

# Chinese human geography and its contributions

FAN Jie

Institute of Geographic Sciences and Natural Resources Research and Key Laboratory of Regional Sustainable Development Modeling, CAS, Beijing 100101, China

**Abstract:** The aim of this paper is to sift through examples of outstanding contributions made by Chinese human geography in terms of social applications and explain the basic concepts and theoretical methods explored by human geography that are behind the applications of results with major social influence, so as to be able to summarize the main school that represents developments in contemporary Chinese human geography. Chinese human geography upholds the subject's designation as being integrated and interdisciplinary. Research focuses on interactions between the natural and human spheres of the Earth's surface, and it is guided by the understanding and effects of the processes of regional sustainable development at different spatial scales. Chinese human geography has innovatively established the following development paradigm: "To be guided by application requirements, refine key issues of the discipline in the course of solving major issues of human geography in national and regional development, and by solving those key issues, to enhance its ability to provide scientific and technological support to serve national and local needs while promoting its own development." Results from early Chinese human geography studies on land use and agricultural zoning, recent research results on point-axis system models and T-shaped national spatial development patterns, and current research results on territorial function theory and major function oriented zones have all continued and strengthened the mainstream school of Chinese human geography and have avoided the global tendency for human geography to become rapidly human-oriented, while results have been applied at the highest level of decision-making management. Chinese human geography can provide lessons for developing countries and may play a leading role in the future development of global human geography.

**Keywords:** Chinese human geography; main school; social contribution; land use; agricultural zoning; point-axis system; T-shaped land development structure; territorial function; major function oriented zone

## 1 Introduction

Over the past decade, human geographers have become the main consulting force and academic team involved in formulating sustainable development strategies and developing spatial plans in China. Chinese human geographers have had a huge influence on decision making and actual processes of development in China, far greater than scholars of other dis-

---

**Received:** 2016-05-10 **Accepted:** 2016-05-20

**Foundation:** Key Project of National Natural Science Foundation of China, No.40830741; National Key Technology R&D Program, No.2008BAH31B01

**Author:** Fan Jie (1961–), PhD and Professor, specialized in regional development and spatial planning of China.

E-mail: fanj@igsnrr.ac.cn

ciplines. Such an impact has rarely been made on development and decision making by human geographers in other countries.

Former President of the Geographical Society of China and human geographer Lu Dadao was invited to discuss regional strategic issues concerning the formulation of the 11th Five-Year Plan (2001–2005) with former Premier of the State Council Wen Jiabao and to discuss China's new type of urbanization with current Premier of the State Council Li Keqiang,<sup>1</sup> during which both premiers listened to Lu Dadao's suggestions. Four Chinese human geographers have been invited to collective study sessions of the Political Bureau of the Communist Party of China (CPC)<sup>2</sup> to discuss major issues of concern to the CPC Central Committee. Professor Zhou Yixing of Peking University was invited to explain "foreign urbanization development models and the path of urbanization with Chinese characteristics" in September 2005; Fan Jie of the Institute of Geographic Sciences and Natural Resources Research under the Chinese Academy of Sciences discussed "foreign regional development and promotion of regional coordinated development in China" in February 2007; Professor Long Guoqiang of the State Council Development Research Center gave a talk on "expanding opening up and safeguarding China's economic security" in September 2007; and Professor Lin Jian of Peking University discussed "issues concerning improving China's land management system" in August 2011. It should be noted that it is rare for four scholars from any discipline to be invited to give talks to the Political Bureau of the CPC.

The prominent contributions to society made by Chinese human geographers are the most significant features in the development of Chinese human geography. Clearly, the fact that the academic results of human geography studies have attracted the attention of decision makers and been applied in actual development is down to the academic research and academic development strategy of Chinese human geography. Moreover, research and the application of results in response to social developments have effectively driven innovations in the theoretical methods of human geography. "The human geography development strategy, which is guided by national strategic requirements, guides the output of academic results; results in human geography are directly applied to national and local sustainable development and modernization efforts; new issues in human geography discovered in the course of applying results become topics for further research; focusing on scientific research in the course of promoting human geography enhances the ability to find practical applications" (Fan, 2011b; Fan *et al.*, 2012). This research logic and the large-scale academic research it has led to as well as the considerable academic achievements it has produced constitute the main characteristics of the modern Chinese human geography school, and they have formed a world-renowned academic school: the Chinese human geography school.

