

Coping with urbanization in China: The role of the sciences of human settlements and planning practice

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Introduction

Since the foundation of the People's Republic of China in 1949 and especially since the adoption of the policies of reform and opening-up, China has obtained outstanding achievements in socio-economic development, as well as in urban and rural construction. Today in terms of national economy, urban and rural construction accounts for about 7 percent of the annual gross domestic product (GDP).

Simultaneously, there emerged a rather confusing phenomenon concerning urban and rural development. Although almost everyone has perceptual knowledge about building and a large number of people live in cities, few of them could give a clear definition or adopt a proper approach towards architecture and the city (fig. 1).

Today under the circumstances of rapid urbanization, China has to face different kinds of problems concerning urban and rural development, ranging from macroscopic problems, such as development strategies of a city, to microscopic problems such as the implementation of building activities. Taking this fact into consideration, it is natural that there are public arguments and criticisms, to which the authorities concerned should pay due attention even though some of them might be partial or not pertinent. However, for the administrative authorities, if the policies were made on the basis of non-scientific concepts, the consequences might be catastrophic with irreversible results. That is why scientific urban policies are very important for the sound development of human settlements.

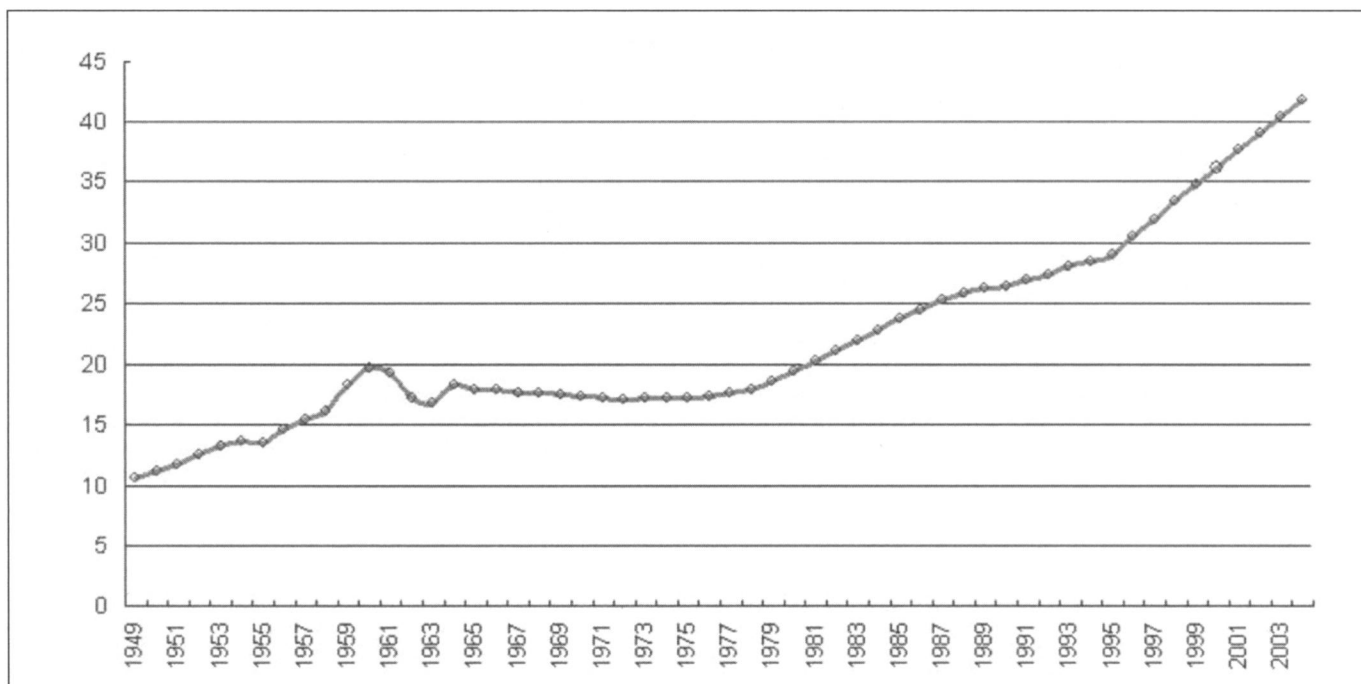


Fig. 1: Urbanization Process in China between 1949 and 2004.

Urbanization: The theme of the age

In the new century, the pace of urbanization is progressing rapidly in China. An expert once predicted that the most influential events in the world at the beginning of the 21st century would be the development of high technologies in the US and the urbanization of China. With regard to such a high speed of development, it is difficult to imagine what will take place in both the urban and rural areas of the country. As countless new buildings and new facilities will be constructed and many new cities and new city-regions will be emerging, it will be hard for us to devise any comprehensive strategies for the urban and rural development of China if we insist on the traditional concepts of architecture and the city, that is, understanding them only as isolated phenomena instead of considering them as a part of urbanization.

In fact, there has already been universal acknowledgement about urbanization in the international academic world. In the 1960s and 1970s, the Athens Center of Ekistics¹ published a series of Delos Declarations² based on extensive discussions, in which the issue of urbanization was addressed several times:

"Urbanization is the result of development, and usually the burden of further development as well, but it should be also a measure to promote further development. Unfortunately, the promoting influence of urban growth on further development is not taken into consideration adequately." (Delos One, 1963)

"By so far, people seldom, if not never, focus on the issue of urbanization, even that of housing. This situation which is equilibrate to the reality should be corrected and more efforts should be contributed to drafting policies of urbanization." (Delos Two, 1964)

At the same time, it was proposed to establish the discipline of human settlements to deal with the problems of urbanization:

"The forum restates the necessity to establish the discipline of human settlements which will target at showing the difficulties of human life under the new circumstances of changing and urbanization, solving the new problems of human settlements resulted from rapid changing by the way of integrating separate solutions into a comprehensive one." (Delos Two, 1964)

These theories were very enlightening for China. Actually in the academic field of architecture and planning of contemporary Western countries, there are many insightful and foresighted scholars who made a significant contribution to search for a sound road of development based on the retrospections on the past, for example from the perspective of information technology, environment, ecology and sustained development. After the reform and opening-up in the 1980s, Chinese architects and planners tried their best to learn earnestly from their Western counterparts and made outstanding contributions to the progress of urbanization in China.

