the Soviet Period*, P.89)
2-13 Red Army Theater, Moscow (http://www.andreas-praefcke.de/carthalia/russia/rus_moskva_redarmy.htm)

2-14 Opera House, Yerevan (www.answers.com/topic/yerevan-opera-house-jpg)
2-15 Azerbaijan Pavilion, All-Union Agricultural Exhibition, Moscow, (http://en.wikipedia.org/wiki/Image:Bccb_azerbaijan_1948.jpg)
2-16 Uzbekistan Pavilion, All-Union Agricultural Exhibition, Moscow (Tarkhanov A. & Kavtaradze S., *Stalinist Architecture*, P.189)
2-17 CCCP Exhibition Hall, Beijing (http://www.bjexpo.com/bzfq/images/pic3.jpg)
2-18 Sino-Soviet Friendship Edifice, Shanghai. (http://postcardxp.com/gnfg/gnfg39/sh003.jpg)
2-19 Office Building of Harbin Measuring and Cutting Tool Works (Ze Denong, *Zhongguo jianzhushi tu shuo xiandai juan*, P.67)
2-20 Housing at the First Automobile Works, Changchun, (*Jianzhu sheji shi nian*, N.P.)
2-21 Liang Sicheng's imaginary illustrations of "national form" *(Liang Sicheng quanji, Vol. 5*, P.233)
2-22 Aquatic Hall, South Chinese Local Products Exhibition, Guangzhou (Ze Denong, *Zhongguo jianzhushi tu shuo xiandai juan*, P.46)
2-23 Forestry Hall, South Chinese Local Products Exhibition, Guangzhou (*Ibid.*, P.48)
2-24 Library at South China Institute of Technology, Guangzhou (Ze Denong, *Zhongguo xiandai jianzhu shi*, P.113)
2-25 Children's Hospital, Beijing (*Jianzhu sheji shi nian*, N.P.)
2-26 Teaching Hospital of Wuhan Medical College (Ibid.)
2-27 Site Plan of Caoyang New Settlement (Ibid., P.3)
2-28 Caoyang New Settlement , Shanghai (Ibid.)
2-29 The diagram of Caoyang New Settlement as a "neighborhood unit" (*JZXB*, Iss.02/1956, P.2)
2-30 Yuying Primary School , Beijing (*Jianzhu sheji shi nian*, N.P.)
2-31 Peace Hotel, Beijing (*Yang Tingbao jianzhu lunshu yu zuopin xuanji*, P.94)
2-32 Hospital of Qingdao Textile Bureau (*Jianzhu shinian*, N.P.)
2-33 Wenyuan Lou at Tonji University, Shanghai (*Zhongguo xiandai meishu quanji-jianzhu yishu 3*, Pic.7)
2-34 Department of Engineering at Hunan University, Changsha (*Ershi shiji Zhongguo jianzhu*, P.214)
2-35 Some office buildings in early 1950s (Ze Denong, *Zhongguo jianzhushi tu shuo xiandai juan*, P.52)
2-36 Southwest People's Grand Hall, Chongqing (Ze Denong, *Zhongguo jianzhushi tu shuo xiandai juan*, P.65)
2-37 Asian Students' Sanatorium, Beijing (*Jianzhu sheji shi nian*, N.P.)
2-38 Friend Hotel, Beijing (Ibid.)
2-39 Di'anmen Dwelling, Beijing (Ze Denong, *Zhongguo jianzhushi tu shuo xiandai juan*, P.77)
2-40 West Building of Beijing Hotel, Beijing (*Jianzhu sheji shi nian*, N.P.)

2-41 Library and Auditorium at Hunan University, Changcha, (Ze Denong, *Zhongguo jianzhushi tu shuo xiandai juan,* P.83)
2-42 Geological Palace, Changchun (Ibid., P.79)
2-43 Classroom Building at East China Aeronautical College, Nanjing (*Jianzhu sheji shi nian,* N.P.)
2-45 CPPCC Hall, Beijing (Ibid.)
2-46 Capital Theater, Beijing (Ibid.)
2-47 Wangfujing Department Store, Beijing (*Yang Tingbao jianzhu lunshu yu zuopin xuanji*, P.97)
2-48 Main Building of the "Sibuyihui" Office Complex, Beijing (*JZXB* Iss.2/1954, P.100; Wang Jun, *Cheng Ji*, P.130)

3-1 Beijing Planetarium (*Jianzhu sheji shi nian*, N.P.)
3-2 Guangzhou Gymnasium (Ibid.)
3-3 Beijing Telegraph Mansion (Ibid.)
3-4 Qianmen Hotel, Zhang Bo (*JZXB* Iss.1/1957, P.27)
3-5 Main Building at Central Party College, Beijing, (Ze Denong, *Zhongguo jianzhushi tu shuo xiandai juan*, P.136)
3-6 Central Party College, Beijing (*Jianzhu sheji shi nian*, N.P.)
3-7 Islamic Koran School, Beijing (Ibid.)
3-8 Xinjiang People's Theater, Urumchi (Ibid.)
3-9 Ministry of Building Engineering, Beijing (Ibid.)
3-10 New Settlement for Returned Chinese Emigrants, Guangzhou (Ibid.)
3-11 First Attached Hospital of Sun Yat Sen University of Medical Sciences, Guangzhou (Ibid.)
3-12 Various design proposals for the Great Hall of the People (*JZXB* Iss. 2/1960 PP.19-24)
3-13 Great Hall of the People, Beijing (*Jianzhu sheji shi nian*, N.P.)
3-14 Chinese Revolution Museum and Chinese History Museum, Beijing (*Jianzhu sheji shi nian,* N.P.)
3-15 Beijing Railway Station (Ibid.)
3-16 National Agricultural Exhibition Center, Beijing (Ibid.)
3-17 Military Museum, Beijing (Ibid.)
3-18 Cultural Palace of Nationalities, Beijing (Ibid.)
3-19 State Art Gallery, Beijing (*Xin Zhongguo jianzhu* N.P.)
3-20 Workers' Stadium, Beijing, (*Jianzhu shinian,* N.P.)
3-21 Minzu Hotel, Beijing (*Xin Zhongguo jianzhu* N.P.)
3-22 Minzu Hotel under construction (*Jianzhu sheji shi nian*, N.P.)
3-23 Auditorium at the Central Party College, Beijing (Ibid.)
3-24 Fuzhou Railway Station (*Xin Zhongguo jianzhu* N.P.)
3-25 Shancheng Wide-Screen Cinema, Chongqing (Ze Denong, *Zhongguo jianzhushi tu shuo xiandai juan*, P.138)
3-26 Students' Mess Hall at Tongji University, Shanghai, (Ibid., P.139)