The diversity of the discipline has been maintained in the course of developing Chinese human geography. It has continued to follow trends in international human geography and imitate foreign human geography research paradigms, while innovatively creating new aca-

---

<sup>1</sup> China formulates a new national development plan every five years which specifies the country's future strategic objectives and main tasks. It also acts as a guide for resource exploitation, environmental protection, economic development and spatial layout considerations. The implementation period of the 13th Five-Year Plan is 2016-2020.

<sup>2</sup> In December 2002, the Political Bureau of the CPC established a system of collective study sessions involving experts from relevant fields discussing major issues of interest to the CPC Central Committee. The summary given by the General Secretary of the CPC Central Committee at the study sessions points the way for the development of that particular field. At the time of writing, there had been a total of 107 collective study sessions.

demographic growth points centered on Chinese issues, such as the rise of social and cultural geography in China and the introduction of evolutionary economic geography. It focuses on researching specific and relatively small-scale matters of human geography and is more concerned with academically exploring the influencing factors in its evolution and explaining its active mechanisms (Fan and Sun, 2011). Teams that carry out studies are usually small and led by one professor. These studies have not only helped Chinese human geography develop, but have provided many unique perspectives and ideas to large-scale studies on meso-scale and macro-scale human geography issues.

## 2 Debate regarding the discipline's development approach

As we all know, in the past half century or so, tremendous changes have taken place in China's development, and Chinese society has made progress despite some twists and turns. During this time, Chinese human geography has been influenced by changes in the political system, in economic development models and in the environment of opening up, and has developed laboriously through exploration. It is unlikely that this development path has been experienced abroad. In the course of developing China's scientific system, only other social science disciplines have shared similar experiences. Developing human geography has also been made more difficult by its designation in China's science and higher education systems<sup>3</sup> as a natural science. Having a rational disciplinary designation is crucial for the healthy development of human geography.

In the 1950s, similar to the system of social organization, the setup of Chinese sciences followed the Soviet model. Economic geography was a sub-field of geography juxtaposed with physical geography, and the subject of human geography did not exist. Economic geography was mainly concerned with the development and layout of agriculture, industry and transport, so the corresponding subjects of agricultural geography, industrial geography and transport geography developed by leaps and bounds. In the 1960s, the Cultural Revolution began and, like other disciplines, research in human geography came to a virtual halt. More tragically, however, it was considered a pseudo-science and teaching and research in the field of economic geography was criticized and attacked. After 1970, and particularly after the policy of reform and opening up was introduced, due to changes in China's economic and social development structure, and together with the need to align it with the path human geography was taking abroad, the position of human geography within China's scientific system was constantly adjusted while its practical value was highlighted. The name "human geography" was proposed and it became a sub-field of geography along with physical geography. Within human geography, the areas of urban geography, tourism geography, and social and cultural geography flourished, while interest in industrial layout, population geography and foreign geographical research diminished in China. In recent years, with the need

---

<sup>3</sup> The Chinese scientific system is divided into natural sciences, social sciences, and engineering and technology. Human geography, together with geography, is classified as a natural science. As such, human geography is a discipline dealt with by a subsidiary body of the Chinese Academy of Sciences and is not covered by the Chinese Academy of Social Sciences. In Chinese institutions of higher learning, students are divided into liberal arts students and science and engineering students, which cover different subjects in the entrance examinations. Human geography is considered a science and engineering subject; therefore, human geography bachelor's, master's and doctoral students gain science and engineering degrees.

for greater spatial planning and urban and regional governance, as well as greater awareness regarding sustainable development and the environment, regional development studies have gradually become the main area of development in human geography.

In this process of development, whether or not human geography is a science, what type of science it is and how to develop it as a science have been, and continue to be, matters of debate.

Prior to the Cultural Revolution, the most important debate was whether economic geography research should be concerned with the “allocation of production” or the “allocation of productive forces.” Those who argued that the target of research should be the “allocation of productive forces” considered production activities to be determined by the relations of production; therefore, no spatial distribution laws existed for production activities divorced from class attributes. This meant economic geography was considered a social science and it was thought that Chinese economic geography should be an economic geography of the proletariat. Ultimately, though, this school went into decline.

