

吴良镛论人居环境科学

吴良镛选集



WU LIANGYONG:
ESSAYS ON THE SCIENCES OF
HUMAN SETTLEMENTS IN CHINA

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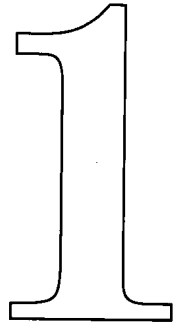
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**Sciences of Human Settlements:
Theoretical and
Practical Explorations**



1.1 The Sciences of Human Settlements in the World

Since C. A. Doxiadis advanced the theory of EKISTICS with the ending of World War II, the theory and practice of the Science of Human Settlements has been developed over the world. The UN Habitat I Conference in Vancouver in 1976, the RIO Conference in 1992, the UN Habitat II Conference in Istanbul in 1996, as well as other worldwide actions up to the UN Special Conference of Istanbul+5 last June, have marked an unceasing progress of the research in this field. The new concepts of Human Settlements, Habitat, cities in the globalizing world, emerging in consequence of the research progress, have become the global guidelines for building a sustainable world. Today, the sustainable development of Human Settlements has become a common theme all over the world and thus architecture and urban planning have been ushered into a broad realm of multidisciplinary cooperation for further development.

Taking into consideration all the current changes, we hereby advocate developing the Sciences of Human Settlements in a more comprehensive way. This means establishing the communities of science, encouraging the collective work and the multidisciplinary communication among all participants, and searching for the theory and approach of a new paradigm.

1.2 Recent Rural and Urban Development in China

It is well known that great changes have taken place in China in the past two decades. These changes can be seen not only in geographical dimensions but also in all socio-economic aspects: politics, economy, culture, science, and technology. Both the economic development and urbanization have stepped into an accelerating phase, leading to a great annual growth of gross domestic product (GDP) and urban population. Amidst magnificent achievements, there have emerged some complicated problems. The crux is that the cities and the countryside are developing at such a rapid rate, on such a large scale, with such enormous capital, to such a vast extent that they have surpassed any historical period that the country has ever witnessed before. Virtually, building construction has today become a major economic pursuit in China.

In the transition from a planned economy to a market economy, China has found out her way in accordance to the specific conditions of the country: the socialist market economy that overemphasizes neither the plan nor the market at the expense of the other. It means that the general plans are still necessary, perhaps even more necessary than before, in the course of this rapid growth. To ensure the sustained development of China in future, we should carry out holistic researches, search for general strategies, and lay out common guidelines. In terms of urbanization, we should in particular study the integrated rural and urban development from the regional viewpoints in the hope that the cities and the countryside would advance side by side and the various regional cultures would coexist.