3-27 Sports hall at Tianjin University（Ibid., P.142）
3-28 Zhejiang Gymnasium, Hangzhou (*Xin Zhongguo jianzhu* N.P.)
3-29 Xinjiang Exhibition Hall, Urumchi (Ze Denong, *Zhongguo jianzhushi tu shuo xiandai juan*, P.143)
3-30 Urumchi Gymnasium (Ze Denong, *Zhongguo jianzhushi tu shuo xiandai juan*,P.145)
3-31 Workers' Gymnasium, Beijing (*Xin Zhongguo jianzhu* N.P.)
3-32 An Office Building of the Ministry of Foreign Trade, Beijing (Ibid., P.102)
3-33 Lu Xun Museum, Shanghai (*Jianzhu sheji shi nian*, N.P.)
3-34 Mao Zedong Museum, Shaoshan (*Xin Zhongguo jianzhu* N.P.)
3-35 Small Auditorium at No.1 Club, Qingdao (Ze Denong, *Zhongguo jianzhushi tu shuo xiandai juan*, P.146）
3-36 Meiling Rest House, Wuhan (Ibid., P.147)
3-37 Biology-Chemistry Building at Sun Yat Sen University of Medical Sciences, Guangzhou (*Xin Zhongguo jianzhu* N.P.)
3-38 Beiyuan Restaurant, Guangzhou (*Mo Bozhi ji*, P.46)
3-39 Panxi Restaurant, Guangzhou (Ibid., P.48)
3-40 Baiyunshanzhuang Hotel, Guangzhou (Ibid., P.59)
3-41 Shuanxi Villas, Guangzhou (Ibid., P.69)
3-42 A courtyard in Friendship Theater, Guangzhou (Ze Denong, *Zhongguo jianzhushi tu shuo xiandai juan*,P.155)
3-43 Yueyalou Pavilion, Guilin (*Xin Zhongguo jianzhu* N.P.)
3-44 Rest House at Ludiyan Park, Guilin (Ibid.)
3-45 Bailongqiao Bridge, Guilin (*Mo Bozhi ji*, P.74)
3-46 Fubolou Pavilion, Guilin (*Xin Zhongguo jianzhu* N.P.)

5-1 Master Plan of Luoyang in the First Five-Year Plan (Wang Dehua, *Zhongguo chengshi guihua shigang*, P.157)
5-2 Preliminary Master Plan of Shenyang, 1956 (Ibid., P.60)
5-3 Plan of a sector of Baotou (Ibid., P.161)

7-1 A housing Plan in Hepingli Residence, Beijing (Lü Junhua, Rowe P.G.& Zhang Jie, *Modern Urban Housing in China 1840-2000*, P.121)
7-2 A house plan in Shanghai in the early 1950s (Xu Xintang, *Jingji Zhuzhai*, P.115)
7-3 workers' apartments in *Jingji Zhuzhai* (Ibid., P.69, P.70)
7-4 workers' apartments in *Jingji Zhuzhai* (Ibid., P.115, P.116)
7-5 The 301 Housing (Lü Junhua, Rowe P.G.& Zhang Jie, *Modern Urban Housing in China 1840-2000*, P.127)
7-6 Plan of the 303 Housing (*JZXB*, Iss.2/1955, P.51)
7-7 Plan of the 305 Housing (*JZXB*, Iss.2/1955, P.53)
7-8 An Apartment Plan Design by the Design Company of Guangdong Province at the 1955 Meeting of Appraisal (*JZXB*, Iss.2/1956, P.65)

7-9 A Corner Unit submitted by the Head Bureau of Design of the MBE (*JZXB*, Iss.01/1956, P.15

7-10 First Floor Plan of Youanmen residential block (*JZXB*, Iss.03/1955, P.27)

7-11 One Set of Apartment Plans at Youanmen residential block (*JZXB*, Iss.3/1955, PP.28-29)

7-12 Open-corridor apartments at Xingfucun Neighborhoo (Lü Junhua, Rowe P.G.& Zhang Jie, *Modern Urban Housing in China 1840-2000*, P.134)

7-13 An open-corridor housing plan by the Chief Bureau of Design of the MBE (*JZXB*, Iss.1/1956, P.21)

7-14 Peng Yigang and Qu Haoran' s design of Open-corridor housing plan (*JZXB*, Iss.6/1956, P.40)

7-15 Small-area apartment design by Song Rong and Liu Kaiji (*JZXB*, Iss.9/1957, P.94)

7-16 Ye Zugui and Ye Zhoudu's study on an 8-s.q.m-room (*JZXB*, Iss.2/1958, P.30)

7-17 A housing plan at the competition of schematic housing design in 1957 (*JZXB*, Iss.2/1958, P.14)

7-18 A housing plan at the competition of schematic housing design in 1957 (*JZXB*, Iss.2/1958, P.12)

7-19 A housing plan at the competition of schematic housing design in 1957 (*JZXB*, Iss.4/1958, P.20)

7-20 Housing plans at the competition of schematic housing design in 1957 (*JZXB*, Iss.4/1958, P.23)

7-21 A "short open-corridor" housing plan (*JZXB*, Iss.3/1960, P.18)

7-22 Housing plans with horizontal stairs (*JZXB*, Iss.3/1960, P.18)

7-23 A housing plan with open-inner-combined corridor (*JZXB*, Iss.3/1962 P.11)

7-24 A 2-2-2 Unit Plan with a short open corridor (Lü Junhua, Rowe P.G.& Zhang Jie, *Modern Urban Housing in China 1840-2000*, P.154)

7-26 A housing plan by Industrial Architectural Design Institute of North-East China (*JZXB* Iss.3/1960, P.28)

7-27 A small inner-courtyard housing plan by Industrial Architectural Design Institute of Middle-South China (*JZXB*, Iss.3/1960, P.21)

7-28 A skip-corridor apartment building by Shanghai Civil Architectural Design Institute and Shanghai Housing Research Institute (*JZXB*, Iss.7/1959, P.24)

7-29 A Standardized skip-corridor apartment building in Taiyuan (*JZXB*, Iss.6/1961, P.6)

7-30 A detached flat housing plan at the competition of schematic housing design in 1957 (*JZXB*, Iss.4/1958, P.23)

7-31 A detached flat housing plan with inner-courtyard present at a housing competition in Beijing in 1963, (*JZXB*, Iss.7/1963, P.4)

7-32 A design of single-storey housing for Beijing at the competition of schematic housing design in 1957 (*JZXB*, Iss.2/1958, P.20)

7-33 A design of two-storey housing at the competition of schematic housing design in 1957 (*JZXB*, Iss.4/1958, P.11)
7-34 Huang Baoqing and Lü Junhua's design proposals for two-storey housing (*JZXB*, Iss.4/1958, P.31, P.33)
7-35 "gandalei" houses at Daqing oil field (*JZXB*, Iss.4/1966 P.5)
7-36 "gandalei" housing designed by local design institute in Daqing (*JZXB*, Iss.4/1966 P.5)
7-37 Prefabricated housing in Beijing, 1958, built with block bricks, prefabricated concrete floor slabs, prefabricated concrete wave-shaped roof tiles (*Jianzhu sheji shi nian, N.P.*)

A-1 "Macro Regions" in China (Redrawn from http://210.44.195.12/zgdl/地图库/政区/1953 年政区.jpg)
A-2 Provincial Devisions of China (http://www.lib.utexas.edu/maps/middle_east_and_asia/china_admin_91.jpg)
A-3 Mentions Locations (Redrawn from Fig. A-2)