The most important differentiation in the subject after the Cultural Revolution occurred with the introduction to China of new factors such as “cultural transformation and social transformation” in the course of integrating with international human geography, when it was asked whether Chinese human geography should make them dominant factors or major research directions in discussions on human geography processes and patterns. Subsequent developments show that although the majority of people advocated research in social geography and cultural geography and elevated this approach to the status of an international representative discipline, attempting or actually managing to put human geography on a cultural and social track, the contribution of this viewpoint, nevertheless, ultimately remained at the level of discussions on subject diversity (Wu, 2008). In these two major debates, the major points of division were internal to human geography and over whether or not to follow a more human-oriented path.

The major debate over whether human geography is a science exists between non-human geography disciplines and the discipline of human geography. Specifically, it is a difference of opinion of the natural sciences family regarding human geography. They disagree that human geography is a science based on its research topics and methods as well as the way it presents its research results.

With regard to whether the discipline is human-oriented or stresses class nature, Wu Chuanjun's<sup>4</sup> efforts to define the discipline of human geography and make himself an example of it laid the foundation and guided the development and orientation of the contemporary Chinese human geography school. Wu Chuanjun defined economic geography (early human geography in China) as “being a frontier science very close to the natural sciences, economics and technical sciences, and having combined natural, economic and technological features” (Wu, 1991; Lu, 2002), with a focus on the formation processes, relevant conditions, types, zoning and development laws of regional systems of production layout. This interdisciplinary definition helped Chinese economic geography (and, later, human geogra-

---

<sup>4</sup> Wu Chuanjun (1918–2009) was a famous human geographer and academician at the Chinese Academy of Sciences. He served as Vice President of the International Geographical Union, President of the Geographical Society of China, Editor-in-Chief of *Acta Geographica Sinica* and Deputy Director of the Institute of Geography of the Chinese Academy of Sciences.

phy) enjoy a long period of prosperity. Even when the social and human tendencies appeared, human geography still maintained its basic interdisciplinary position. It meant that research on the spatial distribution patterns of human and economic geographic phenomena and their evolutionary laws should place increasing emphasis on the effect of social and cultural factors on production and living spatial structures, and should not ignore interactions between the natural and human spheres. Moreover, while emphasizing research on the role of interactive relationships between human and economic geographic phenomena on the formation of patterns, it is necessary to fully acknowledge the impact of resource and environmental systems on the patterns and processes of human and economic geography. In recent years, human geography has used the comprehensive advantages of its interdisciplinary designation, used the rational allocation of space to resolve coordinated issues involving population and economics as well as resources and the environment, and made outstanding social contributions to national and regional sustainable development. The social impact of this has fed back to the science community and gradually helped more and more scholars recognize the academic value of human geography.

### **3 Sequence of ideas in the academic explorations of the Chinese human geography school**

Under the designation of human geography, the academic inquiries of the Chinese human geography school have focused on integrated studies on multi-factor roles and complex systems of natural resources, the environment, society and the economy; major land development, regional strategies, industrial layouts and spatial planning based on national strategic needs in different stages of development; and the interaction of social applications and academic inquiry. Three important research topics from different time periods have been chosen here that reflect the basic sequence of ideas in the academic inquiries of the Chinese human geography school.

#### **3.1 Early period: Land use and agricultural geography studies**

Starting in the 1960s, shortly after the dawn of modern geography in China, the most basic work in geography, namely land use studies, and the most pressing strategic requirement for an agricultural country at the time, namely studies on the rational layout of agricultural production, became the two key issues of the subject. Chinese economic geographers had a firm grasp of the core value of geography and emphasized regional differences within a multi-disciplinary framework. Chinese studies on land use and agricultural geography continued to be the core topics and important approaches to human geography and economic geography until the 1990s. Studies in these areas took spatial variations and regional differences as their scientific basis and aimed to apply results according to local conditions, with academic ideas traceable to land use research. Land use was considered the best and most important area of convergence of natural sciences and human-economic geography.

Land itself relates to physical geography, while use is covered by economic geography. The important areas of geographic study constituted by combining these two things are land cover change and changing land use (Wu and Guo, 1994), which have become eternal geographic propositions facing the world today and people in the future. Outstanding achieve-

ments in these areas were made by Wu Chuanjun in his *1:1,000,000 Land Use Map of China* and *Chinese Agricultural Geography*, as well as Academician Zhou Lisan in his Chinese agricultural zoning work. *1:1,000,000 Land Use Map of China* was the world's first national small-scale land use atlas. It systematically documented regional differences in China's land use and their laws of distribution. Agricultural zoning work involved comprehensively analyzing and zoning China's agricultural production development conditions, features, levels and potential, as well as regional differences. It provided a basis for provincial planning departments and agricultural production departments across the country to arrange and plan agricultural production, and it promoted use of agricultural zoning work in the operational methods of the government's agricultural management (Deng, 1982), which is still used today. These achievements are classic examples that reflect the interdisciplinary nature of human geography, have helped solve major national strategic issues, and developed human-economic geography. They were also good starting points for Chinese human geography to combine human and natural elements and for research paradigms that are guided by major national needs and aim to have national applications.