Yet we must realize that, under the condition of accelerating urbanization at such a high pace (with the urbanization rate rising from 17.9 percent in 1978 to 41.8 percent by the end of 2004), China should not follow the Western way in terms of urbanization strategies, especially that of the so-called American paradigm characterized by scattered cities, auto-mobilization, suburbanization, top-grade villas, skyscrapers and so on. These phenomena should not be copied in China, not only because they would bring about consequential conflicts, but also because China could not afford it. Today China has to confront a shortage of resources which are far from satisfactory for sustainable development. For example, when compared with the world

average level, water resources in China account for less than 25 percent, arable land for less than 40 percent, forest for 16.5 percent, petroleum for 8.3 percent, and natural gas for 4.1 percent.

In addition to that, China has to deal with complicated social problems which emerge one after another during the process of development, for example the problems of unemployment, housing, education, aging population, medical care, etc. There are also big concerns about the ever increasing disparities in terms of wealth possession between different social estates, the ever increasing disparities in terms of regional development between urban and rural areas, and the growing conflicts of interest resulting from the continuing polarization of the social structure.

All these problems are interconnected and unexpected, calling for serious consideration. Yet when we do our best to search for possible solutions to deal with these problems, it is also urgent and essential for us to explore the "theories of architecture and the city" which will serve as guidelines towards the future development of architecture and the city. We should realize that the Western experiences of urbanization could not serve us as readily available answers and that we ourselves have to search for a unique road of urbanization for China in close accordance with the specific conditions of the country.

Development of the sciences of human settlements

As serious scholars with a scientifically-oriented attitude, we hasten to recognize that our academic research on urban and rural development is still deficient and the existing disciplines of architecture and urban planning are incapable of providing comprehensive and efficient solutions to practical issues. At present, though many disciplines are involved in large-scale construction taking place in both urban and rural areas, they are not guided by universally acknowledged professional guidance and they do not coordinate with each other to achieve common goals. Therefore when confronted with the requirements for the development of the new era, it is urgent for Chinese scholars to develop new academic concepts, dealing with the issues of human settlements, society and environment in a comprehensive and holistic way.

Enlightened by the concept of "human settlements" and "habitat," I put forward in 1989 the General Theory of Architecture in my manuscript with the same title, marking the start of my research on the sciences of human settlements. In August 1993, together with my co-partners, I proposed establishing the Sciences of Human Settlements³ in a seminar organized by the Department of Science of Technology, Chinese Academy of Sciences. In 2001, I published another manuscript entitled *Introduction to the Sciences of Human Settlements*⁴ and gave a lecture at the annual meeting of the World Society for Ekistics held in Berlin in October of the same year with the title "Theoretical and Practical Explorations for Sciences of Human Settlements."⁵

Along with the general trends of urban and rural development in China in recent years, I tried to enrich my academic theories in the following aspects:

- Urbanization vs. "Five Balanced Aspects";
- Urban and rural development vs. construction of the new countryside;
- Integration and exploitation of architecture, urban planning and landscape architecture from a regional perspective;
- Research on and application of methodologies.

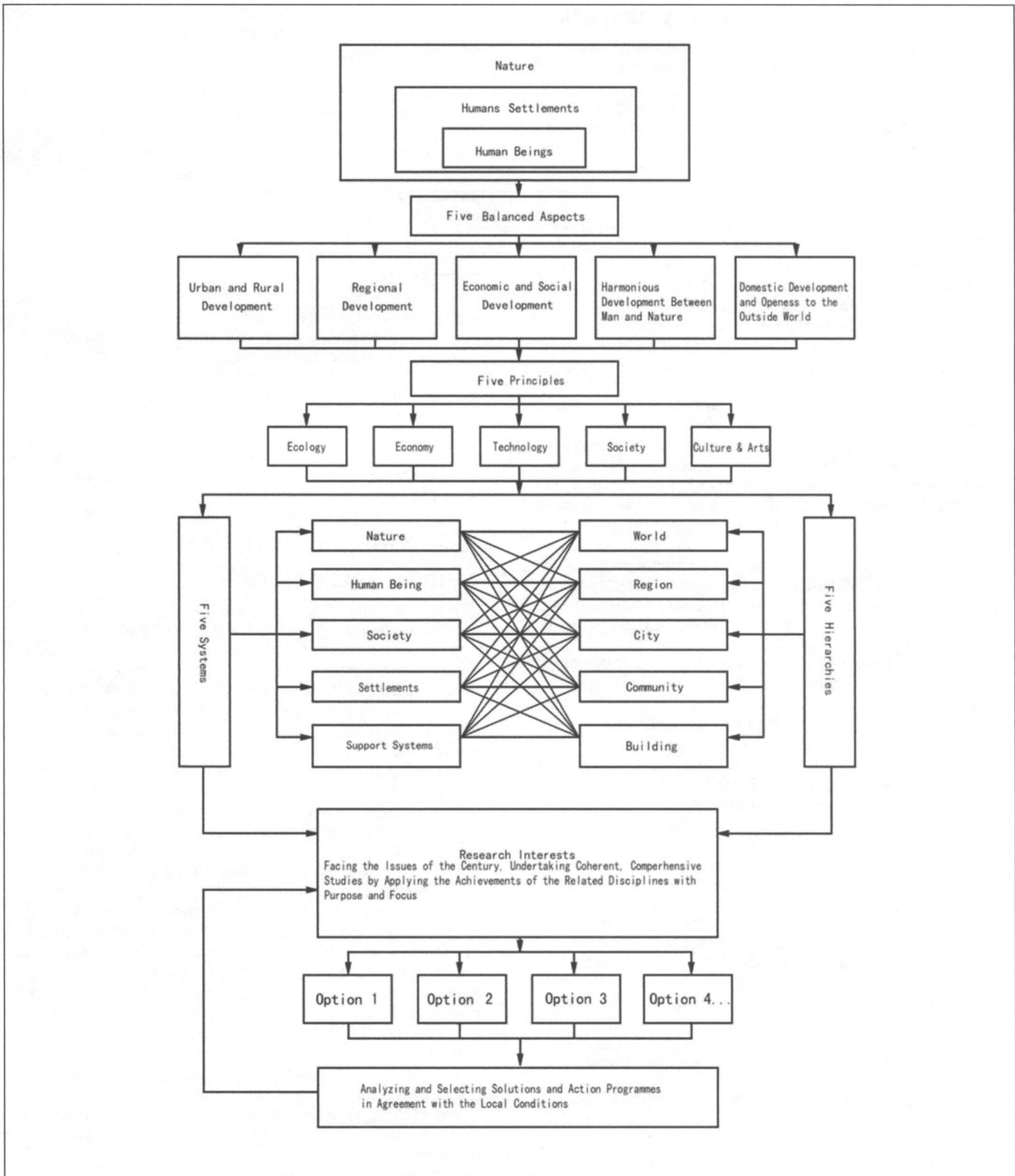


Fig. 2: Basic research grid of Sciences of Human Settlements

Urbanization vs. “Five Balanced Aspects”