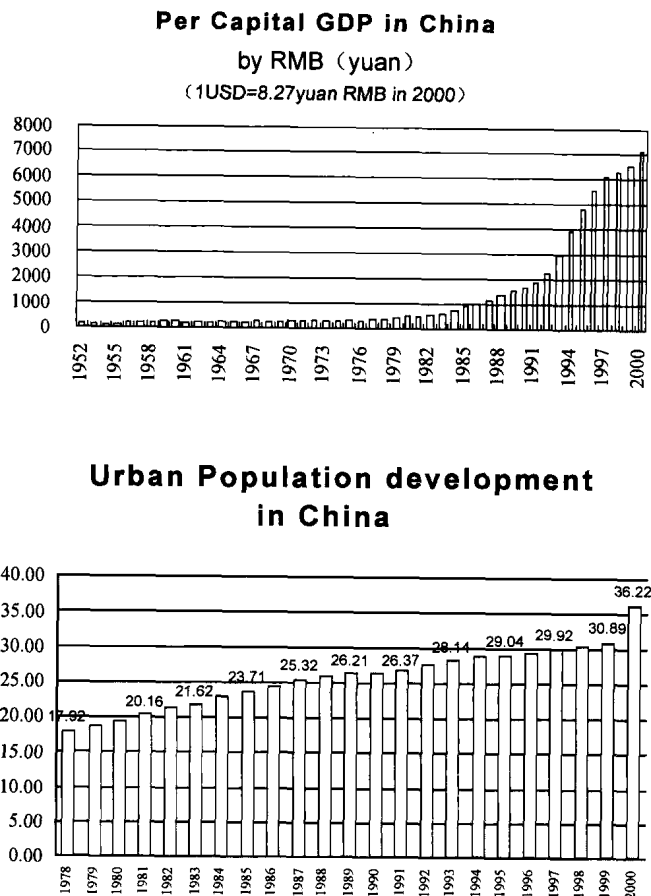


Fig. 1.1 Per Capital GDP and Urban Population Development in China

1.3 Theoretical Developments at the Center for Science of Human Settlements of Tsinghua University

Aware of the seriousness of the issues and conscious of the adoption of a scientific approach, I have devoted myself to search for the theory of Science of Human Settlements in China in the past decades with a series of academic publications including “A General Theory of Architecture” in 1989. In 1993, together with my colleagues, I put forward a proposal to set up the Sciences of Human Settlements at the annual conference of Science and Technology Division of the Chinese Academy of Sciences. In order to tackle the problems existing in China’s rural and urban construction, we have tried to build a new science focusing on coordination between humans and nature, with the living environment as the major object of study. We have made explorations from various aspects.

Founded in November 1995, the Center for Science of Human Settlements (CSHS) of Tsinghua University has offered a course on “Brief Introduction to Sciences of Human Settlements”, and since 1998 offered to publish the “Series on Sciences of Human Settlements” and has made considerable progress in the research field. The steady process marked a good beginning in the field of bright prospects.

Recently, I have published a book entitled “Introduction to Sciences of Human Settlements”, which mainly explores the relationship between humans and environments, also with a view of the way out for human settlements in China. The book is divided into two parts. The first part introduces the origins of the Sciences of Human Settlements, its constitutions, its basic ideas, its methodologies, and some case studies that have been carried out by the CSHS in the course of many years’ research work on the conservation and development of sustainable human settlements. The second part is on C. A. Doxiadis and Ekistics, which functions as an interpretation and review of the theories of Ekistics. The highlights of the book are summed up in the following sections.

1.3.1 The Connotation of Human Settlements

Human settlement refers to a place where people come to live and build homes.

It functions as the base where people manage to make their life in nature. Man is undoubtedly the core of the settlements. Thus, the primary purpose of building settlements is to meet the demand of humans to live together in communities. According to the density of the residents and the degree of their impact on nature, a human settlement can be divided into two parts in terms of physical space: the ecological environment and the manmade environment. During the long history of evolution of human settlements, the harmonization of man with nature has been always the ideal of mankind, though specific building actions have varied greatly from one another under the influences of natural and social factors.

In detail, human settlement is composed of five systems: nature, man, society, habitation, and network, among which the first two systems are most essential while the last two systems are also indispensable in terms of the construction of physical environment. The relationship between human settlement and its five systems is similar to that between a whole and the parts. Therefore, the achievement of a better human settlement does not lie in the perfection of its systems, but in their integration; and a better human settlement should be not only an ecological environment but also a humanistic one that can meet the demands of mankind, both biological and social individuals.

As a complex system, human settlement involves all kinds of settlements: a room, a village, a town, a city, even the entire world. According to their scale, they can be categorized into five levels: global, regional, city, community, and shell. This categorization is very helpful to clarify some basic concepts in the research of the Sciences of Human Settlements and to set acceptable standards for researches at different levels.

The main purpose of promoting the Sciences of Human Settlements in China today is to try adapting the large-scale constructions to the current circumstances. It suggests that the studies should be carried out not only in the academic field to find out the law of the development but also in the practical field to guide the construction of human settlements that takes place everyday and everywhere. As stated above, a better human settlement, composed of five systems, should be such