APPENDIX A • GLOSSARY OF TERMS

1. People

Andreyev 安德列耶夫
Ashepkov 阿谢甫可夫
Bai Demao 白德懋
Baragin 巴拉金
Bi Chun 毕椿
Bo Yibo 薄一波
Chen Boqi 陈伯奇
Chen Deng'ao 陈登鳌
Chen Zhanxiang 陈占祥
Chen Zhengren 陈正人
Chen Zhi 陈植
Dai Fudong 戴复东
Dai Nianci 戴念慈
Dong Dayou 董大酉
Duan Qirui 段祺瑞
Fan Li 范离
Fan Wenzhao 范文照
Feng Jizhong 冯纪忠
Fu Yitong 傅义通
Gong Deshun 龚德顺
Gong Zhenghong 龚正洪
Gu Mengchao 顾孟潮
Guo Shangde 郭尚德
Guo Yangmo 过养默
Ha Xiongwen 哈雄文
Hua Lanhong (Hoa Leon) 华揽洪
Huang Baoqing 黄报青
Huang Xiaoxiu 黄孝修
Huang Zumiao 黄祖淼
He Lizhen 何立蒸
Hua Nangui 华南圭

Huang Xilin 黄锡霖
Huang Yuanqiang 黄远强
Huang Yulin 黄毓麟
Huang Zuoshen 黄作燊
Jiang Jieshi (Chiang Kai-shek) 蒋介石
Jiang Weihong 蒋维泓
Jin Jingchang 金经昌
Jin Oubu 金瓯卜
Jin Zhiqiang 金志强
Kong Xiangzhen 孔祥祯
Li Fuchun 李富春
Li Huibo 李惠伯
Li Jie 李诫
Li Jinpei 李锦沛
Liang Sicheng 梁思成
Lin Huiyin 林徽因(音)
Lin Keming 林克明
Lin Leyi 林乐义
Lin Zhu 林洙
Liu Changcheng 刘昌诚
Liu Dunzhen 刘敦祯
Liu Hongxing 刘鸿兴
Liu Hetian 刘禾田
Liu Kaiji 刘开济
Liu Shiying 柳士英
Liu Xiufeng 刘秀峰
Liu Yumin 刘裕民
Lu Qianshou 陆谦受
Lu Shusen 卢树森
Lu Xun 鲁迅
Lu Yujun 卢毓骏
Luo Weidong 罗维东
Lü Junhua 吕俊华
Lü Yanzhi 吕彦直
Ma Haoran 马浩然
Mamizu Hideo 真水英夫
Mao Yisheng 茅以升
Mao Zedong 毛泽东

Mao Ziyao 毛梓尧
Mei Yiqi 梅贻琦
Meng Zhaoli 孟昭礼
Mukhin 穆欣
Mo Bozhi 莫伯治
Peng Yigang 彭一刚
Qian Long 乾隆
Qu Haoran 屈浩然
Shang Kuo 尚廓
She Junnan 佘畯南
Shen Liyuan 沈理源
Shen Qi 沈其
Shi Linbing 石麟炳
Song Rong 宋融
Song Yuhe 宋裕和
Sun Zhixia 孙支夏
Sun Yat-sen 孙中山
Tan Tiansong 谭天宋
Tan Yuan 谭垣
Tang Pu 唐璞
Tong Jun 童寯
Wan Li 万里
Wang Dingzeng 汪定增
Wang Fuchen 王辅臣
Wang Huabin 王华彬
Wang Jiqi 汪季琦
Wang Ming 王明
Wang Shen 汪申
Wang Tan 汪坦
Wang Kesheng 王克生
Wang Yanling 王延龄
Wu Guangzu 吴光祖
Wu Husheng 吴沪生
Wu Jingxiang 吴景祥
Wu Tianzhu 邬天柱
Xi Fuquan 奚福泉
Xi Zhongxun 习仲勋
Xia Changshi 夏昌世

Xu Jingzhi 徐敬直
Xu Shangzhi 徐尚志
Xu Zhong 徐中
Yan Xinghua 严星华
Yang Kuanlin 杨宽麟
Yang Shiliu 阳世镠
Yang Tingbao 杨廷宝
Yang Xiliu 杨锡镠
Yang Yongsheng 杨永生
Yang Zheming 杨哲明
Yang Zhongzi 杨仲子
Ye Ronggui 叶荣贵
Ye Zugui 叶祖贵
Ye Zhoudu 叶洲独
Yuan Jinshen 袁镜身
Zhan Tianyou 詹天佑
Zhang Bo 张镈
Zhang Kaiji 张开济
Zhao Dongri 赵冬日
Zhao Fengshi 赵风峙
Zhao Shen 赵深
Zhang Bo 张镈
Zhang Jiade 张嘉德
Zhang Jiafu 张稼夫
Zhang Kaiji 张开济
Zhang Yuquan 张玉泉
Zhou Buyi 周卜颐
Zhou Enlai 周恩来
Zhou Huinan 周惠南
Zhou Jingjiang 周镜江
Zhou Rongxin 周荣鑫
Zhou Yang 周扬
Zhu De 朱德
Zhu Qiqian 朱启钤
Zhu Shigui 朱士圭
Zhu Zhaoxue 朱兆雪
Zhuang Jun 壮俊
Zou Denong 邹德侬

2. Places

(See Appendix A-Fig.A-2 for the Provinces, Municipilities directly under the Central Government, and Autonomous Regions)

Anshan 鞍山
Baotou 包头
Changchun 长春
Changsha 长沙
Chaoyang 朝阳
Chengdu 成都
Chongqing 重庆
Dalian 大连
Daqing 大庆
Datong 大同
Daye 大冶
Fushun 抚顺
Fuzhou 福州
Gejiu 个旧
Guangzhou 广州
Guangzhou Bay (Kwangchowan) 广州湾
Guilin 桂林
Guiyang 贵阳
Hangzhou 杭州
Hankou 汉口
Harbin 哈尔滨
Hong Kong 香港
Jiaozhou Bay 胶州湾
Jinan 济南
Kaifeng 开封
Kaiping 开平
Kowloon 九龙
Kunming 昆明
Lanzhou 兰州
Luoyang 洛阳

Lüda 旅大
Macao 澳门
Maoming 茂名
Nanjing 南京
Ningbo 宁波
Panzhihua 攀枝花
Qingdao 青岛
Shanghai 上海
Shaoshan 韶山
Shaoxing 绍兴
Shenyang 沈阳
Taiyuan 太原
Tianjin 天津
Urumchi 乌鲁木齐
Weihai 威海
Wuchang 武昌
Wuhan 武汉
Wuhu 芜湖
Wu Ling Mountain 五岭
Xi’an 西安
Xiamen 厦门
Xiangfan 襄樊
Xiangzhong 湘中
Xuzhou 徐州
Yangzijiang River (Changjiang River)扬子江 长江
Yinchuan 银川
Yingkou 营口
Zhengzhou 郑州

3. Buildings & etc.

Beijing:
Army Headquarters 陆军部
Asian Students’ Sanatorium 亚洲学生疗养院
Beihai Office Building 北海办公大楼
Bank Of Communications 交通银行
Beijing Anglican Church 北京中华圣公会救主堂
Beijing Institute of Technology 北京工学院

