BUILDING A REVOLUTION

Chinese Architecture Since 1980

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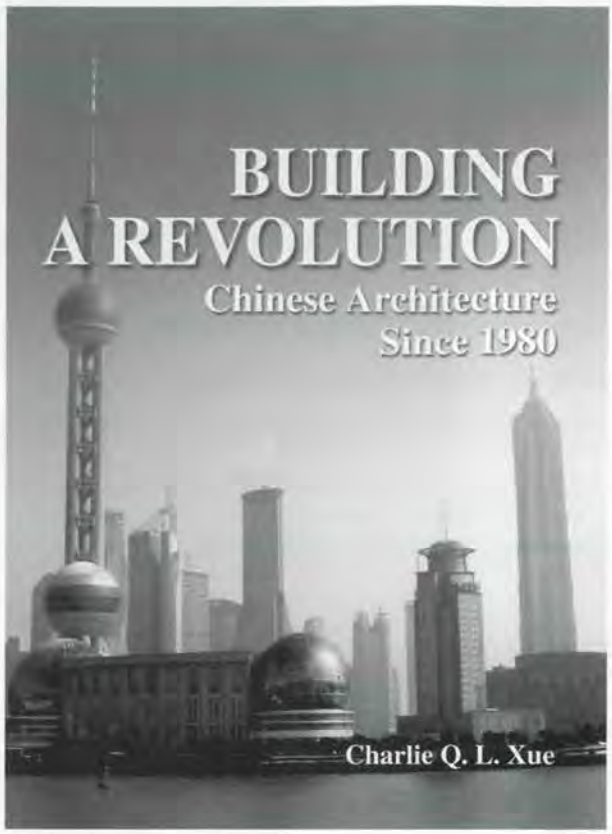

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CHAPTER ONE

EVALUATION CRITERIA FOR CONTEMPORARY CHINESE ARCHITECTURE

The criteria for evaluating architecture are multifaceted and vary according to the social and cultural context, in China and in other countries.

It is widely accepted that social context has a profoundly important influence on architecture (Musgrove 1987; Rapoport 1969; Norberg-Schulz 1975). This chapter analyzes contemporary Chinese architecture from a variety of perspectives, including ideology, culture, and social values based on tradition, economy, the market, and technology. Environmental protection and sustainability are discussed, as they are global focal points in the twenty-first century. In this regard, they give new meaning to traditional aesthetic principles and play a special role in the evaluation of architecture.

By examining the prevailing architectural theories in China, this chapter poses questions about various aspects of China's architecture and serves as a general survey of Chinese architecture today.

ARCHITECTURAL EVALUATION: A RETROSPECTIVE

In his *The Ten Books on Architecture*, Vitruvius, an ancient Roman military engineer, asserted that "firmness, applicability, and delight" are the fundamental principles of architecture. He also defined and analyzed aspects of architectural design, such as site, orientation, column order, scale, and so forth (1999). From then on, his theories became the first set of criteria for how to judge architecture. People's understanding of architecture as a symbol of culture has become increasingly influenced by almost all aspects of society, including aesthetics, religion, institutions, and social behavior. As a result, architectural design tends to be diversified; at the same time, the criteria for judgment have become more complicated and varied.

In ancient times, the practice, theory, and evaluation of architecture placed greater emphasis on aesthetic concerns such as scale, proportion, balance, and composition (Pevsner 1976). The Modern Movement and other "-isms" of the twentieth century not only gave further weight to architectural ontology but also endowed it with social and cultural connotations, adding human dimensions to architectural evaluation.

Modern architectural movements that emphasize spatial effects and "lightness," in contrast to the load-bearing walls and heavy forms of traditional architecture, have created a new set of architectural terms and language. This reform has changed both traditional formulations of architecture and ways of looking at architecture. In his book *Space, Time and Architecture* (1941), Sigfried Giedion argued that the concept of space should be regarded as a criterion to judge architecture. Other architects, for example, Bruno Zevi, continued to support and reaffirm the dominant role of the spatial model in architectural design and criticism (1980).

In the 1960s, Venturi suggested "complexity and contradiction in architecture" (1966) as an antidote to the "monotonous" singularity of Modernist architecture, while also advocating that popular culture be cited in design

critique. Challenging the modernist orthodoxy, this so-called postmodern theory represented another significant milestone in architectural design and evaluation. From then on, Aldo Rossi conceived "city architecture" from typology (1972); Christian Norberg-Schulz put forward "architectural phenomenology," which injected the idea of *genius loci* into theories of space, place, and site (1980); and Peter Eisenman devoted himself to the explication of deconstruction architecture (2003). Geoffrey Broadbent explored the symbolic meaning of architecture from the perspective of semiotic theory, addressing minimalist architecture, which insists on rarefied techniques and concision of space and materials (1980). Moreover, architectural historian and theorist Manfredo Tafuri has referred to the importance of ideology, politics, and the economy in architectural critiques (1986), whereas Kostof understood and demonstrated historical architecture from "rituals and settings" (1985).

Among the thoughts about architecture mentioned above, some are aesthetic explorations of theories of space, whereas others analyze the meaning and cultural symbolic influences of architecture in depth, using the knowledge of such disciplines as philosophy, sociology, and linguistics as reference points. These theories complement, revise, and extend the original concepts and play an inspiring role in developing criteria for architecture.

CHINA IN THE 1950s TO 1970s: POLITICALLY ORIENTED ARCHITECTURAL DESIGN AND EVALUATION

Under the constraints of ideology, economy, and the social system, architectural creation was restricted to some extent. Chinese architects had to endure ideological and political pressures that might not have been apparent to observers in Western countries.

In the early 1950s, post-war construction was in full swing in China. With enormous enthusiasm, the Chinese people started to rebuild their socialist country under Mao Zedong's leadership. In 1953, a conference of architects' associations was held in Warsaw, Poland, at a time when the whole world was under the cloud of the Cold War. Architects from almost all socialist countries attended the conference. The participants agreed to "oppose structuralism" simply because structuralism was considered an expression of capitalism. In its stead, they advocated "socialist content, national form," a politically colorful and appealing doctrine. This conference had a profound influence upon Chinese architecture.