Recently, “promoting the process of urbanization” has become an important issue in China and it is the first time in the history of China that so much attention has been paid to

research on urbanization. This is a good phenomenon. As stated in the *Istanbul Charter* of Habitat II of the UN in 1996, “urban and rural developments are correlated. In addition to improving the living environments in urban areas, we should

make great efforts to increase appropriate infrastructures, public service establishments and employment opportunities in rural areas so as to enhance the attraction of countryside. We should develop unified residential networks to reduce the rural-to-urban migrations.”

In 2003 the Chinese government brought forward the new concept of “Five Balanced Aspects,” namely:

- “balancing urban and rural development,
- balancing regional development,
- balancing social and economic development,
- balancing human and natural development, and
- balancing domestic development and opening to the outside world.”

It can be regarded as an intensive summarization of the achievements and also the problems of construction in China in the past half century. This concept of Five Balanced Aspects can serve as general guidelines for the socio-economic development of China, as well as the top principles for the development of human settlements in China. Thus much attention should be paid to this new concept. On the one hand, we should seriously retrospect on the work we have done in accordance with these guidelines while, on the other hand, we should consciously implement these political creeds in our technical practices (fig. 2).

Thus I further developed my theories of the Sciences of Human Settlements and revised the basic research grid of these sciences which is composed of:

- “Five Principles” (i.e. principles of ecology, economy, technology, society, culture and art),
- “Five Elements” (i.e. nature, human beings, society, settlements, supporting network), and
- “Five Levels” (i.e. world, region, city, community, building).

The “Five Balanced Aspects” as mentioned above (i.e. balancing urban and rural development, balancing regional development, balancing social and economic development, balancing human and natural development and balancing domestic development and opening to the outside world) are set on the dominant level of the grid, serving as the top principles of the Sciences of Human Settlements.

Urban and rural development vs. construction of the new countryside

In his dedication to World Habitat Day in 2004, Kofi Annan, Secretary-General of the United Nations, stated that, “The theme of World Habitat Day this year, Cities – Engines of Rural Development, was chosen to remind development policy-makers at every level not to think of ‘urban’ and ‘rural’ as separate entities, but rather as parts of an economic and social whole. Cities interact with rural areas in many ways.”

It is enlightened in the report “Suggestions on drafting the 11th Five-Year-Plan for National Economic and Social Development” delivered by the Central Committee of the Communist Party of China that, “positive efforts should be made to promote the balanced development of urban and rural areas. Building the new socialist countryside is an important historical task during the modernization of China. The building of the new country should be carried out firmly and steadily following the requirements of growing production, prosperous life, civilized atmosphere, clean appearance, and democratic management, and in accordance with specific local conditions and the true wish of farmers.” “A long-term effective mechanism should be established to encourage the reversed feeding of industry to agriculture and city to countryside. Due attention should be paid to the construction planning of the countryside.”

Although city and rural areas are inevitably different from each other and different methods and policies shall be

adopted to deal with problems of urban and rural development respectively, neither of them could be emphasized or ignored partially for achieving the final goal of sustainable development. We should realize that the prosperity of a rural area is an important basis for sound urbanization, and urbanization should never be at the cost of the decline of agriculture and the lagging modernization of the countryside. It is possible, as well as necessary, that urban development makes a significant contribution to the prosperity of rural development.

Currently, we are doing our best to explore the way to build a new socialist countryside. Based on the experiences and lessons learnt from historic practices – for example, those carried out by the students and staff of Tsinghua University in 1959⁶ – we believe that the prosperity of the countryside relies on the comprehensive development of agriculture, processing industry of agricultural products, education, medical care, housing, socialized services, as well as the construction of towns and villages.

Integration and exploitation of architecture, urban planning and landscape architecture from a regional perspective

According to my theories of the Sciences of Human Settlements, the integrity of architecture, urban planning and landscape architecture (or the so-called “triplicity”) is the core of the Sciences of Human Settlements. Today with regard to the construction practice taking place in the developed coastal areas of China, it is not enough to keep our minds only on cities. Instead, more attention should be paid to dealing with the interrelationship between urban, suburban and rural areas in terms of transportation and spatial development, the protection of the ecological environment and landscape resources, the opening-up of recreational areas, and so on. Thus it is necessary to further promote the integration and exploitation of architecture, urban planning and landscape architecture (figs. 3 and 4).

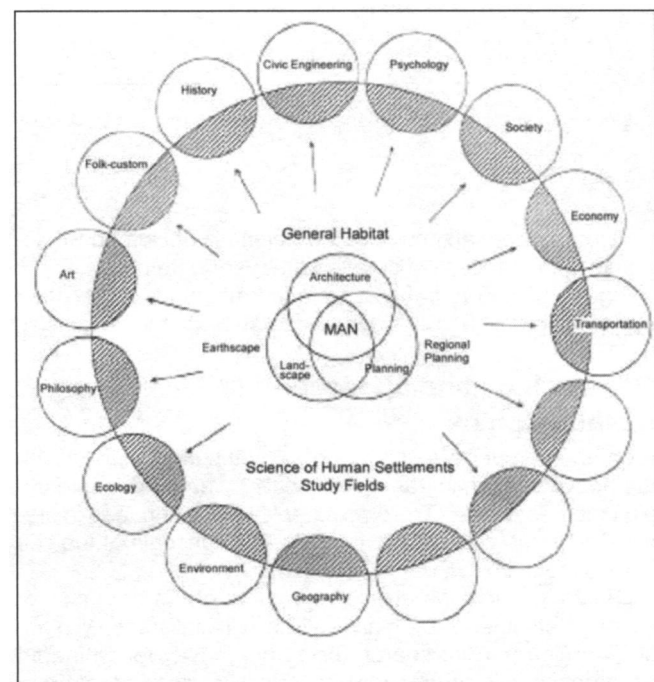


Fig.3: Sciences of Human Settlements – creating an open system (1996).