### **3.2 Recent period: Point-axis system modeling and T-shaped spatial development pattern studies**

As the processes of industrialization and urbanization have progressed in China, especially since the increased industrialization and urbanization that occurred after the 1980s, changes have occurred in the human and economic geography issues facing China. While agricultural geography is more concerned with land use structures of areas, the choice of point locations of industrial enterprises and cities and the spatial structure formed by the relationship between points have become the focus of Chinese human geographers.

Prominent research achievements in this area include Lu Dadao's "point-axis system modeling" and its application in the area of national spatial development in terms of overall pattern arrangement. His research found that the development process of the "point-axis" system is an objective law of the evolution of spatial structures in the process of regional development. He revealed the formation features and regional effects of the point-axis system in different developmental stages and the internal mechanisms of point-axis interactions. He also revealed the dynamic mechanisms of point-axis system evolution from the laws governing the concentration and dissipation of population and industry (Lu, 1995). This became the most effective scientific theory for guiding regional development spatial structures and organization.

Based on the point-axis system, Lu proposed the T-shaped strategy for land development and economic layout in China, whereby coastal areas and areas along the Yangtze River made up the first-tier main axis for developing Chinese territory (Lu, 2003a), which provided a workable theoretical structure for land development, production layout and regional economic development. This had, and continues to have, a tremendous influence on China's land development and macro-economic layout, and it has been implemented on a large and wide scale in every area across the country, constantly changing national and local spatial development objectives and regional policy actions.

It can be seen, then, that the point-axis system theory and the T-shaped land space development pattern have not only led the way in spatial structures in human-economic geogra-

phy studies, but the point-axis system has quickly become the main model used in spatial organization for different geographical scales and different types of spatial planning in China. Thus, the point-axis system has had the deepest and widest influence on the national economy and social development.

### **3.3 Current period: Territorial function theory studies and application of major function oriented zones**

In the 21st century, the core issues facing Chinese development have been the increasingly serious conflict between population and economic development and the natural resources and environment and the difficulty of balancing industrialization and urbanization with environmental and food security and cultural preservation, which are challenges to China's sustainable development. Establishing a scientific system of spatial governance is China's most pressing strategic need in the new era. Chinese human geographers continue to uphold an integrated perspective when it comes to exploring regional differences and trying to tailor measures to local conditions. They have established governance of territorial functions, in other words land use governance, as their main method of spatial management and promoting orderly and coordinated development of national space, allowing them to propose and gradually develop a territorial function theory.

So-called territorial functions are the roles that different regions of the Earth's surface should play in maintaining the effective, safe and sustainable operation of the Earth system. The basic principle of spatial organization is that it should meet the needs of everyday human life and production and spatial requirements of the constantly changing required functions. At the same time, we cannot allow natural ecosystems to be damaged beyond recovery and to develop unsustainably due to the destruction of natural background functions.

Current territorial function theory has focused on explaining contributing factors, spatial organization laws, and spatial pattern change processes of territorial functions, and on developing a territorial function methodology system (Fan, 2007), the focus of which is to accurately identify geographical functions and define the spatial boundaries of different territorial functions. Based on this theory and method, Chinese human geographers participated in research on "Chinese major function oriented zone planning", which divided China into urbanization zones, main agricultural production zones, key ecological function zones, and natural-cultural heritage protection zones. This draft of major function oriented zoning was adopted by the central government and is considered the blueprint that the Chinese government is committed to implementing. The application of territorial function theory and major function oriented zoning is based on a combination of economic, social and ecological benefits, and the "resource and environmental carrying capacity" evaluation methodology has been successfully applied by human geographers on five occasions in reconstruction efforts following major disasters, including in Wenchuan and Yushu (Fan, 2009), providing a scientific basis to reconstruction plans. More importantly, it has been identified by the central government as a fundamental task for major development decision making and planning. Focusing on balancing population and economic layout as well as resource and environmental carrying capacity will fundamentally enable China to embark on a sustainable development path.