In keeping with the harsh economic realities of the late 1950s, the government enunciated the guiding principles of China's architectural design, stating that it must be "functional, economical, and delightful if conditions permit," as well as serving to "create a new socialist architectural style in China." The principle essentially conformed to universally accepted evaluation criteria from the time of Vitruvius through to Gropius and reflected the economic and financial situation of China in that period. The principle was adhered to in the construction of the 1960s and is followed even to this day.

As far as aesthetics is concerned, the school of the Beaux Arts was the leading artistic style in those decades. In his article *Beyond Revolution: Notes on Contemporary Chinese Architecture* (1998), Zhu Jianfei looked at the subtle influence Beaux Arts exerted on architectural creation. "Despite the political changes and elaborate ideological theorization, the Beaux Arts model that was introduced in the 1920s had survived and was now serving a new political project". In 1956, Mao Zedong encouraged new ideas in social culture, arts, and science, with this proclaimation: "Let a hundred flowers blossom and a hundred schools of thought flourish." However, Mao's ideas were not carried out to any significant extent in architectural design during those years when the radical left wing prevailed.

During the 1950s, ideology, national form, China's weak economy, and the single Beaux Arts aesthetic model formed the criteria for architectural design and evaluation. In the late 1950s, "ten grand national projects" in Beijing powerfully embodied the policy-oriented content of Chinese architecture, epitomizing the climax of the style.[1] Construction activities stagnated during the years 1966–74 because of continuous political upheavals.[2]

FROM 1980 TO THE PRESENT: ARCHITECTURE AND SOCIAL TRANSFORMATION

A favorable development occurred in the late 1970s. In 1980, Deng Xiaoping, China's patriarch after Mao Zedong, issued a statement on construction and housing projects, pointing out that building construction should be one of the three pillar industries of the national economy. At the same time, the open-door policy was attracting new technology and materials as well as new architectural ideas

to China. These trends broadened the perspective of Chinese architectural professionals. From then on, building construction, the mainstay of the national economy, grew rapidly. In the past twenty years, construction sites of every size and scale have been seen on almost every corner of the cities and towns of China. Standing at the base of a newly soaring skyscraper in Beijing or Shanghai, the question immediately comes to mind: how is one to evaluate Chinese architecture today?

Frampton stated that the development of Western architecture from 1750 to 1939 could be divided into three main streams embracing "cultural transformations, territorial transformations, and technical transformations" (1992). He also pointed out that these three streams were interwoven and developed in parallel. In fact, the progress of Chinese architecture exhibits similar features to what Frampton concluded. Great transformations in such areas as the natural environment, political systems, the economy, social culture, and technology interweave in parallel development, making the evaluation of Chinese architecture complex and multifaceted.

Chinese scholars also enumerate several models of architectural criticism; for example, models of value criticism, social criticism, cultural criticism, science and methodological criticism, science and technical criticism, form criticism, and so forth (Zheng 2001). It is only by integrating all of these models that one can achieve a comprehensive appraisal.

In this book, the success and failure of contemporary Chinese architecture and its possible role in the future is assessed more or less according to the preceding views. In the narration, three aspects are treated either separately or in sequence: form and function examined in architectural ontology, the social and cultural value of architectural texts, and the technological evaluation of architectural products.

It is not our intention to give a perfect evaluation but rather an individual observation of Chinese architecture for this period, its current situation, problems, challenges, possible strategies, and prospects.

FORM AND FUNCTION: CRITICISM OF ARCHITECTURAL ONTOLOGY

If architectural works could be regarded as self-contained texts, isolated from their social background, the appraisal could focus merely on the analysis of form, function, and aesthetic value. The widely accepted principles of architecture, such as space, scale, proportion, balance, hierarchy, rhythm, order, and so on, become the criteria. Consider, for example, Helou Xuan (literally, "Not a Simple Pavilion"), built in the 1980s in Songjiang Fangta Garden in Shanghai. Professor Feng Jizhong, the designer, employed pure language to create a small teahouse made up of flowing space and juxtaposed so harmoniously with the environment that it looks as if it is actually growing out of the earth (Figure 1.1).

Let us move to buildings in an urban environment. Individually, some of them are quite good; in shape, space, and function, they are full of creativity. However, architecture is such a complicated subject that aesthetic judgment and functional analysis are useful only in the most preliminary stages of assessment. A perfect individual building may not be successful when located in an urban context. In this regard, we may pay more attention to social and cultural critiques rather than to formal or functional judgments.

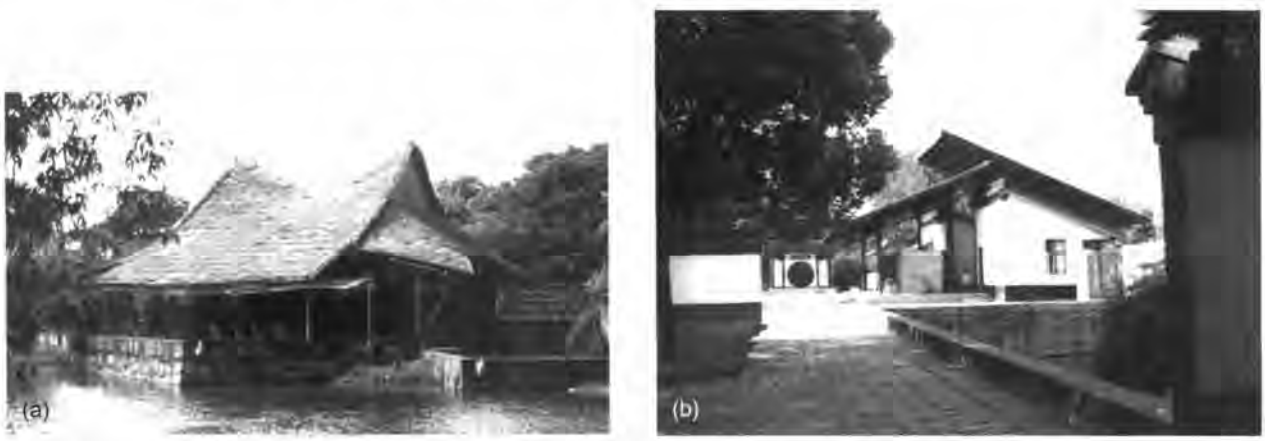

Figure 1.1 (a, b) Feng Jizhong, Helou Xian, "Not a Simple Pavilion," Songjiang, Shanghai, 1986