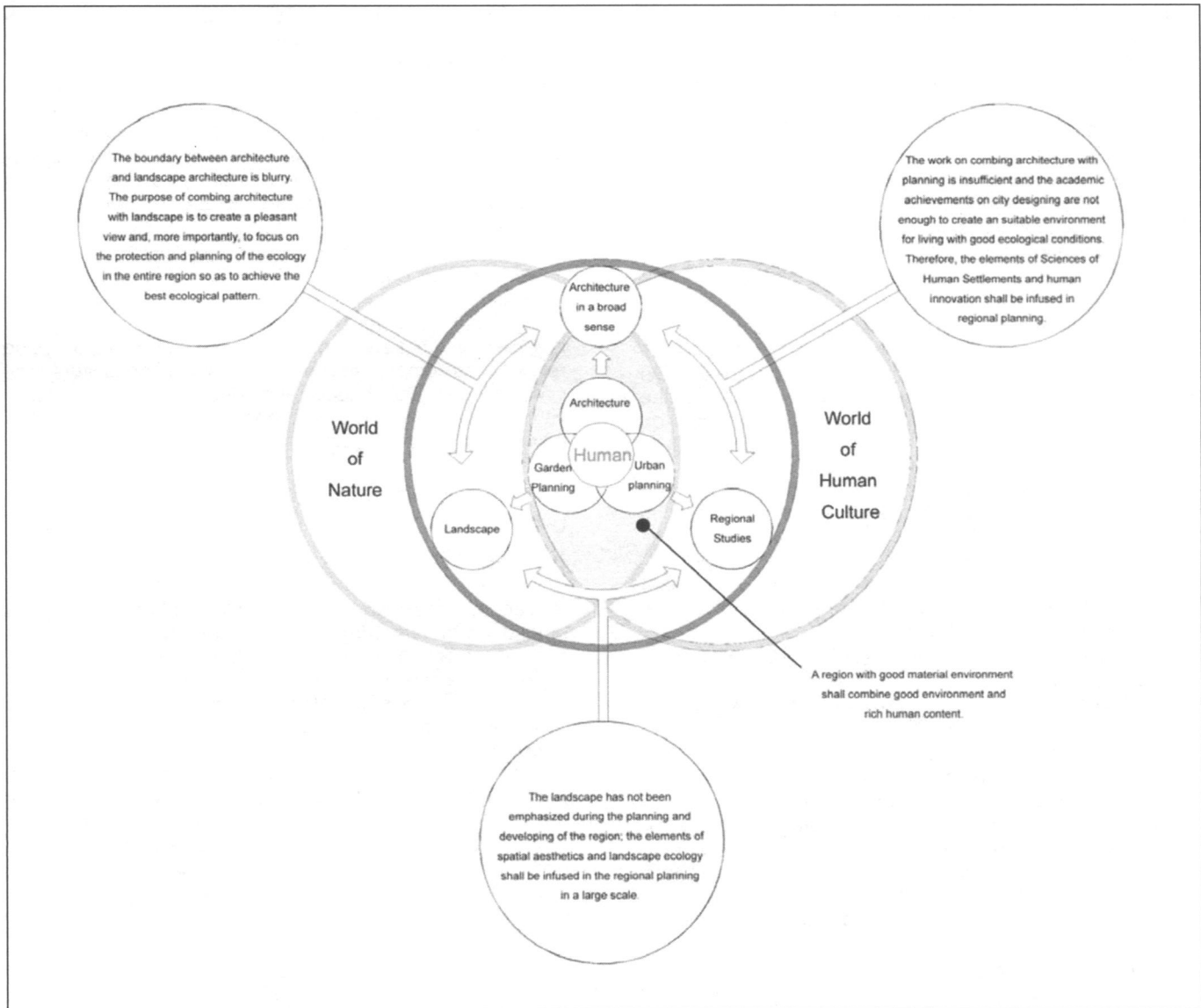


Fig.4: Open system of the Sciences of Human Settlements: Academic framework (2005).

Figure 3 gives an image of the Sciences of Human Settlements in the process of creating an open system.

Figure 4 illustrates the academic framework of the open system of which the Sciences of Human Settlements consist.

Research on and application of methodologies

From the perspective of methodology, the object with which the above academic framework deals is “an open and complex mega-system.” To some extent, we are engaged in creative research with holistic thinking and concepts of the science of complexity.

Generally speaking, the development of the Sciences of Human Settlements in China is still in its initial stage. We are still working hard to search for a unique way for China, in accordance with the realities of China, to glean ideas from relevant disciplines, take lessons and draw experiences from domestic and overseas advanced practices.

Theoretical application of the Sciences of Human Settlements in urban and rural planning practice

Personally, I tried applying the theories of the Sciences of Human Settlements in my systematic practice of urban and rural planning in China and developed them continuously throughout the practice. With a “problem-oriented” methodology, I enlarged my practical scope progressively from architecture to urban studies and further to regional and cultural studies, which could be classified into the following “three platforms”:

- Platform One: Exploration for new paradigms of urban development based on the concept of a “regional block”;
- Platform Two: Concepts of “Urban Unit” and “Design Module” to create relative integrity during the process of development;
- Platform Three: Comprehensive innovation with cultural connotations.

Platform One: Exploration for new paradigms of urban development based on the concept of “regional block”

- **Theory of “City-Region”**, with focus on doing research on spatial development strategies of city-regions from a

regional perspective to achieve coordinated regional development and co-prosperity of big, medium-sized and small cities, as well as towns and villages. Our research work on the Yangtze River Delta Region, Pearl River Delta Region, Northwestern Yunnan and Greater Beijing Region is the pioneering work of architects on spatial development strategies and urban system of city-regions (figs. 5-9).