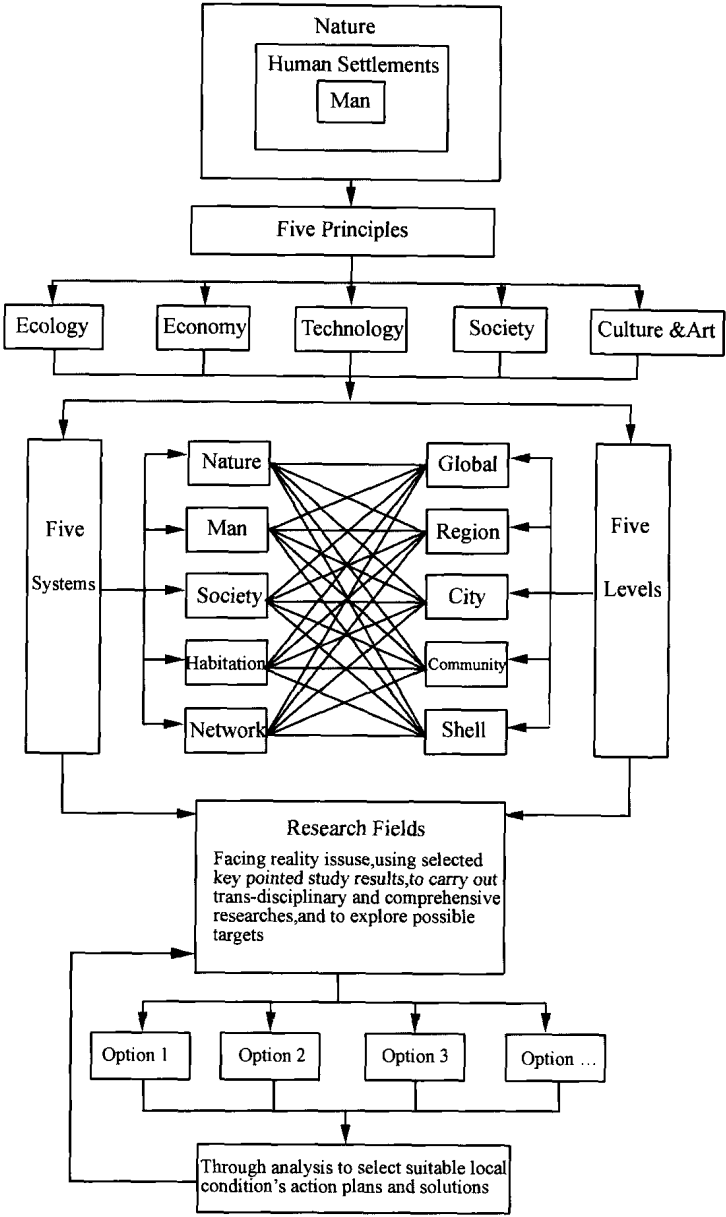


Fig. 1.2 Framework of the Science of Human Settlements Studies

an integration of all its parts that the demands of different aspects would be well satisfied: ecology, economy, science-technology, society, culture-art, etc. From this point of view and with regard to the specific case of China, five principles are proposed herewith as the guidelines for the construction of human settlements: according due respect to nature by promoting ecological awareness of the public and tackling environmental issues; the sound circle between the construction of human settlements and economic development; the prosperity of society promoted by the progress of science and technology; the concerns for the interests of people in terms of individuals as well as society as a whole; and the integration of the pursuit of science and the creation of art.

1.3.2 The Framework of the Sciences of Human Settlements

Taking living environments as the research object, the Sciences of Human Settlements, dealing in a comprehensive way with all the problems occurring during the development of human settlements, is not a mono-discipline but a multi-disciplinary one that involves the sciences of nature, technology, and humanities. It implies that, with the common goal of building an ideal human environment for human beings, all the disciplines concerned with the construction and development of human settlements are regrouped in one framework, centering the trinity of architecture, landscape architecture, and urban planning that work as the leading disciplines.

As the integration of different disciplines, the Sciences of Human Settlements is an adaptive open system that changes ceaselessly. The number of disciplines concerned in the framework may increase or decrease while their importance may also vary from time to time. It should not equate all the disciplines but highlight one or more when it is necessary to deal with practical problems.

The Sciences of Human Settlements advocates a comprehensive, systematic research on human settlements in various aspects. On one hand, the research works could be carried out at any of the five levels of human settlements from the disciplinary perceptions; on the other hand, they could be focused on any of the five systems of human settlements from the regional viewpoints.