SOCIAL AND CULTURAL ASPECTS OF ARCHITECTURE

The Social Value of Architecture

In this section, we emphasize the essential purpose and significance of architecture. In our argument, the physical function of architecture is not equivalent to its essential purpose. In other words, form and function alone fall far short of telling whether or not a building possesses meaning, because architecture carries so much social and cultural information about our era. From this perspective, the purpose of building "for the people" is not only fulfilled by physical functions but by spiritual ones.

Take, for example, the projects in the 1950s–60s that pursued "socialist content, national form." When one discards the prejudice of ideology, one finds that these projects were created with the rationale of symbolizing the national dignity of dictatorship. Traditional architectural vocabulary became an appropriate way of expressing that meaning. These projects embodied historic changes and became representatives of that special period (Figure 1.2).

Figure 1.2 Office building of Ministry of Electrical Engineering, Beijing, 1999. In addition to the creative interior space, the building tries to capture the atmosphere of the nation's capital.

However, "national form" gradually evolved into an extreme stylistic expression and became a kind of formal doctrinism. During the 1980s, especially in Beijing, contemporary buildings with traditional kiosks or pagoda-shaped tops were considered to have "recaptured the traditional style" and were the products of such extremism. These shallow imitations of ancient forms proliferated throughout China, but they were unable to "recapture the features of the ancient capital" (see Chapter Two). On the contrary, such parodies debased the traditional architectural language to that of a facetious and ridiculous label.

Some architectural slogans gained popular currency and reflect the psyche of many municipal leaders. Who hasn't heard proclamations such as "This building won't go out of date for at least fifty years" or "It will be a landmark of our city"? Or buzzwords such as "cyber city," "street in the Tang Dynasty style," "miniature world landscape garden," as well as the fabulous hyperbole of "tallest building," "longest bridge," or "largest convention center" in China, Asia, or perhaps the world. These superlatives reveal the ambitions of the developers or municipal leaders concerned and express the vainglory of their achievements. The buildings in question, which usually have important daily functions, are made to bear too heavy a burden (Figure 1.3).

The newly built Zhuhai Airport, which cost 69 billion yuan is a regrettable example. The government of Zhuhai was originally anxious to establish an "international first-class" airport to showcase the city's success. But things went dreadfully wrong and the airport that boasted "the longest runway" and "the most luxurious terminal lounge"

Figure 1.3 (a) People's Square, Shanghai, (b) Train Station in Shenzhen

sank into debt because of a dearth of business; it attracted few passengers and flights, primarily because of the city's geographic location. As a result, the Zhuhai Airport has become little more than an embarrassing "landmark." The design and function may be excellent, but the airport has lost its utilitarian value.

Social and Cultural Orientation of Architectural Text

Spiro Kostof once concluded: "Architecture, to state the obvious, is a social act — social both in method and purpose" (1985, 7). Architectural text epitomizes a society's culture and its time; consequently, a profound understanding of the culture and spirit of an era can help us to more fully evaluate its architecture. At this point, nothing else can replace cultural understanding as the basis for architectural critique (Figure 1.4).

During the 1980s, great transformations in Chinese society occurred: the economic system was shifting from a planned economy to a market economy. At the same time, theories from abroad flooded into China. As China began to emerge from the shadow of ideological domination, architectural professionals endeavored to escape from the straitjacket of "socialist content, national form." A revival of architectural creation began.

Pluralism in Architectural Design

In the 1980s, Chinese architectural circles started to appeal for pluralism in design as an alternative to "monotonous pattern." "Socialist content, national form" was replaced by "features of times, nationality, regionalism" (*Architectural Journal* 1980). At the same time, people were liberated from their long mental oppression, and their creative energies were unleashed. Like bamboo shoots after a spring rain, numerous high-rise buildings and huge mansions in a variety of styles shot up in the following two decades. A number of talented architects worked unremittingly to create new forms of Chinese architecture. Well-known projects such as the Beijing Olympic Sports Center, the Yanhuang Art Gallery, the China International Exhibition Center, and the Memorial Museum for the Nanjing Massacre of 1938 are only a few of these successful works.

However, an overreaction to the dictates of the "monotonous pattern" and a lack of understanding of the new architectural theories and critiques resulted in a one-sided approach to design "pluralism," and a farrago of vulgar, strange, and noisy buildings were thrown up in the streets of large and small Chinese towns.

Related to "pluralism" is the rich cultural connotation of architecture, which includes not only an understanding of traditional culture but also of foreign culture. In an article analyzing how foreign theories affected the development of Chinese architecture, Professor Zou Denong invokes the metaphor of "three tidal waves" to describe the interchanges between China and other countries that have occurred in different historical periods. According to Zou, we are now witnessing the "the third wave" (2001).

An enormous number of architectural theories, such as postmodernism, deconstruction, typology, and other philosophical, sociological, and anthropological "-isms" have flooded China. It was these exotic trends that enabled Chinese architects to contemplate architecture from more angles, and the new ways of thinking became the weapons of architects and students. Yet few had a real understanding of the social origins of the latest trends. In this situation, studying and applying these theories actually became only a kind of simple grafting or direct iconic imitation. As a result, the buildings with postmodern symbols or KPF decoration and SOM motifs that arose here and there were labeled "hybrid" buildings.