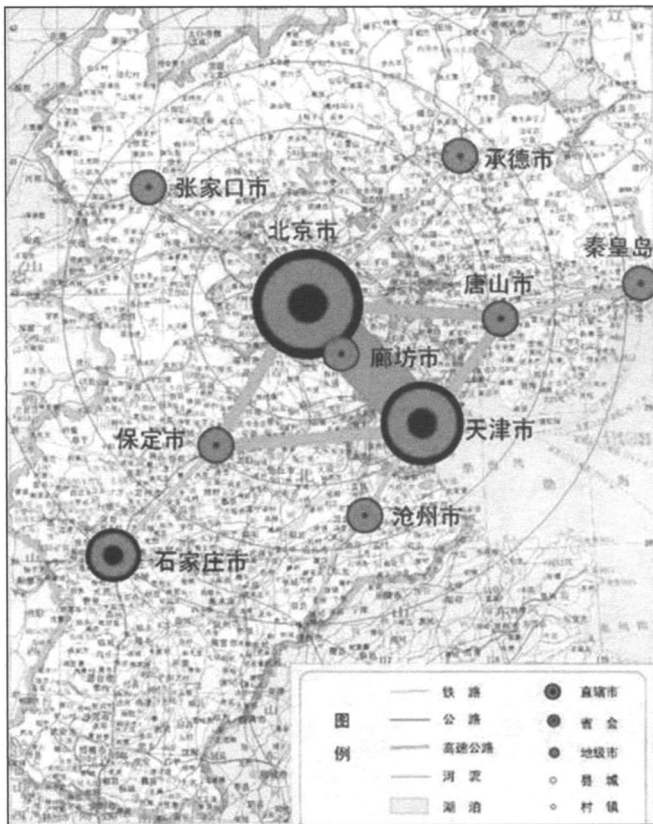


Fig. 5: Greater Beijing Region (Beijing-Tianjin-Tangshan-Baoding) and surrounding area.

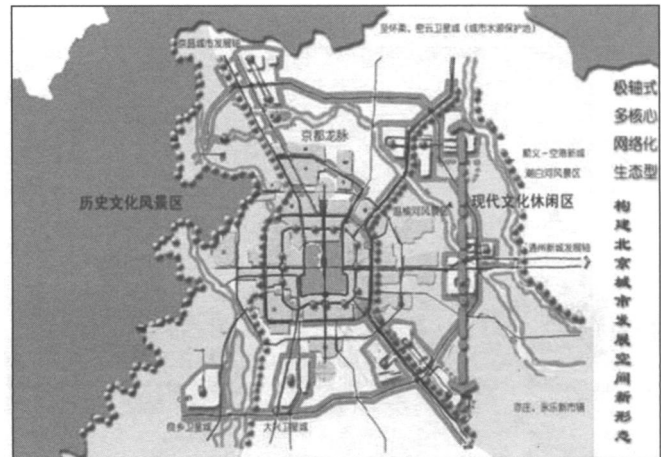


Fig. 7: Beijing Urban Proper Planning Pattern.



Fig. 8: Beijing National Park Strategy.

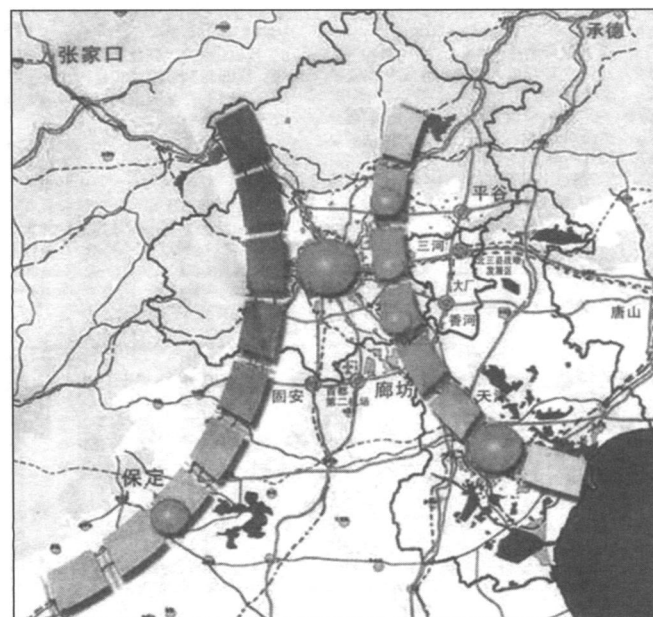


Fig. 6: Beijing Two-Belt Spatial Strategy

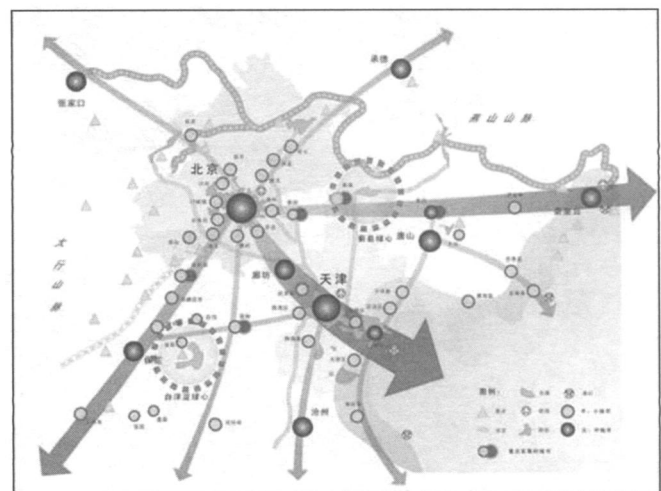


Fig. 9: Greater Beijing Spatial Development Strategic Plan.

● **Theory of “Regional Architecture”**: At the beginning of the 1980s, I first put forward the theory of regional architecture and advocated in 1988 the modernization of regional architecture and regionalization of modern architecture. My designs for the Confucius Institute in Qufu and the Museum of Mount Tai in Tai’an, Shandong Province can be regarded as a practical implementation of regional architecture (figs. 10-14).



Fig. 10: Master Plan of Tai'an City.



Fig. 11: Taishan Museum Design – 1.

