

Rural restructuring in China: Theory, approaches and research prospect

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Abstract: Rural restructuring is a process of reshaping socio-economic morphology and spatial pattern in rural territory in response to the changes of elements both in kernel system and external system of rural development, by optimally allocating and efficiently managing the material and non-material elements in the two systems. It aims at ultimately optimizing the structure and promoting the function within rural territorial system as well as realizing the coordination of structure and complementation of function between urban and rural territorial system. This paper establishes a theoretical framework of rural restructuring through elaborating the concept and connotations as well as analyzing the mechanism pushing forward rural restructuring based on the evolution of “elements-structure-function”, and probes the approaches from the three aspects of spatial restructuring, economic restructuring and social restructuring. Besides, the authors argue that the study of rural restructuring in China in the future needs to focus on the aspects of long-term and multi-scale process and pattern, mechanism, regional models, rural planning technology system and standard, policy and institutional innovations concerning rural restructuring as well as the impacts of globalization on rural restructuring, in order to serve the current national strategic demands and cope with the changes of rural development elements in the process of urban-rural development transformation.

Keywords: rural restructuring; rural development transformation; rural territorial system; elements-structure-function; spatial restructuring; economic restructuring; social restructuring; rural geography

1 Introduction

To some extent, rural restructuring is related to the rural recession along with the globalization and urbanization (Woods, 2005; Hoggart and Paniagua, 2001; Markey *et al.*, 2008; Marsden *et al.*, 1990). Since the 1950s, some developed countries, e.g., Britain, the United

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States, Australia, New Zealand and Germany, have experienced the process of urbanization and anti-urbanization, and the social structure, economic form and ecological environment in rural areas have undergone significant changes and restructuring (Lobley and Potter, 2004; Nelson, 2001; Holmes, 2006; Wilson, 1995). Woods argued that rural restructuring refers to the reshaping of rural socio-economic structure during industrialization and urbanization caused by various interactions of different factors due to the declining of economic significance of agriculture, the rising of the service departments, the reorganization of urban-rural development elements, etc. (Woods, 2011). With the implementation of the national strategy of new-type industrialization and urbanization, especially affected by the globalization and informatization since the new century, the recombination and interaction of socio-economic development elements have changed gradually the traditional characteristics in rural China involving industrial structure, employment mode, consumption structure, land utilization mode, and administrative organization and spatial layout at town and village levels, etc. (Long, 2014; Zhang, 1998), which require local participants (including local government, enterprisers, rural elites and villagers) to make response and readjustment corresponding to the processes and outcomes of changes in socio-economic morphology and regional spatial patterns to realizing rural restructuring (Long, 2012; Long *et al.*, 2012). Based on the practice of rural development in China, Zhang *et al.* (2006) argued that rural restructuring is one of the rural development strategies as a whole set of economy, society and space for the purpose of realizing urban-rural integrated development.

Currently, rural restructuring in China has increasingly attracted the interest of numerous scholars in various disciplines such as geography, sociology, architecture, management, who have carried out systematic research from different perspectives and spatio-temporal scales, and already obtained a large number of enlightening research outcomes by comprehensively using various methods like case analysis and theoretical research. The main topics range from the spatial evolution of rural settlements (Zhang, 1999; Liu *et al.*, 2009; Long *et al.*, 2009; Qiao, 2011; Lei, 2009; Ma *et al.*, 2012; Fang *et al.*, 2012; Han and Cai, 2011), functional differentiation and evolution of rural territory (Liu *et al.*, 2008, 2011a, 2011b; Fang and Liu, 2015; Lin and Cai, 2012; Wang and Li, 2011), the pattern and process of rural development and transformation (Long, 2012; Liu, 2007; Yang *et al.*, 2015; Li *et al.*, 2015a; Long *et al.*, 2007, 2011; Long and Li, 2012), the layout and optimization of rural settlements (Liu *et al.*, 2014; Liu, 2006; Wang *et al.*, 2011; Tang *et al.*, 2014; Yu, 2014), the mechanism and model of rural spatial restructuring in typical regions (Li *et al.*, 2012, 2015b; Feng, 2012; Zhang *et al.*, 2009; Chen *et al.*, 2010; Liu, 2011), the social order change and the remodeling of rural governance system (Wang and Cao, 2011), to the paths of rural restructuring, etc. (Cai, 1999; Li *et al.*, 2013; Liu, 2013, 2014). Recently, *Journal of Rural Studies* has published a special issue on 'Rural Restructuring in China' (Long and Liu, 2016), which highlighted the latest research achievements focusing on the rural restructuring practice in contemporary China, and contains 25 academic papers related to the allocation and management of key resources in rural China, the spatial distribution and optimization of rural settlements, the spatio-temporal changes of urban-rural land use, the transferring of rural labor forces, the allocation of rural educational resources, the declining of traditional rural settlements, dynamic change and spatial transformation in suburban village and other topics.