Figure 1.4 (a) Shekou (snake mouth), (b) Hotel of South China Sea, Shekou, 1986

It is necessary to mention the influence of globalization and Westernization on Chinese society. Given the global dominence of Western culture, Western ways of living and thinking, such as democracy, freedom, McDonald's, KFC, and Disney, quickly spread into mainland China. This kind of quasi-colonial discourse seemed to be a representation of advanced productivity and culture; Chinese people felt compelled to receive it but often did so inconsistently, both positively and passively. They surrendered to the pervasive force of this new social culture, which was so powerful that Chinese traditional customs and value systems were gradually overwhelmed. During this transformation of Chinese society, conflicting ideas and cultures clashed, resulting in abnormalities of social psychology. Worshipping the foreign style and having unquestioning faith in another culture, both in society and in buildings, was a reflection of the kind of dialogue and even struggles that ensued during this confusing time of transition. Chapter Three discusses the effect of international trends.

Regionalism and the Pursuit of Traditional Architectural Culture

"Traditional and national form" has haunted the Chinese architects for a long time. The description has varied from time to time; it was "national style" in the 1950s, "new socialist style" in the 1960s, and "of the times, nationality, and regionalism" in the 1980s; different slogans yet the same essence.

At the beginning, to inherit tradition was simply to imitate the physical form, which was superficial. In the 1980s, the contradiction between ancient form and modern function and materials became more pronounced, and people began to rethink how to best carry on the tradition. A "Chinese pitched roof" was not considered the only way to embody Chinese character. Indeed, traditional architecture is a source of unlimited inspiration. Take the Juer Hutong neighborhood project in Beijing, designed by Professor Wu Liangyong, as an example. The attempt to create a new relationship between traditional forms and modern life is highly commendable, although it has also generated controversy (2000). Chapter Two discusses tradition and innovation.

The continuity and innovation of regional architecture is worth mentioning here. For example, the "Lingnan style" of architecture rooted in southern China and led by Professor Mo Bozhi (see Chapter Seven) combines modernistic language and local context. Research conducted by architect Cheng Taining into territorial culture and local styles in architectural design is another persuasive example. We can also list the so-called "Shanghai school" of architecture created during the 1930s–60s, and various works designed by Xing Tonghe in Shanghai after the 1980s, as illustrative of such explorations. These new architectural styles are contemporary but possess Chinese characteristics. The achievements of these architects are discussed further in Chapter Seven.

Form Follows Finance: Commercial Culture, Media, and Form

In the mid-twentieth century, many architects and theorists were involved in a dispute over the relationship between form and function, a debate that continues even today. At present, the influence of commercial culture upon architecture has endowed the discussion with new content: does form follow finance?

During the recent transformation of Chinese society, the widespread and rapid proliferation of commercial culture has been a noteworthy feature. For architecture, there are both advantages and disadvantages to working within such an environment. On one hand, financial incentives and rewards will motivate designers to bring their initiatives fully into play. There will be more variety and creativity in the buildings constructed and greater design flexibility. The requirements of the public will be further satisfied as a result. On the other hand, the situation can have opposite and deleterious effects when commercial considerations are taken to the extreme.

The effect of commercial pressures in China has manifested itself in degraded city streets and urban spaces that lack character or humanity. The harmful influence of capital interests has taken its toll on traditional values, behavior, aesthetics, and taste, causing these cornerstones of Chinese society to almost collapse. The greedy "get rich quick" mentality and hunger for instant profits have spread throughout society, causing deterioration in moral standards and values. In building design, commercial considerations inevitably supersede artistic ones, and the profit motive becomes the sole *raison d'être* for development.

As a matter of fact, the two poles — commercial and artistic — coexist everywhere and at all times, but the two are not so contradictory that reconciliation is impossible. A commercialized architecture does not always conflict with the ideals of architectural form. Examples in both China and abroad provide ample proof of this contention.

Clients, Architects, and End Users: A Three-way Confrontation

Architectural space is ultimately designed for human beings. The parties in architectural projects are: clients, architects, and end users. As the building market gradually opens, architectural design is becoming an even more important commercial activity. Under these circumstances, direct communication among the three sides intensifies. But until now, the relationship among the parties has not been particularly harmonious.

The target of the client — be it the government, a developer, or a private individual — is to achieve maximum commercial and social benefit with a minimum outlay of resources. The expectations and demands of clients are not always easy to meet: they will often impose impractical requirements upon the architect, insisting that the building be "the most advanced," or "not become dated," or be constructed in a certain style, which might not be aesthetically or technically practicable. The client's desires can also be self-contradictory. A recognized architect in Beijing recently stated that few buildings in the capital were designed according to the ideals of the architects. Most were generated from the unreasonable ideas of local municipal officials and developers: awkward spatial relationships and a clash of icons are typical of the unfortunate results.[3] The municipal leaders, clients, or even construction contractors sometimes decided the materials of external walls, doors, or windows. The problem here is the low level and inferior quality of the "architectural education" of the clients who have commissioned the projects. In this case, the architect acts only as a "drawing puppet."

As far as architects are concerned, they serve both clients and users. According to a media survey gauging public perception of "golden collar professionals," architects ranked fifth (http://www.sina.com.cn, Sep. 2001). However, the ranking refers to income only; the social status of architects doesn't match this high rating. In China's rapid transition from a planned economy to a market economy, architects have not been immune to the blandishments of a profit-oriented culture. A client's commission is everything, no matter if the project is good or bad. The architect is not in a position to independently implement the responsibility to create a better society (Xue and Chen 2003).

The end users may be the majority of society, but they are ordinary people with neither power nor influence. From this point of view, the real needs of the users of architectural space are not always satisfied, because they must passively accept built environments. The concept of "public participation" is unfamiliar to most people. In addition, the ability of ordinary people to appreciate architecture is limited, and this affects the efficacy of such participation (Figure 1.5).