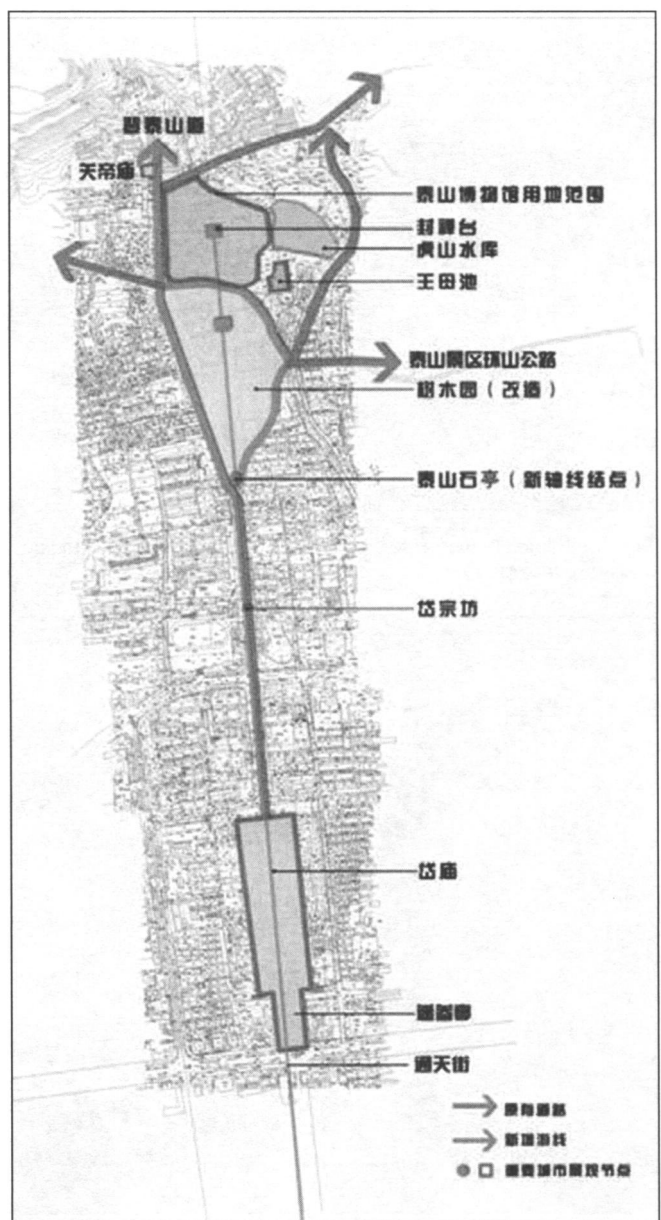


Fig. 12: Taishan Museum Design – 2.

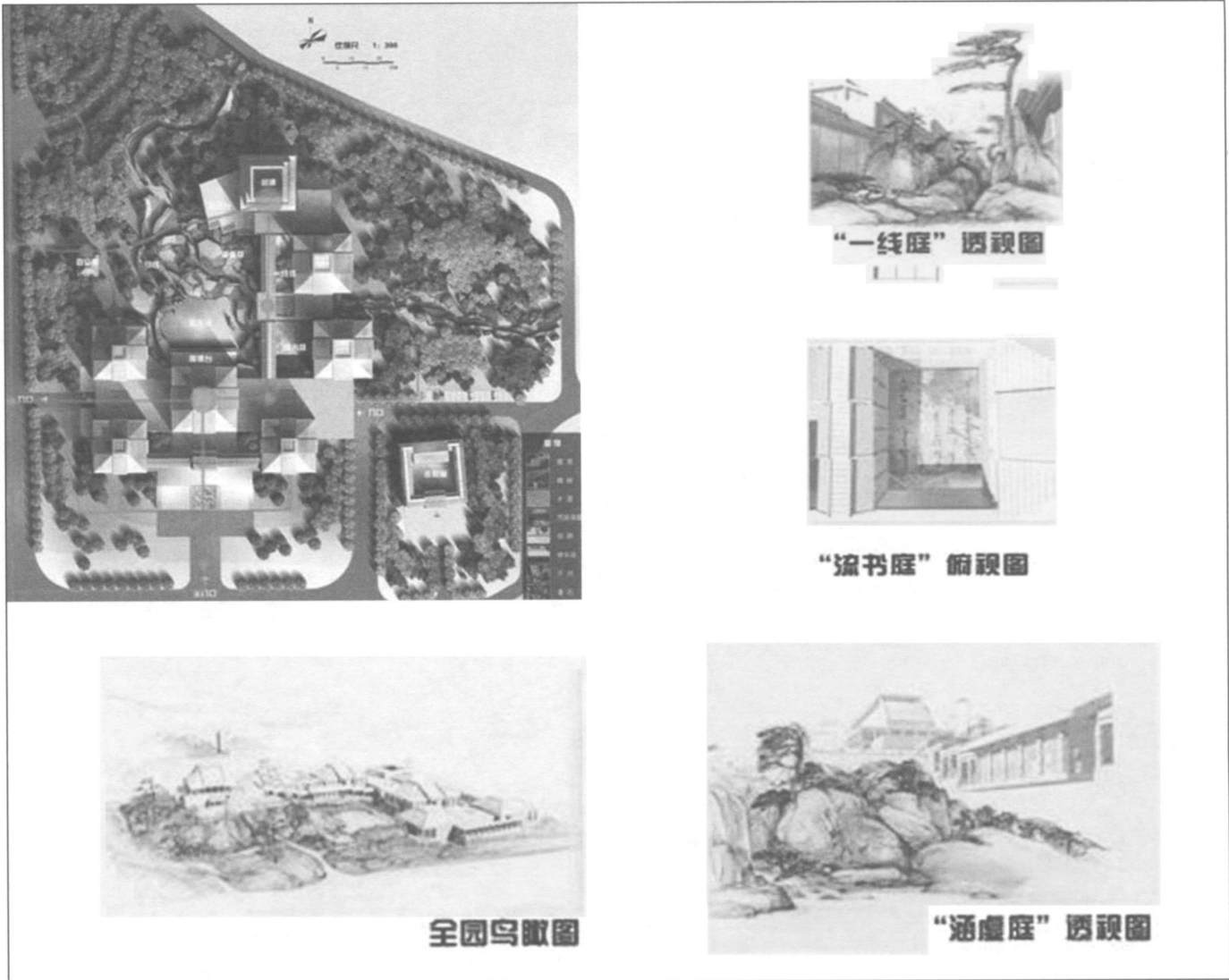


Fig. 13: Taishan Museum Design – 3.