Moreover, urban geography in China has moved into the field of urban planning, and

systematic study of the laws and modes of urbanization, the interactive relationship between cities and regions, and urban systems, has improved the scientific ability of urban planning to predict the size of urban populations and determine urban functions. This in turn has helped boost urban system planning, urban development strategy and concept planning, overall urban and rural planning, and urban planning, and become the main force in research on Chinese urban strategy and this type of planning. At the same time, after urban planning became an area of application of urban geography theory and an area that attracted talent, it led to the growth of urban geography.

Similarly, the creation and development of Chinese tourism geography has promoted the rapid growth of the Chinese tourism industry and turned it into an emerging strategic industry, and with the help of tourism geographers, the tourism industry in China is the only industry to have had industry standards and industrial development and layout guidelines throughout its emergence and development. The tourism industry and tourism as a discipline have undergone extensive development, and the focus of research in tourism geography has turned to the field of eco-tourism, which is closely related to the geographical environment. Through its considerable influence on the development of related disciplines, such as urban planning, human geography has shown its academic value within the system of disciplines, and by helping to create an emerging strategic industry, namely the travel industry, it has shown its application value in national development, which is further evidence of the academic and applicable nature of developments in Chinese human geography (Fan *et al.*, 2013).

#### **4 Basic characteristics of the theoretical approach to Chinese human geography**

Looking at the development process of Chinese human geography compared to that of human geography abroad, there are at least two aspects that are unique to Chinese human geography. The first is, compared to foreign countries, the tendency to become human-oriented was not prominent in the development of human geography in China. The choice of human geography research targets and explorations into the influencing factors and drivers behind their formation and change tended to focus on interactions between natural systems and human systems, and resource and environmental conditions that differ regionally have not been diluted or overlooked in Chinese human geography studies. The second is the extent to which results from Chinese human geography studies have been directly transformed into applicable results and their ability to serve government decision making has been at the world's forefront. Research results from Chinese human geography can directly influence major decisions and as well as actual social development.

Further analysis of the basic characteristics of the theoretical approach of Chinese human geography shows the following.

##### **4.1 The need orientation of social development and government decision making have become the main drivers of the subject's development**

A subject's development is often driven by constant proposals of new scientific topics and breakthroughs in scientific instruments and research methods that restrict subject develop-

ment, as well as constantly emerging new social development needs and realities. The applicability of geography means that social development needs are the main thing driving the development of geography, particularly human geography. When human geography focuses on identifying the patterns and laws governing the development and protection of the Earth's surface and on predicting and forecasting future development trends and taking rational control of these trends, then one of the main areas in which the subject's research results can be applied is government decision making. As such, when there are significant social needs and government decision making needs, and when human geographers respond positively, Chinese human geography prospers. Agricultural geography and agricultural zoning studies in the early period, spatial organization and industrial layout studies in the recent period and regional sustainable development studies in the current period are all testament to that. Chinese human geography focuses on refining key scientific topics from real needs, on innovating and promoting subject development in the process of resolving issues, and on improving the quality of service to national needs by developing the subject (Lu, 1995). At the same time, knowledge of Chinese human geography is increasingly becoming a measure of people's, and particularly leading government officials', fundamental qualities and their ability to make managerial decisions. With regard to the geoscience foundation of social and economic development and research on its resource and environmental effects, through the direct application of practical methods, a large amount of applied basic research on development status diagnosis, evolutionary process analysis, strategic forecasts, and planning and policy research and development has been carried out at different regional scales and in different fields (Fan, 2011a; Fan *et al.*, 2013), with strong momentum maintained over the past half century.

#### **4.2 Reflecting the integrated nature of the subject is the key to its application**

Chinese human geography has upheld its designation as an integrated discipline, making it a unique interdisciplinary subject in the huge scientific system of geoscience, and even within the whole scientific system, as well as one of the most important applications of basic science in the relationship between human development and the natural environment (Wu, 2008).