Beijing Planetarium 北京天文馆
Beijing Railway Station 北京火车站
Capital Theater 首都剧场
Catholic University of Peking 北京辅仁大学
Central Party College 中央党校
--, Auditorium 礼堂
--, Main Building 主楼
CCCP Exhibition Hall 苏联展览馆
Children’s Hospital 儿童医院
Chinese Revolution Museum and Chinese History Museum 中国革命和中国历史博物馆
CPPCC Hall 全国政协礼堂
Cultural Palace of Nationalities 民族文化宫
Di’anmen Dwelling 地安门宿舍
Diaoyutai State Guesthouse 钓鱼台国宾馆
Friendship Hospital 友谊医院
Friendship Hotel 友谊宾馆
Hall of Science & Technology 科技馆
Huairentang 怀仁堂
Huaqiao Mansion 华侨大厦
Imperial Ancestral Temple 太庙
Imperial University of Peking 京师大学堂
Islamic Koran School 伊斯兰教经学院
Jen-Li Company 仁立地毯公司
Military Museum 军事博物馆
Minzu Hotel 民族饭店
Ministry of Building Engineering 建筑工程部
Ministry of Foreign Trade 外贸部
National Agricultural Exhibition Center 全国农业展览馆
National Parliament 国会大厦
Peace Hotel 和平宾馆
Peking Union Medical College 北京协和医学院
Peking University, Department of Geology, 北京大学地质馆
Peking University, Dormitory for Schoolgirls 北京大学女生宿舍
Occident Buildings at Changchunyuan Garden 长春园西洋楼
Old Summer Palace (Yuanmingyuan) 圆明园
Qianmen Hotel 前门饭店
Sanlihe Office Complex 三里河办公大楼

School of Russian Language 北京俄文专修学校
State Art Gallery 中国美术馆
State Theater 国家剧院
Telegraph Mansion 电报大楼
Tian’anmen Square 天安门广场
The Great Hall of the People 人民大会堂
Tsinghua University 清华大学
Wangfujing Department Store 王府井大楼
West Building of Beijing Hotel 北京饭店西楼
Worker’s Gymnasium 工人体育馆
Worker’s Stadium 工人体育场
Xingfucun Neighborhood 幸福村
Xinqiao Hotel 新侨饭店
Yenching University 燕京大学
Youanmen Experimental Residence 右安门实验住宅
Yuying Primary School 育英小学
Zhongnanhai 中南海

Baotou:
Genghis Khan's Mausoleum 成吉思汗陵

Changchun:
First Automobile Works 第一汽车制造厂
Geological Palace 地质宫

Changsha:
Hunan University 湖南大学
--, Auditorium 大礼堂
--, Department of Engineering 工程馆
--, Library 图书馆
Yale-in-China 雅礼学堂

Chengdu:
Southwest Institute of Nationalities 西南民族学院
West China Union University 华西协和大学

Chongqing:

Chongqing Hotel 重庆宾馆
Shancheng Wide-Screen Cinema 山城电影院
Southwest People's Grand Hall 西南人民大礼堂

Fuzhou:
Fukien Christian University 福建协和大学
Fuzhou Railway Station 福州火车站

Guangzhou:
Beiyuan Restaurant 北园酒家
Baiyunshanzhuang Hotel 白云山庄
Dinghushan Teacher’s Sanatorium 鼎湖山教师疗养院
First Attached Hospital of Sun Yat-sen University of Medical Sciences 中山医学院第一附属医院
Friendship Theater 友谊剧院
Kuanquan Hotel 矿泉别墅
Guangdong Science Hall 广东科学馆
Guangzhou Gymnasium 广州体育馆
New Settlement for Returned Chinese Emigrants 华侨新村
Panxi Restaurant 泮溪酒家
Sacred Heart Cathedral 石室天主堂
Shuangxi Villas 双溪别墅
South China Institute of Technology 华南工学院
--, Chemistry Building 化学楼
--, Library 图书馆
South Chinese Local Products Exhibition 华南土特产展览交流大会
--, Aquatic Hall 水产馆
--, Forestry Hall 林产馆
Sun Yat-sen Memorial Hall 中山纪念堂
Sun Yat-sen University 中山大学
Sun Yat-sen University of Medical Sciences 中山医学院
--, Biology-chemistry Building 生化楼
--, Pharmacy Building 药学楼
Thirteen Hongs 十三行
White Swan Hotel 白天鹅宾馆

Guilin:
Bailongqiao Bridge 白龙桥
Fubolou Pavilion 伏波楼

Ludiyan Park 芦笛岩公园
Qixingyan Park 七星岩公园
Yueyalou Pavilion 月牙楼

Harbin:
Harbin Railway Station 哈尔滨火车站
Linen Textile Factory 亚麻纺织厂
Measuring and Cutting Tool Works 量具刃具厂
Office Building of China-Eastern Railway 中东铁路办公楼
Office Building of City Government 政府办公楼

Hangzhou:
National Commercial Bank 浙江兴业银行
Zhejiang Gymnasium 浙江省体育馆

Jinan:
Shandong Opera House 山东剧院

Lanzhou:
Classroom Building Complex at Northwest Nationality University 西北民族学院教学楼

Maocau:
The Cathedral of San Paulo 大三巴教堂

Nanjing:
AB Buildings AB 大楼
Central Archives of the Nationalist Party 中央党史史料陈列馆
Central Hospital 中央医院
Central Museum 中央博物馆
Central News Agency 中央通讯社
Central Palaestra 中央体育场
Ginling Girls' College 金陵女子大学
Jiangsu Parliament 江苏咨议局
Jinling Machinery Works 金陵机器局
Memorial Hall for Revolutionary Martyrs 国民革命军阵亡将士纪念馆
Memorial Tower for Revolutionary Martyrs 国民革命军阵亡将士纪念塔
Ministry of Foreign Affairs 外交部
National Grand Assembly Hall 国民大会堂

Linggusi Temple 陵谷寺
Scripture Hall 藏经楼
South-east Building at Nanjing University 南京大学东南楼
Sun Yat-sen's Mausoleum 中山陵
Tan Yankai's Tomb 谭延凯墓
Classroom Building at East China Aeronautical College 华东航空学院教学楼
University of Nanking 金陵大学
Yangtze River Bridge 长江大桥
Yanhuiguan House 延晖馆

Nantong:
The Chamber of Commerce 南通商会

Qingdao:
Hospital of Qingdao Textile Bureau 青岛纺织管理局医院

Shanghai:
Apartments at Xizang Road 西藏路公寓
Bank of China 中国银行
Broadway Mansions 百老汇大厦
Caoyang New Settlement 曹阳新村
Chekiang First Bank 浙江第一商业银行
Dent & Company 宝顺洋行(颠地洋行)
Ecole Remi 雷米小学
Embankment Building 河滨公寓
Francico Xavier Church 董家渡天主堂
Grand Theater 大光明大戏院
Great World 大世界
Halmilton House 汉弥尔登大厦
Hong Kong and Shanghai Bank 汇丰银行
Hongqiao Sanitarium 虹桥疗养院
Heji Apartments 合记公寓
Holy Trinity Church 圣三一堂
Hongkou Park 虹口公园
Hengli Bank 恒利银行
I.S.S. Gasgoigne Apartments 万国储蓄大楼
Jiangnan Arsenal 江南制造局
Joint Saving Society Building 国际饭店
Le Dauphiné Apartment 道斐南公寓