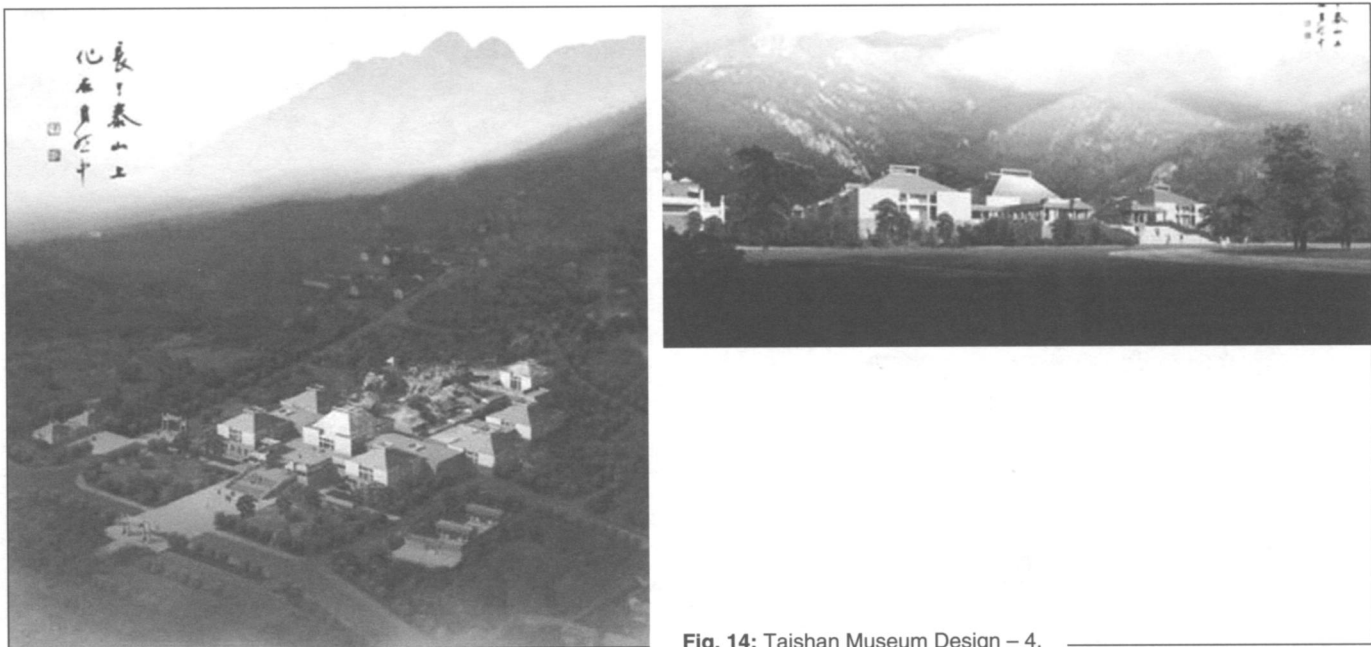


Fig. 14: Taishan Museum Design – 4.

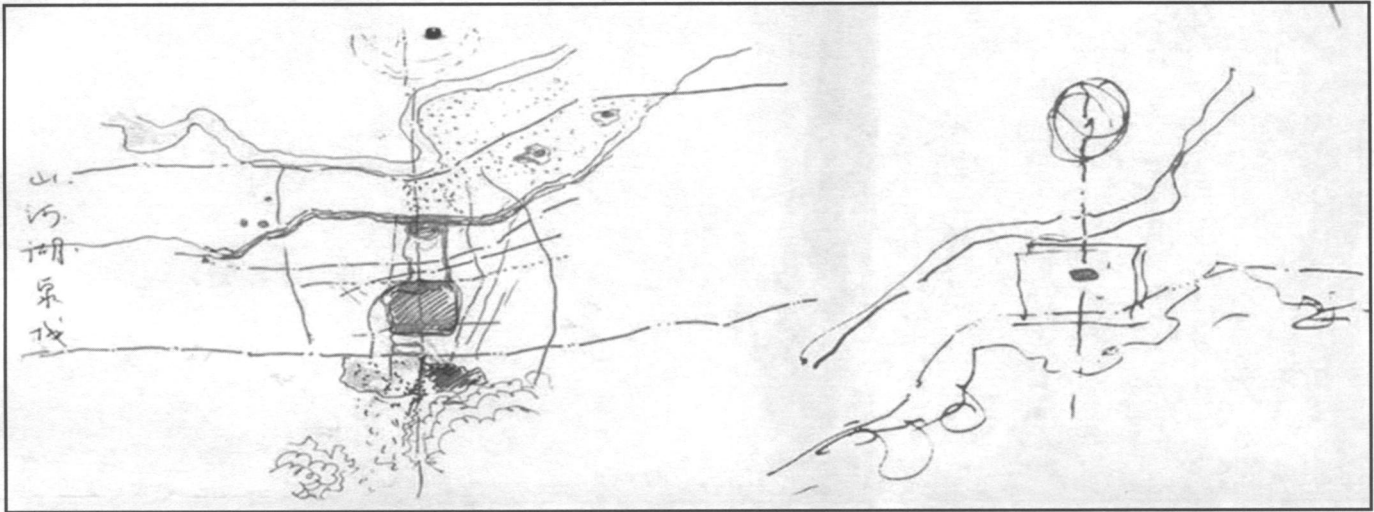


Fig. 15: Jinan cityscape and landscape. (Source: Sketch by Wu Liangyong).

● **Theory of “regional-scape and/or earth-scape,”** with focus on enlarging the scope of landscape from gardens of micro-level to regions and even the earth of macro-level. My proposals for the “four national park strategy” for Beijing and the “Quehua National Park” for Jinan are guided by the theory of regional-scape (figs. 15-18).



Fig. 16: The picture of Que and Hua mountain in autumn (Zhao Mengfu, Yuan Dynasty).



Fig. 18: Jinan City's viewpoint from the Qianfo Mount.



Fig. 17: Jinan City Axis to compare with Changan and Luoyang. (Source: Sketch by Wu Liangyong).