Figure 1.5 Rising from the old district, Shanghai

However, a new phenomenon is emerging. The government and private developers are paying increasing attention to the masses; at the same time, the awareness of the public's right to participate in architectural decisions is growing. For example, in Beijing, Shanghai, and other cities, more and more people have joined in activities such as choosing their ten favorite "celebrity" buildings. Public voting has become fashionable; for example, in the election of notable works from Shanghai's architectural heritage of the past fifty years, and in the public competitions held for the Grand National Theater of Beijing (1998), the Oriental Arts Center (2000), and the design for the World Expo in Shanghai (2002).

But it is unclear how significant public voting is in these activities. How did ordinary people's opinions influence the process of design revision and decision-making? It is reasonable to assume that such public participation is superficial.

Without a doubt, the three-way confrontation in China among clients, architects, and users is counterproductive. A healthy relationship among the three is an important parameter for evaluating the architectural design environment. Although the situation in China is gradually improving, the "social design" that Robert Sommer envisaged is just a matter of armchair strategy (1983). The subtle three-way relationship among clients, architects, and users remains a dubious factor in evaluating contemporary Chinese architecture.

EVALUATING THE TECHNOLOGY OF ARCHITECTURE

It is widely accepted that new inventions in the science of building and the improvement of architectural technology can create a revolution in architectural design. In the late nineteenth and early twentieth centuries, as a result of the invention of the steel structural frame and the elevator, the Eiffel Tower in Paris, the Crystal Palace in London, and the high-rise buildings of Chicago were constructed. These edifices dramatically illustrate the power of architectural technology to change our world.

Today, a century later, history seems to be repeating itself. The development of the computer, advances in digital and communications technology, and breakthroughs in structural and materials science are fueling the irresistible momentum of the building industry. It was the unprecedented computer power that enabled both Zaha Hadid and Frank Gehry to push the boundaries of space in their visionary projects. The construction of intelligent buildings and ecological buildings also requires the utilization of high technology. Some architects, such as Richard Rogers, would be unable to create the incisive details on the stressed skin of their buildings without tectonic and special material techniques.

Although China has made considerable progress in architectural technology, Chinese architects cannot congratulate themselves on their work in this area. Computer technology has not been fully used in design work, but only as a drafting and rendering machine. The understanding of ecological architecture is partial and incomplete, whereas research into intelligent buildings is only beginning. Moreover, an obvious disparity still exists between China and the developed countries in the matter of structural technology. One hears complaints from designers such as: "The concept could not be realized because of a lack of technology, and many details had to be changed on site." The construction personnel will often frankly admit: "We cannot do it."

THE ECOLOGICAL CRITERIA OF ARCHITECTURE

In addition to considering form and function, social culture, market, and technology, ecological aspects must not be ignored when evaluating contemporary Chinese architecture.

The rapid development of the economy is quickly depleting natural resources and threatening the ecological fabric of China. The conflict between people and the planet Earth is sharpened by the seemingly endless increase in population and limited and depleting natural resources. China's arable land accounts for only 6 percent of the world's total, but it must feed 25 percent of the world's population. One problem is that China's population continues to explode and will reach 1.7 billion in the mid-twenty-first century, although the strict one-child policy has been implemented since 1980; the areas of Beijing, Shanghai, Hangzhou, and Guangzhou doubled in the 1990s and urban sprawl is rampant. Another factor is that arable land is eroding at an alarming rate, sacrificed mostly in the name of the "Special Economic Zones" that the government is creating. Although a national "Land Management Law" was promulgated in 1986, farmland continued to decrease. From 1986 to 2002, farmland in China dropped 15 percent from 132 million hectares to 112 million hectares according to a very conservative calculation. This keeps China's farmland per person at the bottom of the world ranking.[4] The new movement of occupying rural land was launched in the Pearl River Delta and Yangtze River Delta, and this will affect more than 50 million peasants (*Mingpao Daily News*, March 2, 2004). The worry of "who will feed China?" was raised again (Brown 1995; *Mingpao Daily News*, Nov. 30, 2003).

Water resources is another area of concern. The water in China is 2,313 cu m per person, only one quarter of the world's level, and the number in northern China is even as low as 944 cu m (Zheng 2001). More than 300 cities, including some large municipalities such as Beijing, Tianjin, Shanghai and Xi'an are already regarded as areas with severe water shortages. Wastage of water can be observed in these cities. Water trucks in Beijing and Shanghai sprinkle plants, lawns, and asphalt roads when sandstorms from the north blow into southern China. China also needs to consider whether its limited water resources in western China can withstand the pressures of large-scale development (Figure 1.6).

To build a city — no matter how fabulous — at the sacrifice of energy and natural resources is self-defeating. Green architecture and ecological architecture take environmental protection and sustainability as their mandate; they can be of incalculable significance to a country that has a population of 1.3 billion and is short of natural resources at the same time. This is the reason that the voice of a developing ecological architecture has been

(a)

(b)

Figure 1.6 (a) Earth sheltered dwelling, Ganshu, 1988, (b) Interior of the earth sheltered dwelling

raised more loudly in recent years. In regard to architectural design, the Ministry of Construction and some local governments have successively promulgated standards for energy saving and sustainability. For example, clay brick has been forbidden as a building material, heat loss through external walls (OTTV, overall thermal transfer value) must now be calculated; solar water heaters and passive solar building technologies are extensively used in north and south. Energy consumption, conservation, green areas, and innovative technology are emphasized as necessary in building plan and urban design submission.

The intensification of global warming indicates that humanity's efforts to prevent environmental degradation and collapse remain insignificant and ineffectual when weighed against the relentless ecological destruction that occurs daily. The future for China and the world is frankly bleak. To sum up, architectural principles based on ecology and sustainability will be an important component of Chinese architecture in the future.