Lu Xun Museum 鲁迅纪念馆
Lyric Theater 金城大戏院
Maritime Customs House 江海关
Majestic Theater 美琪大戏院
Metropole Hotel 都城饭店
Metropole Theater 大上海大戏院
Nanyang Public School 南洋公学
Obstetrical Hospital 妇产医院
Paramount Hall 百乐门舞厅
Picardie Apartments 毕卡地公寓
Russo-Chinese Bank 华俄道胜银行
Sassoon House 沙逊大厦
Shanghai Cannon Works 上海洋炮局
Shanghai Gymnasium 上海体育馆
Shanghai Library 上海图书馆
Shanghai Municipal Hall 上海市政府大楼
Shanghai Museum 上海博物馆
Shanghai Palaestra 上海体育场
Shanghai-Wusong Railway 淞沪铁路
Sincere Departmrnt Store 先施公司
Sino-Soviet Friendship Edifice 中苏友谊大厦
St John's University 上海圣约翰大学
--, Schereschewsky Hall 怀施堂
St. Joseph’s Church 洋泾浜天主堂
Tongji University 同济大学
Students’ Mess Hall 学生食堂
Wenyuan Lou 文远楼
Triumphal Arch 胜利门
Wu Tongwen’s House 吴同文住宅

Shaoshan:
Mao Zedong Museum 毛泽东纪念馆

Qingdao:
Small Auditorium of No.1 Club 一号俱乐部小礼堂

Tianjin:
Beiyang University 北洋大学
Bo Hai Building Hotel & Office 渤海大楼

Duan Qirui’s House 段祺瑞宅
Leopold Building 天津利华大楼
Ninth Classroom Building at Tianjin University 天津大学第九教学楼
Quanye Bazaar 劝业场
Sin-Hua Trust & Savings Bank 新华信托银行
Sports Hall at Tianjin University 天津大学体育馆
Tianjin Machinery Works 天津机器局
Wanghailou Church 望海楼教堂

Urumchi
Dongfeng Cinema 东风电影院
Tuanjie Theater 团结剧院
Xinjiang Exhibition Hall 新疆展览馆
Xinjiang People’s Theater 新疆人民剧场
Urumchi Gymnasium 乌鲁木齐体育馆

Wuhan:
Hospital of Wuhan Medical College 武汉医学院附属医院
Hubei Iron Smeltery 湖北炼铁厂
Meiling Rest House 梅岭招待所

Wuhu
Bank of China 中国银行

Xi’an
Office Building of Construction Commission 建委办公楼

Yinchuan:
Ningxia Gymnasium 宁夏体育馆

Others:
Shikumen House (stone gate house) 石库门住宅
bamboo tube house 竹筒屋
riding house 骑楼

4. Firms, Institutions, & etc.

Academy of Building Research 建筑科学研究院
--,Theory & History Section 理论及历史研究室

Administration Bureau of Iron and Steel Industry 钢铁工业管理局
All-China Association for Science and Technology Popularization 中华全国科学技术普及协会
All-China Union of Special Societies of Natural Science 中华全国自然科学专门学会联合会
Allied Architects 华盖建筑师事务所
Anshan Iron and Steel Works 鞍山钢铁厂
Architectural Department of Huahai Company 华海公司建筑部
Architectural Design Company of the Ministry of Building Engineering of East China 华东建筑工程部建筑设计公司
Architectural Society of China 中国建筑学会
Art School of Beiping University 北平大学艺术学院
Beijing City Planning Commission 北京都市计划委员会
Beijing Building Engineering Company 北京市建筑工程公司
Beijing Industrial and Urban Architectural Design Institute 北京工业及城市建筑设计院
Beijing Institute of Building Engineering 北京建筑工程学院
Beijing Municipal Architectural Design Institute 北京市建筑设计院
Beijing Public-Operated Construction Company 北京公营建筑公司
Building Engineering Press 建筑工程出版社
Central Party Committee (Central Committee) 中共中央委员会
Central University 中央大学
Chengdu Public-operated Construction Company 成都公营建筑公司
(Chief) Bureau of Urban Construction 城市建设(总)局
--, Bureau of Urban Planning 城市规划设计局
--, --, Department of Information 资料处
China Civil Engineering Society 中国土木工程学会
China Association for Science and Technology 中国科学技术协会
Chinese Academy of Sciences 中国科学院
Chinese Communist Party 中国共产党
Chinese People’s Political Consultative Conference 中国人民政治协商会议
Construction Office for Central Committee Departments 中央直属机关修建办事处 (中直修办处)
Construction Company of the Chief Bureau of North China Road Transportation 华北公路运输总局建筑公司
Design Company Directly under MBE 建筑工程部直属设计公司
Design Company of Central Ministry of Forestry 中央林业部设计公司
Design Institute of Tianjin University 天津大学设计院

East China Building Engineering Company 华东建筑工程公司
East China Industrial Architectural Design Institute 华东工业建筑设计院
Finance and Economic Commission of the Government Administration Council 政务院财政经济委员会 (中财委)
First Ministry of Machinery Industry 第一机械工业部
Fourth National SunYet-sen University 第四中山大学
Geological Exploration Institute 综合勘查院
Government Administration Council 政务院
Guohua Construction Company 国华建筑公司
Head Department of Building 总建筑处
Industrial and Urban Architectural Design Institute of MBE 建筑工程部工业及城市建筑设计院
Heilongjiang Forestry Design Company 黑龙江林业设计公司
Institute (Society) for Research in Chinese Architecture 中国营造学社
Institute of Standard Design 标准设计院
Jilin Forestry Design Company 吉林林业设计公司
Jianlu Construction Company 建鲁营造公司
Kuomintang 国民党
Kwan,Chu and Yang Architects 基泰工程司
Leonard, Veysseyre and Kruze 赖安公司 (赖安洋行)
Longhu Construction Company 龙虎建筑公司
Morrison & Gratton Design Office 马礼逊洋行
Middle-south Industrial Architectural Design Institute 中南工业建筑设计院
Military Commission 军事委员会(军委)
Military Commission of Beijing 北京军事委员会
Ministry of Building Engineering 建筑工程部
--, Bureau of Science and Technology 科学技术局
--, (Chief) Bureau of Design 设计(总)局
--, --, Department of Standards and Quotas 标准定额处
Ministry of Building Material Industry 建筑材料工业部
Ministry of Communications 交通部
Ministry of Culture 文化部
Ministry of Forestry 林业部
Ministry of Heavy Industry 重工业部
Ministry of Metallurgy Industry 冶金工业部
Ministry of Power Industry 能源工业部
Ministry of Urban Construction 城市建设部
Ministry of Water Resources 水利部