Platform Two: Concepts of “Urban Unit” and “Design Module” to create relative integrity during the process of development

I insist that architectural design should be done with a holistic thinking of urban design, not only focusing on restructuring the urban fabric or urban order, but also thinking about improving the system of civil infrastructure. In the process of design, each site of a city should be regarded as an “urban unit” and be treated as a “design module” so as to achieve integral harmony out of chaos (figs. 19-22). More specifically:

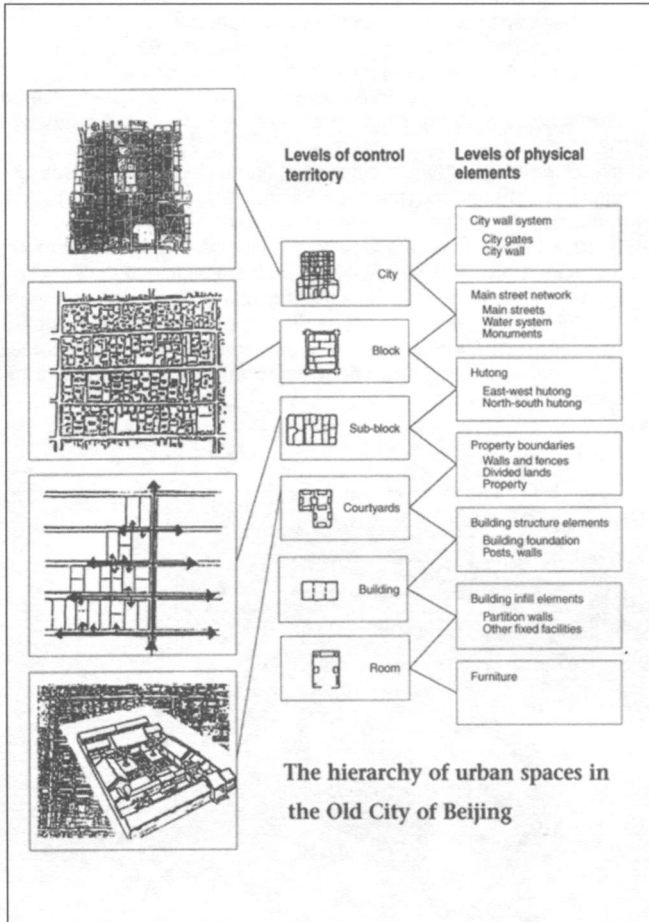


Fig. 19: The hierarchy of urban spaces considered as “urban unit” in Old Beijing.

- A city could be divided into many urban units of design in accordance with not only functional differentiation, but also natural situations or built-up elements.
- The planning and design of an urban unit should
 - first, “connect the preceding and the following,” which means to conform to the requirements of higher-level planning while providing guidelines for lower-level planning;
 - second, “glance right and left,” which means to take into consideration the relationships with its neighbors; and
 - third, “conceive future” which means to forecast as much as possible the changes of life in the future and to explore as much as possible spaces to maintain the potential growth.



Fig. 20: Beijing Ju'er Hutong before renovation.



Fig. 21: Beijing Ju'er Hutong New Courtyard Housing Project – 1.



Fig. 22: Beijing Ju'er Hutong New Courtyard Housing Project – 2.

- The objective in terms of physical environment is to achieve the beauty of integral coordination, which means to create order within chaos and harmony of difference.

Platform Three: Comprehensive innovation with cultural connotations

This means to develop new paradigms on the basis of summarizing historic experiences, grasping fundamental laws and meditating on original prototypes. In detail,

- We should learn from the successful experiences in human history all over the world and create regional architecture full of local character all over China.
- Under the circumstances of economic globalization and cul-

tural diversification, due attention should be paid equally to global culture and local culture. In terms of either global perspective or local action, neither of them should be partially ignored or discarded.

- Concerning the development of architecture, science and culture should be highlighted simultaneously. On the one hand, we should establish the concept of “great science” to learn and apply sciences in architecture; while on the other hand, we should have the concept of “great art” to integrate architecture with painting, sculpture and fine arts to enhance the artful expression of architecture, to create the soul of architecture of the era and to intensify the cultural connotations of the built environment.

Conclusion

All my theoretical and practical work, including manuscripts, dissertations, as well as planning and design works, are elements of my designing knowledge system which aims at integrating science with humanism. One thing needs to be clarified here that, though till now my theoretical and practical works are confirmed by some colleagues, both domestically and overseas, I still think that they represent only one school. In China we have an ancient philosophical saying, “there might be one hundred different ideas for one object, and there might be one hundred different ways for one destination.” In other words, a common road, as well as a common destination could be found even when confronted with numerous problems. That is what I call Problem-oriented. For Chinese architects, we should do our best to explore dif-

ferent ways and put forward different ideas so as to find a common direction leading to a common goal, that is, to develop the school of Chinese architecture.

Notes

1. The Athens Center of Ekistics was established in 1963 by the Athens Technological Organization (which was inaugurated in 1958) to promote Ekistics, the Science of Human Settlements, through research, education, documentation and international programs.
2. Editor's note: The author refers to the Declarations which were issued at the end of each of the 12 Delos Symposia lasting one week, the first 10 of which took place on board ship cruising the Mediterranean between 1963 and 1972 and thereafter the final two in Athens. All documents and Declarations were printed in the October issues of *Ekistics* in the corresponding years.
3. Wu Liangyong, Zhou Ganzhi, and Lin Zhiqun (1994), *Today and Tomorrow of Building Industry of China* (Beijing, City Press).
4. Wu Liangyong (2001), *An Introduction to the Sciences of Human Settlements* (Beijing, China Architecture & Building Press), pp. 379-395.
5. Wu Liangyong (2002), “Sciences of human settlements: Searching for the theory and practice,” *Ekistics*, vol. 69, no. 415/416/417 (July/Aug.-Sept./Oct.-Nov./Dec.).
6. In 1959 the staff and students of the Department of Architecture, Tsinghua University, were involved in the design and construction of the residential community at Shangzhuang People's Commune, Xushui County, Hebei Province. Since the ordinary building materials were not affordable there at that time, all the two- or three-storeyed buildings were constructed in reed which had to be demolished later on.



A group of the Chinese contingent from Tsinghua University, Beijing, taking part in the Symposium, with students and faculty members Wu Weijia (left) and Mao Qizhi (second from right).