The criteria for evaluating architecture are multifaceted and vary according to social context, in China and other countries. After reviewing the historical standards used for evaluating architecture, this chapter analyzes the situation in China, addressing the economy, the social milieu, the population, and the natural resources, and indicates new criteria not just based on general principles of architectural judgment but on factors unique to China. Furthermore, the chapter emphasizes that sustainability and environmental protection will be the major concerns of the twenty-first century. In this regard, ecological standards applied to architecture will satisfy the demands of social progress, give new meaning to traditional aesthetic rules, and play a special role in how Chinese architecture is appraised.

China will have better opportunities and prospects in the twenty-first century than it did in the previous century. In this regard, the building industry in China, including relevant government departments and professionals, needs to understand how to turn challenges into opportunities.

Notes

1. The "ten grand national projects" of 1959 include the People's Congress Hall (Great Hall of People), the Revolutionary History Museum, the Agricultural Exhibition Hall, the Fine Arts Museum, the Military History Museum, the Nationality Cultural Hall, the Beijing Train Station and the Workers' Stadium, the Nationality Hotel and Pavilion of Welcoming Guests, in a total area of 673,000 sq m. The decision to construct these impressive structures was made in October 1958, and all were completed before October 1, 1959, in time to celebrate the Tenth Anniversary of the People's Republic of China.
2. During the Cultural Revolution, from 1966 to 1976, most design institutes in major cities were dismantled and the architects and engineers sent to the countryside for labor and "brainwashing." See the Virtual Museum of the Cultural Revolution at http://www.cnd.org.
3. Interview with one of the project assistants, Dr. Zhang Xiaochun, June 2001
4. There are great discrepancies between the government's statistics and some scholars' studies. The author uses the figures from government's statistics. See Ye Yaoxian, The process and prospect of China's urbanization, *Architectural Journal*, No.1, 2002, pp.46–48, *Mingpao Daily News*, Nov.30, 2003. According to Zheng Yi, the farmland decreased 5% or more every year in the past ten years. And a large portion of forest and grassland was reclaimed to the new farmland at the same time, thus leading to more natural disasters. See Zheng Yi, *China's Ecological Winter*, Hong Kong: Mirror Books, 2001, pp.83–102.

CHAPTER TEN

CHINESE ARCHITECTURE IN THE TWENTY-FIRST CENTURY: AN EPILOGUE

WHERE WILL CHINA GO FROM HERE?

The previous nine chapters talk about architecture, a very visible profession that speaks for a nation. However, where and how will this nation go, in turn, determines its future shape of architecture. This chapter first analyzes the directions and scenarios of China's development in the twenty-first century. It then presents the strengths, weaknesses, opportunities, and challenges in architecture, planning, and built form.

China is the fastest growing economy in the world, its per capita income increasing fivefold since 1980. In the past quarter century, it has achieved what took other countries centuries to do. Swift growth and structural change, although resolving many problems, has created new challenges; for example, employment insecurity, growing inequality, persistent poverty, inefficient bureaucracy, inconsistent policies, widespread corruption, lack of infrastructure, and mounting environmental pressures (World Bank 1997; World Economic Forum 2003). The World Bank, in its research report, argues that China can meet the challenges and sustain rapid growth. Although the difficulties ahead should not be underestimated, neither should China's strengths: relative stability, a remarkably high saving rate, a strong record of pragmatic reforms, a disciplined and literate labor force, a supportive Chinese diaspora, and a growing administrative capacity (World Bank 1997).

"The transformation of an economy as large as China's, from low- to middle-income status, from rural to urban, from agricultural to industrial (and services), will inevitably cause ripples in the world economy." "The past two decades have seen sustained, rapid modernization unlike in any other period in China's long history. The next two decades promise more of the same. The huge risks that China faces could yet take the shine off this potential. But with resolute leadership at home and statesmanlike policies from the world's industrial powers, China can overcome these challenges. One-fifth of humanity would then have within its grasp the power to break free of the shackles of poverty and underdevelopment and accomplish what could become the most remarkable economic transformation the world has ever seen" (World Bank 1997).

Many world experts on economics acknowledge China's phenomenal growth on a macro scale, but fail to recognize the problems associated with the pace of the development. From the top leaders to the workers in China, everyone sees the imperative of economic prosperity. Money and development are the only goals and measures to gauge success. Even when SARS (severe acute respiratory syndrome) affected China in 2003, the country recorded an increase in GDP of 9.1 percent.[1] The physical construction of modernization continuously exhibits proud achievements. Without this speed, tens of thousands of people will lose jobs, triggering social upheaval. To maintain a booming economy seems to be the sole objective of the government at various levels.

How to showcase the rapid development and make a profit from the process are two questions that need

answering. The "image projects" are the best means. Scattered throughout the countries, these bridges, highways, central business districts, and impressive theaters are lucrative business for the officials in charge, and the manifestation of the achievements of local governments and officials. Countless grand scenes parade in the mass media, and people's lust for materials has reached a climax. Woman can sell their bodies, officials sell their power, intellectuals sell their souls, a nation sells its land, and people sell their dignity — all for money! Corruption is rampant in various administrative levels and academic institutions. The social, moral, and honest conscience has gradually disappeared in this 5000-year-old civilization. The traditional religions and the spiritual pillars collapsed during the communist rule, and the new common belief and world values have not yet been established.