A core theory is the human-land relationship regional system theory, and the core objective of studies on human-land relationship regional systems is to balance the relationship between humans and land and to understand and seek mechanisms for the overall optimization, overall balance and effective control of a global, national or regional human-land relationship system in the areas of spatial structure, schedules, organizational change, overall effectiveness, and coordination and complementation, in order to effectively provide a theoretical basis for regional development and regional management (Lu and Fan, 2009). It should be noted that the human-land relationship regional system theory and the integrated research ideas and methods followed by the Chinese human geography school ought to be the development approach of geography as a whole. In fact, the integrity of Chinese geography, particularly its integrated research results, are largely thanks to human geography. The theories and methods of human-economic geography are coordinated with, and are an extension of, the research of Earth science and physical geography of the natural sciences, and they are used in major scientific research programs such as the World Climate Research

Programme (WCRP), the International Geosphere-Biosphere Programme (IGBP), the International Human Dimensions Programme (IHDP) on Global Environmental Change and DIVERSITAS. China has a considerable number of human-economic geographers involved in those programs researching major scientific questions, including the role and processes, response and feedback, control and prospects of human activities in global environmental change (Fan, 2008), and they have revealed the mechanisms and changing laws behind the complex, uncertain and dynamic interactions between human activities and environmental change and have played an invaluable role in such research (Lu, 2002).

### **4.3 The equal attention to ideology and scholarship reflects the diversity of the subject**

Given the characteristics of the targets and service requirements of human geography, in addition to its similarities with other academic disciplines in terms of basic theoretical research and innovations in technical methods, a notable feature is its attention to ideology. The consciousness orientation of its point of view, judgmental tendencies and problem solving directly influence its theoretical approach system, which creates a diverse subject, school of thought and types of results.

Looking at the main school, human geography is based on human-land relationship regional system theory and is geared to the needs of national and regional sustainable development processes and patterns. It calls for new “designs” of the concepts, objectives and measures of China’s regional development and is innovative with its thought orientation, which has a philosophical basis. Recent ideological content can be summed up by the “three-dimensional target dimensions” of regional development, which simultaneously take into account the targets of economic growth, social security and the eco-environment, and recognize the interactive relationship between the three target dimensions; the economic development trajectory characteristics of the “three-dimensional target dimensions” and its formation factors; and the regional development processes, structures, benefits and national area controls of the “three-dimensional target dimensions” (Fan *et al.*, 2011). The key points of the research are to show the relationship between the three-dimensional targets in regional development and to evaluate and show the overall benefits of this type of development. Under this ideological guidance, when it comes to researching a theoretical approach, it is necessary to construct regional development factors and action mechanisms in a three-dimensional target system, research the forms of expression and comprehensive benefit analysis framework concerning regional development, and predict the basic trends of regional development under the three-dimensional target framework.

### **4.4 The traditional methodology is still the main one, but it is supplemented by modern methods of measurement.**

Human geography’s emphasis on its integrated nature, in other words the use of a systems approach and integrated view in studying the geographical environment, has become its greatest scientific problem, as there have not been any substantial breakthroughs in technical methods. One can appreciate that breakthroughs in research methods for complex systems in human geography largely depend on breakthroughs in research methods for open and dynamic complex giant systems. The traditional factor method and zonal method for integrated

human geography studies are still the main methods (Lu and Fan, 2012), the main specific tools of which are often “process summaries, regional comparisons, qualitative analysis and logical judgements.” In recent years, human-economic geographers have increasingly emphasized the use of databases, model bases and visualization techniques and methods. Of these, the scope and depth of use of remote sensing and GIS has been far greater than in the past (Fan, 2004), and databases, model bases and mapping are playing an increasing role in raising the quantitative level of human geography.

## **5 Future development trends in Chinese human geography**

As economic globalization and global environmental change constantly deepen, many new human geography issues are emerging worldwide. The current classic theories and methods of human geography are tailored to the industrialization process and the development processes of developed market economies, but they are less suited to explaining the changing geographical patterns of developing countries now and under new factors and mechanisms in the future; therefore, there is an urgent need to consider the unique geographical issues of developing countries while adopting a global perspective and to develop new human geography theories and methods based on “Big Data” and the Internet. At the same time, China’s development has entered a new normal. In addition to global synchronization, China’s problems are becoming more unique in some respects. How we understand the responses of China’s land surface to the country’s new type of urbanization, industrialization and agricultural modernization within the context of a new development concept, new opening up, and new regional interactions, and how we propose constructive ideas to further optimize spatial development and protection patterns for national land guided by objective laws and scientific predictions, will determine future changes in Chinese human geography.