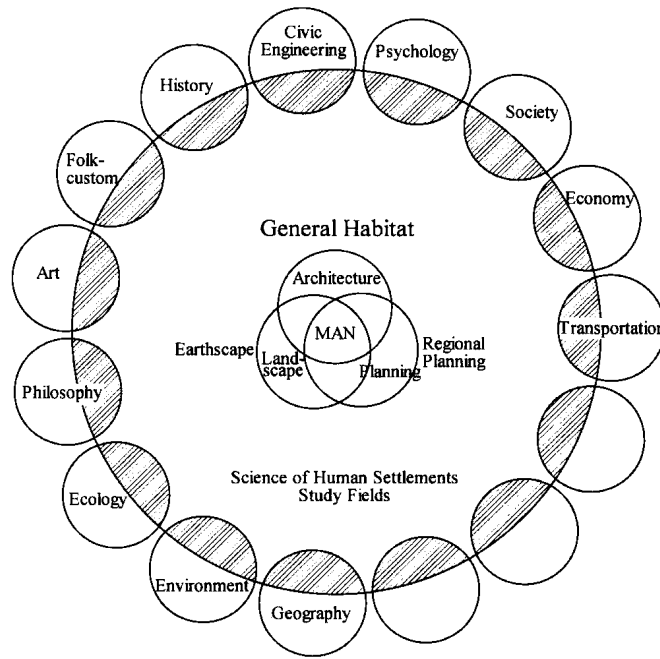


Fig. 1.3 An Open and Creative System for the Sciences of Human Settlements

1.3.3 Research Methodology of the Sciences of Human Settlements

The Sciences of Human Settlements is not an all-powerful discipline that can reach every aspect of human environment. As a complex adaptive system, its feasible method in practice is problem-oriented. First, it aims to identify the key issues from complicated realities, then to channel out the possible solutions to these problems by integrating, in a trans-disciplinary way, the achievements of other concerned disciplines.

From the following figures that we can easy to understand the trans-disciplinary approach was developed. For any researching works, it could be stepped by a single-isolated discipline, or a few disciplines but no linkage; then, a multiple disciplines with some relations; afterward, in a high level cooperation of disciplines intercross; finally, it will be developed into trans-disciplinary with multi-level integration, and trans-discipline process and integrating research steps.

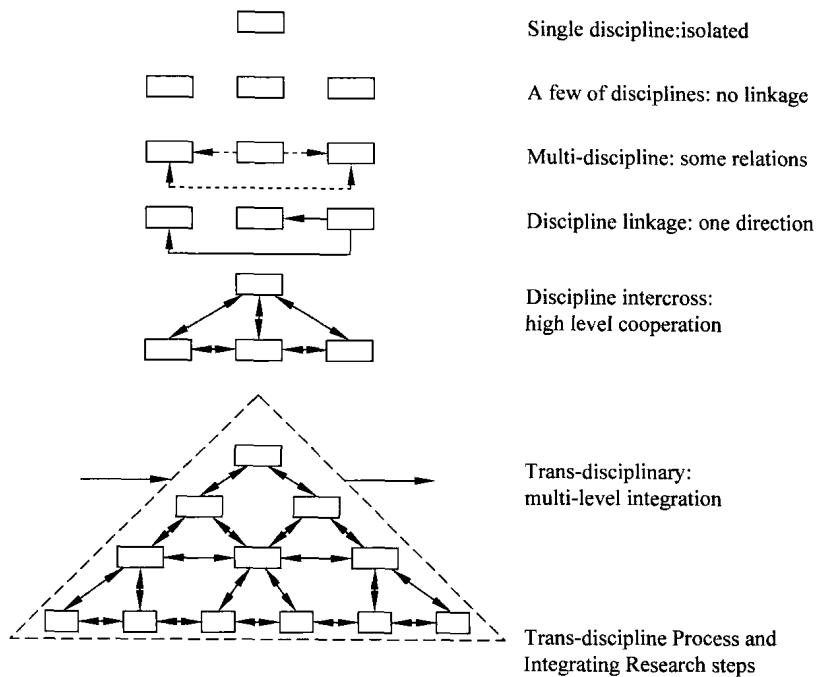


Fig. 1.4 From Single Discipline to Trans-disciplinary Integrating Research

Source: Jantsch, Erich. "Inter- and transdisciplinary university: a systems approach to education and innovation". *Ekistics*, Dec. 1971, vol. 32:193, pp. 430-437

1.3.4 The Theoretical Guidelines for to the Development of Sciences of Human Settlements in China

The Sciences of Human Settlements is a strategic research significant for the development of economy, society, science, and technology of a country. Thus, it is always important to put forward a research schedule that is realistically appropriate. Based on the sustained studies of human settlements in China, I have preliminarily summed up, in my new publication "Introduction to Sciences of Human Settlements", the basic issues for our research of Sciences of Human Settlements under the current circumstances. They concern the coordinative organization of the different disciplines within the framework of the Sciences of Human Settlements, the multi-disciplinary communication and integration of the concerned disciplines, the realistic goals of the development of the Sciences of Human Settlements, and the practical application of

the theories and methodologies of the Sciences of Human Settlements in the fields of research, planning, design, and education concerning the construction of human settlements.