Nine hundred million peasants and rural inhabitants account for more than 60 percent of the population in China. The structural poverty of rural areas, and a series of irrational policies, will enlarge the already huge gap between the countryside and cities, rural people and city-dwellers. The voices of disadvantaged and vulnerable groups, both in the countryside and cities, are rarely heard. The fruits of growth cannot be fairly shared by all people, and that will create more instability in society (also see Preface and notes).[2]

Social problems directly or indirectly lead to environmental disasters. China's growth has brought both dramatic improvements in living standards and serious damage to the environment. China's air and water, particularly in urban areas, are among the most polluted in the world. Ambient concentrations of most pollutants exceed international standards several times over, burdening China with vast human and economic costs, estimated at 3 to 8 percent of the GDP a year (World Bank 1997; also see Preface and Chapter One). An alarming scientific report, "Climate change," indicated "the planet is carrying a higher population than it can sustain. By 2020 'catastrophic' shortages of water and energy supply will become increasingly harder to overcome, plunging the planet into war. 8,200 years ago climatic conditions brought widespread crop failure, famine, disease and mass migration of populations that could soon be repeated" (*The Observer*, Feb 22, 2004). Accounting for almost one-quarter of the residents on Earth, China is no exception, as "China's huge population and food demand make it particularly vulnerable." When "major European cities will be sunk beneath rising sea" (*The Observer*, Feb 22, 2004), Shanghai and other Chinese coastal cities have no escape.

In an authoritative global ranking conducted by the World Economic Forum and Swiss International Institute of Management Development, China's growth competitiveness dropped from number twenty-six in 1996 and twenty-four in 1997 to forty-four in 2003, and around forty to forty-four since 2000 (World Economic Forum 1995–2003). Apparently the social, environmental and other problems are affecting the country's competitiveness.

All of those barriers can be attributed to the reluctance to reform China's political system and the strict censorship of the media. According to many analyses, modernization will only be assured by liberal democracy (Fukuyama 1992; www.cnd.org). The Chinese government "must begin serving markets by building the legal, social, physical, and institutional infrastructure needed for their rapid growth" (World Bank 1997). Only by taking this direction can China sustain further growth and steadily enter the strongest rank in the twenty-first century.

STRENGTH, WEAKNESS, OPPORTUNITIES, AND CHALLENGES IN ARCHITECTURE

While the macro condition in China is one of rapid growth with potential instability, China's architecture is also in a state of flux. To predict how Chinese architecture will perform in the twenty-first century, four aspects will be discussed: strengths, weaknesses, opportunities, and challenges.

Strengths

The healthy development of Chinese architecture has benefited from the ambitions of various levels of governments to improve their cities. As revealed in the previous chapters, China not only embraces the international norms but aspires to lead the world trends. This is reflected in the rapidly expanding building quantities, gradually enhanced qualities, and more frequently held international activities. If the economy keeps a healthy momentum, it will be financially viable to build a series of more impressive urban and building projects.

After twenty and more years of exchange with and immersion in international architecture, Chinese architects

have accumulated valuable experience in design and management, which in turn contributes to their building works in the twenty-first century. Trained in the top Chinese and overseas architectural schools, the architects mentioned in Chapter Eight entered the golden age of their career in this new millennium and will soon reach the frontier of China's construction of modernization. They know China's past shortcomings and aim to be world class in design and services. Their activities and work will be part of the international scene of pioneering architecture.

In spite of the shortcomings mentioned in the previous sections, the general education level and people's qualities have been enhanced. "Educating clients" has been mentioned by the professional world for a long time, as it "is a slow job and often lags as much as a quarter century behind the education of architects which is not always a fast moving process" (Lang *et al.* 1997). In twenty-first-century China, it is hoped that the clients have a better vision and higher mission in doing building, which directly demands more forward-looking, durable, sustainable, and ingenious design. The authentic and serious designs and buildings will be based on China's economic, and available technical and material situations, instead of merely showing off wealth and mimicking foreign counterparts.

Figure 10.1 New town in Shunde, Pearl River Delta

Figure 10.2 Seminar in a small design firm, Zhuhai, Guangdong Province

Figure 10.3 Jianwai SOHO, Beijing

Weaknesses

Although the large number of design tasks gives designers more practice opportunities, it takes away the time required for careful thinking. It is a common problem of Chinese architecture that a building has an impressive visual effect when viewed from afar, but it cannot be read closely. The details and maintenance have the typically embarrassing problems that can often be seen in developing nations.

As the funding is volatile and decisions are usually made in haste, most buildings are designed and constructed in a very short period (see Chapters Four and Five). For example, the construction of the Zhuhai campus of Dr Sun Yat-sen University, a site of around 200 ha, the academic buildings, canteens, and students halls of around 200,000 sq m. GFA, was completed in less than a year in 2000. So was a neighboring campus, Beijing Teachers' University in Zhuhai. The Dongguan Convention Center of 190,000 sq m was also delivered to clients after eight months of intensive construction in 2001. Foundations were laid when other drawings had not yet been issued. The hard-working clients, designers, and construction companies deserve applause. But those buildings fail to present appropriate details here and there, not to mention the lack durable of qualities required for fifty or even a hundred years.

In this regard, Chinese architects and their clients are generally not mature. More exposure to international architecture, or examination of Hong Kong architecture, will help Chinese architects to establish the concept and techniques of carrying out projects from design through procurement.

Opportunities

The ample opportunities of practice, both in quality and quantity, give architects (especially younger ones) the best environment to learn and accumulate experience. From 2000 to 2010, the urbanization level will increase from 36 percent to around 50 percent, which means another 130 million people will move to the towns and cities. Some social scientists estimate this migration figure as 200 million (Jakes 2004). Suppose each person needs 15 sq m. That means 1.95 billion sq m in floor area for residential buildings alone. Assume the current 12,000 architects continue to work in these ten years. Each architect will design 160,000 sq m of residential buildings, not including the 2008 Olympic Games in Beijing, 2010 World Expo in Shanghai, and numerous urban beautification projects in various towns. The chances of real building are so immense: a young architect under thirty years old may act as design or project architect for a building of 100,000 sq m. Good works, it is hoped, are increasing proportionally to the vast quantity. The boom in the 1990s and early 2000s gave opportunities mainly to international masters. The rising young Chinese architects cannot compete in building quantities and scale. When this generation matures and has ample chance to practice, Chinese architects will rise in prominence. A similar phenomenon happened in Japan in the second half of the twentieth century, which also saw a large quantity of construction and trained Japanese and overseas architects.