### **5.1 The positioning of Chinese human geography in the research framework of the “Future Earth” and earth system science**

The “Future Earth” plan combines global holistic research and global sustainable development research, and based on a full range of human and natural interdisciplinary studies, closely integrates scientific research and application requirements to improve the efficiency of relevant decision-making departments at applying research results. The “Future Earth” plan emphasizes the fusion of basic theories and decision-making applications and the applicability of basic scientific research. It is consistent with the scientific development orientation advocated by Chinese human geography for so long of “being geared toward major and practical national and local development needs and serving national economic and social development” (Fan, 1999). The “Future Earth” plan also emphasizes the need for systematic solutions to global or regional sustainable development issues, which provides a good example for future human geography research on regional sustainable development.

As an integral part of Earth system science, human geography has human and natural interdisciplinary characteristics, and as an applicable basic subject, it has played a unique role in understanding and revealing, from an integrated perspective, the processes and patterns of interactions between human and natural spheres of activities on the Earth’s surface. As such, Chinese human geography will continue to adhere to its interdisciplinary designation; take

researching interactions between the natural and human spheres as its scientific orientation and take solving sustainable development issues at different scales of the Earth's surface as a guide to application within Earth system science; focus more on regional sustainable development; and strive to make improvements in the three areas of predictions and evaluations, applied research on regulatory processes and management models, and system and mechanism design. This will give the subject of human geography its proper role to play in the mission to develop China.

## 5.2 Lessons for developing countries and research areas that need strengthening

Different research paradigms exist within Chinese human geography research. The main school introduced in this paper is predominantly concerned with research on the interactions between human and natural systems. This mainstream school is represented by the human geography team of the Institute of Geographical Sciences and Natural Resources Research at the Chinese Academy of Sciences.<sup>5</sup> Most other Chinese research institutes are developing this same area. There has been a large body of scientific research and significant funding for it, with many studies involving systematic research carried out in cooperation with several professors, which tends to produce outstanding social benefits and help drive the development of the discipline.

Another research direction is studies on human geography patterns and processes within social and cultural contexts. These studies are generally considered to be in line with the international forefront of the discipline. In this research direction, the discipline has clear cultural and social tendencies, and its interdisciplinary properties are being weakened. Research organization methods are largely diverse and involve free exploration, while a wide range of objects of the study are covered, and a large number of papers are published, providing various new growth points in human geography. The subject, in this latter research direction, is suited to the basic characteristics of higher education, so higher education scholars usually make up the main body of it.

In future, developing countries will face various complex and intertwined problems related to sustainable development, competitiveness, people's livelihoods and social equality. This author believes that the lessons for developing countries from the content of the Chinese human geography school is of greater use than the lessons from the content of European and American human geography, particularly in the area of regional sustainable development. On the one hand, it is necessary to ensure that the discipline's development is directly geared toward the major strategic needs of social development, as regional sustainable development is often the most important geographic issue facing developing countries (Fan and Jiang, 2015). On the other hand, it is necessary to closely marry the integrated and regional features and values of human geography. In a whole series of research – from the logical extension of the resource environment foundation, the cross synthesis of the geo-

---

<sup>5</sup> The human geography team from the Institute of Geographic Sciences and Natural Resources Research under the CAS is made up of 60 researchers, including the only human geography academician of the CAS. The team's research mainly involves economic geography (including industrial geography and transport geography), urban geography, agricultural and rural geography, and socio-cultural and tourism geography. There are currently 18 professors in the team and it has the only national key laboratory in the field of human geography – the Key Laboratory of Regional Sustainable Development Modeling.

graphic environment and social and economic development, and regional differentiation, to regional development models and regional policies – regional sustainable development is a legitimate topic. The main areas of research are as follows: the mutual influence between ecology, environment, resources, etc., on the Earth's surface and spatial distribution patterns and change processes of human production and living activities; the effect and mechanisms of interactions between elements within human production and living activities (including different fields and different regional spaces, horizontal and vertical) on their spatial distribution and movement; and the effect of culture, society and other superstructure factors on the spatial pattern of human production and living activities. Human geography in developed countries places greater emphasis on research in the latter aspect, resulting in a greater overall human element to human geography (Lu, 2003b).

### 5.3 Adapting Chinese human geography research to China's New Normal

At present, China's development and Chinese human geography are in important periods of transition. The focus of Chinese human geography is shifting from "social needs" to both "social development needs" and "discipline development" (Lu and Fan, 2009). Development of the discipline based on practical theoretical and methodological outputs and development of a system of applied, basic theories will be the focus of future developments within human geography. The application of modern technological methods, especially GIS methods, and the development of human geography will mutually promote one another and produce common improvements. In particular, as society comes to accept and recognize integrated subjects and interdisciplinary science, the development environment of human geography will change substantially.