Ministry of Textile Industry 纺织工业部
Minutti Co. Civil Engineers and Architects 法商营造公司
Muller & Hunke 法商永和工程司
National Capital Reconstruction Planning Committee 首都建设委员会
National Congress of Scientific Workers 全国科学大会
National Meeting of Building Industry Union 全国建筑工会工作会议
North China Design Company 华北设计公司
Northeast Industrial Architectural Design Institute 东北工业建筑设计院
Northeastern University 东北大学
Northwest Industrial Architectural Design Institute 西北工业建筑设计院
Palmer & Turner Architects and Surveyors 公和洋行
People's Liberation Army 中国人民解放军
Public-operated Construction Company of Shanghai Municipal Bureau 上海工务局公营建筑公司
Public-operated Shandong Construction Company 公营山东建筑工程公司
Public-operated Yongmao Construction Company 公营永茂建筑公司
Publicity Department 宣传部
Research Institute of Building Technology 建筑技术研究所
Second Ministry of Machinery Industry 第二机械工业部
Shanghai Civil Architectural Design Institute 上海市民用建筑设计院
Shanghai Housing Research Institute 上海市住宅研究所
Shanghai Land Investment Co. Ltd 上海业广地产公司
Shanghai Municipal Building Engineering Company 上海市营造建筑工程公司
Shanghai Municipal Architectural Design Company 上海市建筑设计公司
Shanxi University 山西大学堂
Shiang Chyn University 勷勤大学
Southeast Architecture Company 东南建筑公司
Southwest Industrial Architectural Design Institute 西南建筑设计院
State Capital Construction Commission 国家基本建设委员会
State Construction Commission 国家建设委员会
Bureau of Urban Construction 城市建设局
Bureau of Regional Planning 区域规划局
State Council 国务院
State Economic Commission 国家经济委员会
State-Operated Head Construction Company of the Ministry of Communications 交通部国营建筑企业总公司
State Planning Commission 国家计划委员会
--, United Office for Capital Construction 基本建设联合办公室

--, Bureau of Urban Construction Plan 城市建设计划局
State-operated Southwest Construction Company 国营西南建筑公司
Suzhou Engineering School 苏州工业专科学校
Tangshan College of Railways and Mines 唐山路矿学堂
Tianjin Construction Service Company 天津营造服务公司
Tianjin University 天津大学
Tongji University 同济大学
Tongzhou Normal College 通州师范学校
Urban Design Institute 城市设计院

5. Regulation, Criterion, Papers and Etc. (not include those in the Bibliographies)

"A General Introduction of Modern Architecture" 现代建筑概论
All-China Labor Quota for Building Engineering 全国建筑工程劳动定额
Basic Rule on Unification of Plant Structure 厂房结构统一化基本规则
Code for Architectural Design 建筑设计规范
Code for Construction and Acceptance of Acid-resistant and Anticorrosive Engineering of Industrial Building & Structure 工业建筑物和构筑物耐酸防腐工程施工及验收规范
Code for Construction and Acceptance of Building Ground 地面工程施工及验收规范
Code for Construction and Acceptance of Brickwork of Industrial Furnace 工业炉砌筑工程施工及验收规范
Code for Construction and Acceptance of Chimney 烟囱工程施工及验收规范
Code for Construction and Acceptance of Decoration 装饰工程施工及验收规范
Code for Construction and Acceptance of Earth Works and Explosion Works 土方及爆破工程施工及验收规范
Code for Construction and Acceptance of Foundation 地基和基础工程施工及验收规范
Code for Construction and Acceptance of Foundation Engineering 地基和基础工程施工及验收规范
Code for Construction and Acceptance of Installation Engineering of mechanical Equipment 机械设备安装工程施工及验收规范
Code for Construction and Acceptance of Masonry Engineering 砌体工程施工及验收规范

Code for Construction and Acceptance of Mine Workings Engineering 矿山井巷工程施工及验收规范

Code for Construction and Acceptance of Reinforced Concrete 钢筋混凝土工程施工及验收规范

Code for Construction and Acceptance of Roof , Waterproof & Insulation 屋面和防水隔热工程施工及验收规范

Code for Construction and Acceptance of Steel Structure 钢结构工程施工及验收规范

Code for Construction and Acceptance of Timber Structure 木结构工程施工及验收规范

Code for Construction and Acceptance of Water Supply Tube Well 供水管井工程施工及验收规范

Code for Design of Indoor Water Supply, Water Sewerage, and Hot Water Supply 室内给水、排水和热水供应设计规范

Code for Design of Reinforced Concrete Structure 钢筋混凝土结构设计规范

Code for Design of Urban Water Sewerage 城市排水设计规范

Code for Design of Urban Water Supply 城市给水设计规范

Code for Monochromatic Building Drawing 单色建筑图例标准

Code for Operation And Acceptance Of Welding Of Reinforcing Steel Bar 钢筋焊接操作及验收规程

Code for the Building in the Area of collapsible loess 湿陷性黄土地区建筑规范

Decision for Final Accounting System, Budget Examining and Approving, and Construction Planning and Monetary Control of Investments 决算制度、预算审核、投资的施工计划和货币管理的决定

Direction on Improving and Strengthening Design Work of Capital Construction 关于改进与加强基本建设计划工作的指示

Decision on Must Establishing Governmental Building Construction Departments and State-run Companies after the Three Antis 三反后必须建立政府的建筑部门和建立国营公司的决定

Decision on Reinforcing and Developing the Building Industry 关于加强和发展建筑工业的决定

Decision on Reinforcing Design Work 关于加强设计工作的决定

Decision on Reinforcing New Industry Zones & New Industrial Cities 关于加强新工业区和新工业城市建设工作中几个问题的决定

Decision on the Work of the Ministry of Building Engineering 关于建筑工程部工作的决定

Direction on Trying out Labor and Material Contract System 关于试行包工包料的指示

Design Standard & Technical Code for Brick Structure & Reinforced Brick Structure 砖石及钢筋砖石结构设计标准及技术规范

Design Standard & Technical Code for Indoor Water Supply and Sewerage of Productive Plant and Accessorial Plant of Industrial Enterprise 工业企业生产厂房和辅助厂房室内上下水道设计标准及技术规范

Design Standard & Technical Code for Natural Foundation of Building & Industrial Structure 房屋和工业结构物天然地基设计标准及技术规范

Design Standard & Technical Code for Productive Plant of Industrial Enterprise 工业企业生产厂房设计标准及技术规范

Design Standard & Technical Code for Reinforced Concrete Structure 钢筋混凝土结构设计标准及技术规范

Design Standard & Technical Code for Steel Structure 钢结构设计标准及技术规范

Design Standard & Technical Code for Timber Structure 木结构设计标准及技术规范

Draft Method for Organization of Standard Building Company 标准建筑工程公司组织编制草案

Economic Indexes of Civil Building in 1956 1956 年度民用建筑经济指标

Management Method for Building Machinery 建筑机械管理办法

Measures for Ensuring Structural Design Qualities of Industrial Plants 关于保证工业厂房结构设计质量的几项措施

Measure for Making and Approving Regional Planning (Draft) 区域规划编制和审批暂行办法(草案)

Measure for the Housing Construction for the Employee in State-Operated Enterprises 关于 1952 年建筑国营企业职工住宅的规定

Notice on Dividing Construction Bounds in Site between Building Company & Installation Company 关于划分土建公司与安装公司在现场中施工范围的通知

Opinions on EngineeringQuality Accident & Safety Measure 关于工程质量事故和安全措施的意见

*Plan for Carrying out Regulations of the Work of State-run Industrial Enterprise (Draft)*关于贯彻执行《国营工业企业工作条例(草案)》的规划