Figure 10.4 Students' design, arts exhibition, Shanghai, 2002

"Fifty years ago, the architectural scene was not about a unique individual, the genius, but about the group, the movement. There was no scene ... Architecture was not about the largest possible difference, but about the subtleties that could be developed within a narrow range of similarities within the generic ... This kind of architecture saw itself as ideological. Its politics stretched all the way from socialism to communism and all the points in between ... Our client is no longer the state or its derivation, but the private individuals often embarked on daring ambitions and expensive trajectories, which we architects support whole heartedly." "The system is final. The market economy. We work in a post-ideological era and for lack of support we have abandoned the city or any more general issues... At best our work brilliantly explores and exploits a series of unique conditions" (Koolhaas 2000, www.pritzkerprize.com). Koolhaas's words succinctly describe the transitions of both world and Chinese architecture, as evidenced by the narrative in this book. The market economy and ambitious private developers are encouraging individual design and unique qualities in planning and buildings.

As the lower-stream computer industry moves to China and India, the twentieth century saw a tendency for Hong Kong's design firms to outsource the rendering and technical documentation to the Mainland. The relatively inexpensive technical labor in architectural rendering, animation, printing, and binding may also attract employers from overseas. This may be an opportunity for China to export its building services.

In addition to the market, technological advancement provides opportunities for better design and quality of urban architecture. One development is in the continuously

improved building materials and creative structural and mechanical engineering, which generate high-intensity, low weight and brand-new-looking structures. Another development is in the design process itself, which benefits from the current information technology, including digital architecture, a larger database, design intelligence, virtual realities, and faster and more extensive communications. In this regard, China shares the global efforts in expediting the advancement of building science and technology.

The changes in ideas, culture, and technical means will inevitably influence the future curriculum of architectural education. The youth in the twenty-first century live and grow in an environment obviously different from that of their parents. In the 1980s, students had limited material resources and reference materials; therefore, at that time they could take only one or two directions. In the 2000s, students have too many choices in a more lively cultural background, and they may be bewildered about what and how to choose. They have their own cultural values, aesthetic goals, and technical dimension. Teaching them needs a completely new way of thinking and pedagogic methodology.

The building boom creates an urgent need for new blood — the expansion of architectural education has been and will be continuously ongoing. There are currently around 120 architectural programs, either in an architectural program attached to an engineering department or in an architectural school under the university system. Architectural education will be particularly in demand in two areas. One is the undergraduates, who will directly join the army of drafting and designing. The other is the higher graduate and research degree holders, who will satisfy the teaching forces of continuous expansion in old and new schools. The latter is seen in top schools like Tsinghua, Tongji, and Southeast Universities. The opportunities of practice and education are for both the domestic Chinese and the overseas international professionals. China will become a new employment center for building professionals and scholars.

Threats

The strengths and opportunities are always encouraging; however, challenges and threats exist. The environmental and social crises, often mentioned in this book, saliently present several possible constraints for the future of architecture.

Figure 10.5 Old lane house in Shanghai

Figure 10.6 Residential tower in Pudong, Shanghai

First, the land supply is limited, as indicated in Chapters One and Four. The fast expansion and drive of

cities and Special Economic Zones ruthlessly erode the agricultural lands; building development and "food demand" compete for pitifully limited land resources. The existing city centers are suffering from increasingly crowded use: more people, more buildings, more roads, and vehicles. The Chinese government's encouragement of the car industry has sharpened the contradiction. The land shortage will force people to dig for space underground. According to a study, the underground space of Beijing has a potential of providing 6.4 billion sq m of floor area, outnumbering the total of Beijing's buildings now (Qian 1998). In this case, the challenges may also be transformed to opportunities.

The shortage of electricity and clean water already constrain most Chinese cities in the beginning of the twenty-first century. The new development stretches the already tight supply, and it will have to slow down to adapt to the situation. The "opportunities" of abundant practice mentioned above can easily be lost at any time. What is the appropriate development speed? What is the suitable density for the urban areas, which can save the buildable land and cater for livable environment? These will be big challenges both for China and the world. This also explains why we believe that the environmental aspect should become the new criterion in evaluating (Chinese) architecture, as discussed in Chapter One. The environmental crisis may also stimulate more research and practice in sustainable, green, and intelligent buildings and relevant technologies.

Second, in the conflict of commercialism and preservation, traditional neighborhoods and relics are threatened and largely being razed. The pace of preservation and meager funds cannot save the valuable heritage from the bulldozers and short-sighted decision-makers. As discussed in the preceding chapters, the continuation of Chinese culture was broken on several occasions in modern times; the people's belief in their own tradition is amazingly weak or even nonexistent. The Chinese or local identity and tastes are almost swamped in the high tide of globalization. Imported buildings, architects, and styles are embraced, and they dominate the urban streets regardless of the local conditions. Most Chinese cities, if not all, soon fall into the rank of "generic city," a term coined by Rem Koolhaas (1995). It is good or bad, as repeatedly discussed in Chapters Two and Three, but it is definitely detrimental to China as a nation.

In our analysis in Chapters Two and Three, the mere and singular "Western" or "Chinese" will only exist in illusion. Chinese architects and developers should find new balance and position in the framework of contemporary China and the world. China should, and will, provide more pleasure to its people through a better built environment, and vigorously contribute to the wealth of world architecture in the new millennium.

Notes

1. The World Bank, through its thorough study, suggests that an alternative (or perhaps real) picture may be 1.2 percentage points lower than is indicated by China's official statistics. See World Bank, *China 2020: Development Challenges in the New Century* (The World Bank, Washington DC, 1997, p 3).
2. Following the discussion in the Preface of this book, the problems of the countryside and peasants gradually draw the attention of the Chinese government and people in the cities. In the beginning of 2004, an investigation, *Report of Chinese Peasants*, by two writers in Anhui Province, shocked the country with its profound revealing of the poor conditions in rural areas and a series of scandals about the local leadership. The report was first published by People's Literature Press of Beijing, and then by numerous newspapers and websites.

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