- The Guide for Methodology. Just as the Sciences of Human Settlements, composed of different disciplines, is a complex open system that could be approached by a problem-oriented method, Human Settlement, a multi-leveled structure, should be regarded and approached in the same way. Especially in China, the biggest developing country of the world that is now in the accelerating phase of development, the problem of human settlements can only be dealt with as a huge, complex, open system. Thus, researchers working on the Sciences of Human Settlements are required to have a scientific philosophical thinking, a comprehensive understanding of the science of system and the science of complexity, and are required to well master the trans-disciplinary and problem-oriented method to tackle step by step the complicated practical problems. Meanwhile, a community of science should be established, composed of scientists of different disciplines devoted to sustained research for new paradigms.

- The Guide for the Practice of Planning and Design. A holistic thinking is indispensable in the different phases and at the different levels of planning and design. The new theories of planning and design can only be worked out by integrating the various existing ones. Exactly speaking, at the level of architectural design, the theory of General Architecture should be encouraged to enable the return of architectural creations to the basics. At the level of urban design, the new concept of human settlements would lead to the harmony of physical spaces by respecting the perceptions of region, city, community, and building. At the level of general planning and design of human settlements, a new dynamic notion of time and space should be set up to reach the harmonization of time, space, and human beings.

- The Guide for Professional Education. The architectural, landscape, and planning education should be reformed and adapted to the new context to provide the society with new type of qualified persons who are capable of carrying out trans-disciplinary research works and integrating science, humanity, and art. In this view, the

training for “professional leadership” and the popularization of the Sciences of Human Settlements would be the key points in future education.

1.4 Practical Developments at the Center for Science of Human Settlements of Tsinghua University

Concerning the advocacy of the Sciences of Human Settlements in China, a considerable number of studies has been done by Tsinghua University in the past half-century, especially in the past 20 years after the economic and political reforms of China. The problem-oriented analysis, the historical and regional study, and the multi-disciplinary reference have served as the main methods for the CSHS.

Holistic thinking is the philosophy of the CSHS’s planning and design practices. It means that when dealing with a specific project, we always approach it as a part of the whole, as a period in the time sequence, and as an element in a spatial system. The solution is the result of the integration of the past and the future, the element and the entity, the personality, and the harmony.

With accordance to our experiences in the research of Sciences of Human Settlements, the following factors are indispensable for the success:

- The establishment of innovative and industrious academic groups;
- The spirit of cooperation and practical and realistic attitude of the participants;
- The advance of common academic guidelines, academic theories, developmental stratagems, and working methods;
- The organization of research groups, directed by high-level academic leaders, which is made up of the combination of the old, the middle-aged, and the young;
- The promotion of practical problems, which are urgent to be tackled.

1.4.1 Regional Studies

- Sustainable Development of Human Settlements in the Northwest Area of the Yunnan Province. This is a collaborative research between the provincial government of Yunnan and the Tsinghua University, which involved School of Architecture

of Tsinghua University and several local institutes of the Yunnan Province. The Northwest Area of Yunnan is distinguished by its richness of ecological and cultural diversities, while suffering from the fragility of environment and backward economic development. Aiming at improving the living environment of the local people, we searched for the potential to accelerate the pace of local economic development, to better preserve the regional feature of ecological and cultural diversities. Some constructive propositions were made: 1) to coordinate the ecological preservation with the socio-economic development by setting up a regional network for preservation of ecological diversity; 2) to encourage the development of tourism and concerned service industries as the key to promoting the local economy; 3) to consciously conserve the diversity of regional cultures under the press of economic growth; 4) to ameliorate the planning, construction, and governance of the living environment. Completed in 1999, the research achieved such a success that all the propositions were accepted by the local government and some of them were even implemented.

• Spatial Development of the Region of Greater Beijing. As one of the most important regional studies in China, this research work was done during the past two years, involving more than 10 research institutes of different cities and hundreds of specialists of different disciplines. It is a successful experiment of the Sciences of Human Settlements in the practical field with the application of problem-oriented methods, trans-disciplinary communication, the collective work of Community of Science, holistic thinking, the Science of Complexity, etc. The research object concerns the territory of the Municipalities of Beijing and Tianjin and the northern part of the Hebei Province. With reference to the experiences of other countries, we approached the region from a global point of view in the following aspects: strategic role, regional function, spatial layout, and mechanism of coordination and cooperation. Based on in-depth analysis of the current situation of the region, the spatial development of Greater Beijing was restructured, aiming at the emergence of a prosperous world city. 1) Combination of organic disposal and rational regroupment in regional dimension. This means to gradually relocate certain urban functions of core cities like Beijing and Tianjin to other cities and to