Precept for Division & Collaboration of Mechanized Engineering Tasks between Building Company & Mechanized Construction Company 关于土建公司与机械施工公司对机械化工程任务的分工协作方案

Preliminary Opinion for Future Urban Construction, Housing, and Civil Buildings 对今后城市建设及住宅民用建筑的初步意见

Procedure of Urban Planning and Construction Design of PRC (Draft) 中华人民共和国编制城市规划设计与修建设计程序 (草案)

Regulations of the Work of Building & Installation Enterprises 建筑安装企业工作条例(草案)

Regulations of the Work of State-run Industrial Enterprise (Draft) 国营工业企业工作条例(草案)

Regulations on Production Reporting System 关于生产报告制度的几项规定

Regulations on Reinforcing Construction Management 关于加强施工管理的几项规定

Responsibility of Safety Technique & Labor Protection in Enterprise 企业安全技术劳动保护工作职责范围

Sanitation Standard for design of Industrial Enterprise 工业企业设计卫生标准

"Some Impressions of Traveling in Europe" 欧游感想

"Some Words to Chinese Architects" 向中国建筑师进一言

Specification for Application of Second Quality & Substandard Reinforcing Steel Bar 二级品及副品钢筋应用办法

Specification for Experiment of Technique of Building Machinery (Trial) 建筑机械技术试验规程(试行)

Specification for Maintenances of Building Machinery 建筑机械保养规程

Specification for Manufacturing and Application of Steam-curing Flyash Concrete Masonry (Trial) 蒸养粉煤灰混凝土砌块生产应用规程(试行)

Specification for Mixing and Application of Concrete with Tenuous Sand 特细砂混凝土配制及应用规程

Specification for Operation of Insulated Aluminum Conductor Cable 铝芯绝缘导线连接操作规程

Specification for Operation of Manufacture Technique of Steel Structure 钢结构制造技术操作规程

Specification for Operation of Structure Installation of Industrial Plant 工业厂房结构安装操作规程

Specification for Structural Calculation of Reinforced Concrete Shell Roof & Floor 钢筋混凝土薄壳顶盖及楼盖结构设计计算规程

Standard for architectural drawings 建筑制图标准

Standard of Quality Inspection and Assessment (Building) 质量检验评定标准(建筑部分)

Standard of Quality Inspection and Assessment (Installation) 质量检验评定标准(安装部分)

Suggestion of Establishing Organizational Structure of Building Industry (Draft) 关于设立建筑工业部门的组织机构建议(草案)

Supplementary Labor Quota for Plant Building Engineering 厂房建筑工程补充劳动定额

Temporary Code for Artificial Lighting of Industrial Enterprise 工业企业人工照明暂行标准

Temporary Code for Brick Structure & Reinforced Brick Structure 砖石及钢筋砖石结构设计暂行规范

Temporary Code for Construction and Acceptance of Building Engineering 建筑工程施工及验收暂行规范

Temporary Code for Construction and Acceptance of Installation Engineering of Cement Mechanical Equipment 水泥机械设备安装工程施工及验收暂行规范

Temporary Code for Design of Natural Foundation 天然地基设计暂行规范

Temporary Code for Design of Reinforced Concrete Structure 钢筋混凝土结构设计暂行规范

Temporary Code for Design of Timber Structure 木结构设计暂行规范

Temporary Code for Loads 荷载暂行规范

Temporary Fire Protection Standard for Industrial Enterprise & Residential Building 工业企业和居住建筑设计暂行防火标准

Temporary Indexes of Multi-Story Housing, Dormitory and Office in 1956 1956年楼房住宅、宿舍、办公楼暂行指标

Temporary Measure for Adopting the Working Drawings of Standard Design 关于使用标准设计施工图的暂行规定

Temporary Measure for Lowering the Standards of Industrial Buildings in 1957 1957年降低工业建筑标准的暂行措施

Temporary Measure for Regional Planning (Draft) 区域规划编制暂行办法(草案)

Temporary Measure for Urban Planning 城市规划编制暂行办法

Temporary Method for Capital Construction Work 基本建设工作暂行办法

Temporary Method for Circulating Fund Management of Contract Building Enterprise 建筑包工企业流动资金管理暂行办法

Temporary Method for Delivery, Acceptance, & Open of Capital Construction Project 基本建设工程交工和验收动用暂行办法

Temporary Method for Design and Budget of Industrial and Civil Buildings 工业、民用建筑设计和预算编制暂行办法

Temporary Method for Labor Contract in Construction and Installation Project 建筑安装工程包工暂行办法

Temporary Method for Making, Approving and Using Standardized Design 关于标准设计的编制、审批、使用暂行办法

Temporary Method for Responsibility System of Financial Costs of Building & Installation Enterprise 建筑安装企业财务成本责任制暂行办法

Temporary Method for the Procedure of Capital Construction 基本建设工作程序暂行办法

Temporary Regulations on Saving Metal, Wood and Cement in Building 关于在建筑中节约金属、木材及水泥的暂行规定

Temporary Rule for Application of General Low-alloy Steel Bar Including 16 Mn and 25 MnSi 16 锰和 25 锰硅普通低合金钢暂行应用规定

Temporary Sanitary Standard for Design of Industrial Enterprise 工业企业设计暂行卫生标准

Temporary Specification for Application of 25 Γ C Low Alloy Reinforcing Steel Bar in Reinforced Concrete Structure 钢筋混凝土结构中 25 Γ C 低合金钢筋暂行应用规程

Temporary Technical Regulation for Construction and Acceptance of Building & Installation Engineering 建筑安装工程施工及验收暂行技术规定

"The Ethos of Contemporary American Architecture" 现代美国的建筑作风

"The Styles of Architecture" 建筑之式样

Trial Code for Construction and Acceptance of Prestressed Concrete 预应力混凝土施工及验收试行规范

Trial Code for Design of Steel Structure 钢结构设计规范试行草案

Trial Method for Labor Contract System (Draft) 包工试行办法(草案)

Trial Method for Overall Contract & Subcontract of Building & Installation Engineering (Draft) 建筑安装工程总承包与分承包试行办法(草案)

Trial Specification for Production of Steamed Portland Cement Concrete 蒸养硅酸盐混凝土生产工艺试行规程

Unified Construction Quota for Building & Installation Engineering in 1956 1956 年建筑安装工程统一施工定额

Unified Modulus for Building 建筑统一模数

6. Other Terms

Big Roof 大屋顶

Boxer Rebellion 义和团

Common Program 共同纲领

Eastern Han 东汉

Gongcheng Zuofa Zeli 工程做法则例

Han 汉

Lean to one side 一边倒

Jianzhuyuekan 建筑月刊 (The Builder)

Ming 明
New Culture Movement 新文化运动
Qing 清
Renmin ribao 人民日报 (People's Daily)
shishixinbao 时事新报 (The China Times)
Taiping Rebellion 太平天国
Xiaodao Hui Rebellion 小刀会
XinGuanCha 新观察
Xinjianzhu 新建筑 (New Architecture)
Xuexi 学习
yingzaochang 营造厂 (construction firm)
Yuan 元
Yingzao Fashi 营造法式
Zhongguojianzhu 中国建筑 (The Chinese architect)
Zhongguo yingzao xueshe huikan 中国营造学社会刊 (Bulletin of the Institute for Research in Chinese Architecture)