In summary, Chinese human geography has good development prospects, and as an applied, basic discipline, its technical ability to solve major issues relating to sustainable development is set to improve significantly. Human geography is an integral part of Earth system science, and it will play a unique role in people's efforts to gain a scientific understanding of the Earth's surface from both a human and natural perspective, or more accurately it will play a unique role in people's efforts to comprehensively understand the processes and patterns underpinning the interactions between human and natural spheres of activities on the Earth's surface (Fan, 2014).

## References

- Deng Jingzhong, 1982. Some problems on the comprehensive agricultural regionalization of China. *Geographical Research*, 1(1): 9–18. (in Chinese)
- Fan Jie, 1999. Comprehensive study of regional development. In: Lu Dadao. *The Development and Innovation of Geography*. Beijing: Science Press, 91–93. (in Chinese)
- Fan Jie, 2004. Comprehensiveness of geography and integrated research on regional development. *Acta Geographica Sinica*, 59(Suppl.1): 33–40. (in Chinese)
- Fan Jie, 2007. The scientific foundation of Major Function Oriented Zoning in China. *Acta Geographica Sinica*, 62(4): 339–350. (in Chinese)
- Fan Jie, 2008. Academic thinking and economic geography of the "regional system of man-land relationship". *Economic Geography*, 28(2): 870–878. (in Chinese)
- Fan Jie, 2009. Planning of Post-disaster Reconstruction of Wenchuan: Resources and Environment Carrying Ca-

- capacity Evaluation. Beijing: Science Press. (in Chinese)
- Fan Jie, 2011a. Scientific foundation for optimizing the pattern of China's economic geography. *Economic Geography*, 31(1): 1–6. (in Chinese)
- Fan Jie, 2011b. Perspective on the development process of human-economic geography and regional development studies. *Progress in Geography*, 30(4): 387–396. (in Chinese)
- Fan Jie, 2014. Frontier approach of the sustainable process and pattern of human-environment system. *Acta Geographica Sinica*, 69(8): 1060–1068. (in Chinese)
- Fan Jie *et al.*, 2012. Geography Discipline (Human-Economic Geography) Development Report. Beijing: China Science and Technology Press. (in Chinese)
- Fan Jie, Jiang Zilong, 2015. Trend of human-economic geography in relation to the Future Earth initiative for systemic solutions of regional sustainable development. *Progress in Geography*, 34(1): 1–9. (in Chinese)
- Fan Jie, Liu Weidong, Jin Fengjun *et al.*, 2011. The research progress of human-economic geography in major plans of science and technology. *Progress in Geography*, 30(12): 1548–1554. (in Chinese)
- Fan Jie, Sun Wei, 2011. Recent progress and outlook of human-economic geography in China. *Progress in Geography*, 30(2): 1459–1469. (in Chinese)
- Fan Jie, Zhou Kan, Sun Wei *et al.*, 2013. Scientific values and research innovations of human-economic geography in construction of ecological civilization. *Progress in Geography*, 32(2): 147–160. (in Chinese)
- Lu Dadao, 1995. The Regional Development and Spatial Structure. Beijing: Science Press. (in Chinese)
- Lu Dadao, 2002. Theoretical studies of man-land system as the core of geographical science. *Geographical Research*, 21(2): 135–144. (in Chinese)
- Lu Dadao, 2003a. Theory and Practice of Regional Development in China. Beijing: Science Press. (in Chinese)
- Lu Dadao, 2003b. Some key issues concerning development of geographical science in China. *Acta Geographica Sinica*, 58(1): 3–8. (in Chinese)
- Lu Dadao, Fan Jie, 2009. Regional Development Research in China: A Roadmap to 2050. Beijing: Science Press. (in Chinese)
- Lu Dadao, Fan Jie, 2012. The rise and effects of regional sustainable development studies in China. *Bulletin of the Chinese Academy of Sciences*, 27(3): 290–300, 319. (in Chinese)
- Wu Chuanjun, 1991. The core of geographical study: Man-earth areal system. *Economic Geography*, 11(3): 1–6. (in Chinese)
- Wu Chuanjun, 2008. Man-land Relationship and Economic Layout. Beijing: Academic Press. (in Chinese)
- Wu Chuanjun, Guo Huancheng, 1994. Land Use in China. Beijing: Science Press. (in Chinese)