APPENDIX B • ILLUSTRATION THE LOCATIONS

Fig. A-1 The “Macro Regions” in China

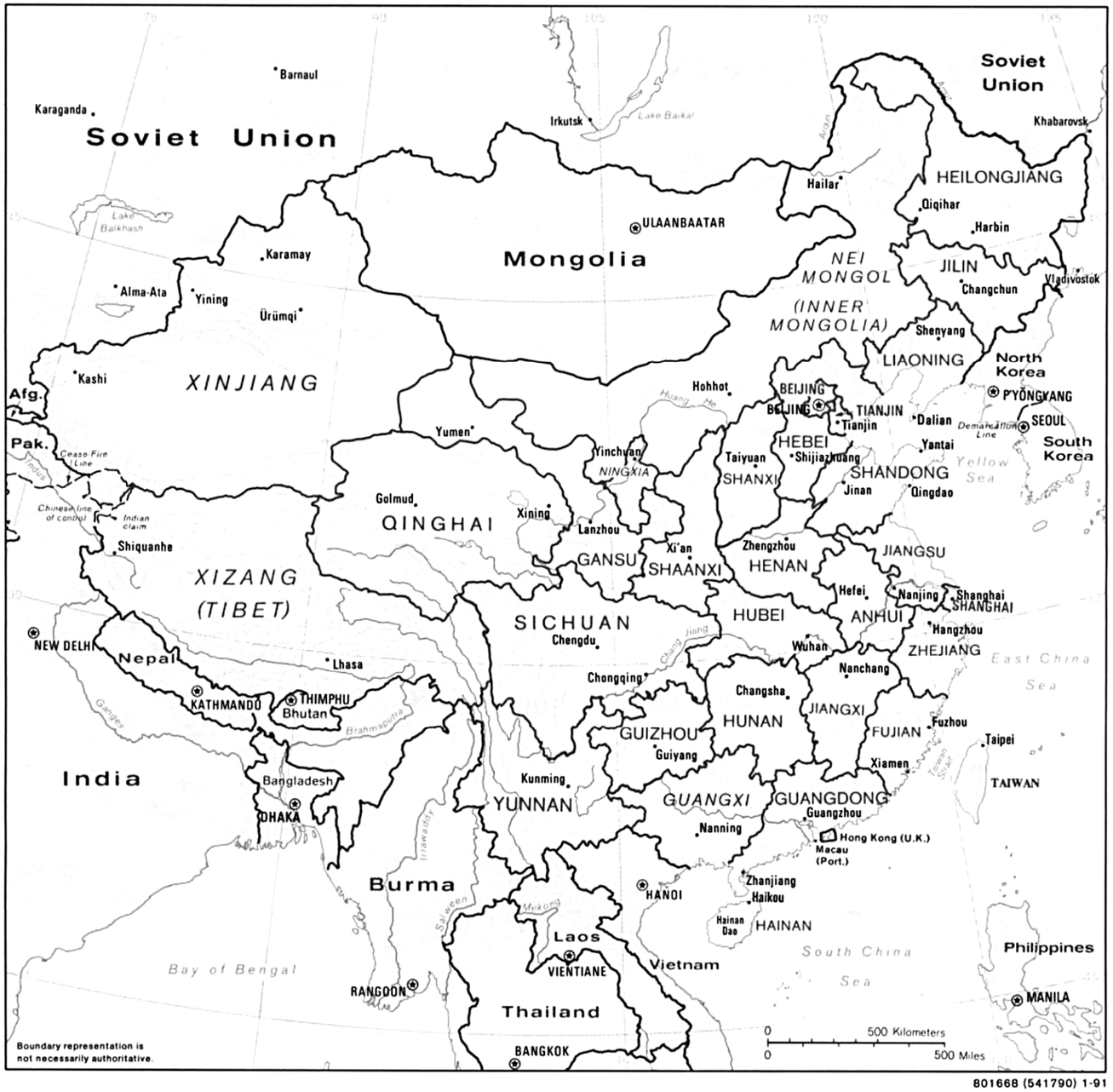

Fig. A-2 Provincial Devisions of China

Province-Level Names

Characters	Pinyin	Pronunciation
安徽	Anhui	ahn-way
北京	Beijing	bay-jing
福建	Fujian	foo-jee_en
甘肃	Gansu	gahn-soo
广东	Guangdong	g_wong-doong
广西	Guangxi	g_wong-she
贵州	Guizhou	g_way-joe
海南	Hainan	hi-nan
河北	Hebei	huh-bay
黑龙江	Heilongjiang	hay-loong-jee_ong
河南	Henan	huh-nan
湖北	Hubei	hoo-bay
湖南	Hunan	hoo-nan
江苏	Jiangsu	jee_ong-su
江西	Jiangxi	jee_ong-she
吉林	Jilin	jee-lynn
辽宁	Liaoning	lee_ow-ning
内蒙古	Nei Mongol	nay-mung-goo
宁夏	Ningxia	ning-she_ah
青海	Qinghai	ching-hi
陕西	Shaanxi	shun-she
山东	Shandong	shahn-doong
上海	Shanghai	shong-hi
山西	Shanxi	shahn-she
四川	Sichuan	ssu-ch_wan
天津	Tianjin	te_en-jin
新疆	Xinjiang	shin-jee_ong
西藏	Xizang	she-dzong
云南	Yunnan	yu_oon-nan
浙江	Zhejiang	juh-jee_ong
台湾	Taiwan	tie-wan

Urumchi
Baotou
Datong
Yinchuan
Taiyuan
Lanzhou
Xi'an
Xiangfan
Chengdu
Chongqing
Guiyang
Panzhihua
Guilin
Kunming
Gejiu

Harbin
Changchun
Fushun
Shenyang
Anshan
Yingkou
Chaoyang
Dalian, Lüda
Tianjin
Weihai
Qingdao
Jiaozhou Bay
Jinan
Kaifeng
Xuzhou
Zhengzhou
Luoyang
Nanjing
Shanghai Wuhu
Shaoxing
Hangzhou
Ningbo
Hankou, Wuchang, Wuhan
Daye
Changsha
Shaoshan
Xiangzhong Region
Fuzhou
Xiamen
Guangzhou
Hong Kong, Kowloon
Macau
Kaiping
Maoming
Guangzhou Bay

Fig. A-3 Mentions Locations

CURRICULUM VITAE

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EDUCATIONS AND DEGREES

Southeast University, Nanjing, P.R.China; B. Arch, 1991; M. Arch, 1994.

Swiss Federal Institute of Technology (ETH), Zurich, Switzerland; academic guest, 1996-1997; *NachDiplom* of Architectural Education, 1998; candidate for a doctor degree of technical science sine 1998.

TEACHING EXPERIENCES

Department (School) of Architecture, Southeast University, P.R.China; assistant, 1994-1997; lecturer, 1997-2000.

Department of Architecture, Swiss Federal Institute of Technology (ETH), Zurich, Switzerland; *Assistanz*, 1997-1998.

Research Institute (School) of Architecture, Nanjing University, P.R.China; associate professor, since 2001.