The process of rural restructuring contains a wide range of transformations, such as the

industrial structure, employment mode, the rural settlements morphology and social cultural landscape, the relationships between the urban and the rural as well as agriculture and industry, etc., which determine that rural restructuring is a systematic project in practice. Especially, influenced by special physical and socio-economic conditions, e.g., notable territorial differences, the dual-track structure of urban-rural development and the prominent government intervention, it may exacerbate the volatility and complexity of rural restructuring practice in rural China (Long and Liu, 2016). So, there is an urgent need for probing related theories to guide the practice of rural restructuring in China. The aims of this paper are as follows: (1) to establish the theoretical framework of rural restructuring; (2) to probe the approaches of rural restructuring from the aspects of space, economy and society; (3) to prospect the contents of rural restructuring research in the future, in order to expand the field of rural geography research and guide the practice of China's rural restructuring; and (4) to provide some implications for future rural restructuring in China.

2 The theoretical framework of rural restructuring

There are two different ways of understanding the connotations of rural restructuring in academic circle: one is regarding it as an evolutionary process of rural territory, focusing on analyzing the various objective features shown in the process; another is taking it as a strategic means of rural development, emphasizing the human intervention to effectively promote the positive evolution of rural areas in a predetermined way (Feng, 2012). Due to the blurring definition, together with the fact that rural restructuring involves various contents, the term of "rural restructuring" has been abused in the available literature, which resulted in related research lacking of hierarchy and rationality, and hampered the further study on rural restructuring. Accordingly, this paper analyzes the concept and connotations of rural restructuring as well as the mechanism promoting rural restructuring from the perspective of the "elements-structure-function" in rural territorial system, so as to establish a theoretical framework of rural restructuring.

2.1 The concept and connotations of rural restructuring

Rural territory is an open system with certain structure and function, which is composed of diversified elements including natural resources endowments, geographical conditions, economic base, human resource, cultural customs, etc. (Long *et al.*, 2016a; Tu *et al.*, 2015). Structurally, rural territorial system is composed of kernel system and external system (Long *et al.*, 2016a). The kernel system of rural territory includes some subsystems, such as natural resources, ecological environment, socio-economic development (Wu, 2001); and the external system consists of the subsystems concerning regional development policies, industrialization and urbanization development levels (Zhang and Liu, 2008). With the advancement of globalization, urbanization, industrialization and informatization, the rural territory continuously exchanges the material, energy and information with external urban system (Wu, 2001). Inevitably, under the integrated effects of the changes of rural development elements, e.g., vast out-flow of rural population, deagriculturalization of industry, low-efficient rural land use, and the external regulation factors, e.g., national policy, market demand and advance of technology, etc. (Tu *et al.*, 2015), there are a variety of interactions between mate-

rial and non-material elements in the aspects of the production and living behaviors. These interactions will subsequently lead to the changes in employment structure, consumption structure, land use structure and social organization structure (Long *et al.*, 2011, 2016a), and the constantly evolving of the function of rural territorial system in the aspects of living, production, ecology and culture (Tu *et al.*, 2015).

In essence, rural restructuring is a process of reshaping socio-economic morphology and spatial pattern in rural territory in response to the changes of elements both in kernel system and external system of rural development, by optimally allocating and efficiently managing the material and non-material elements in the two systems. It aims at ultimately optimizing the structure and promoting the function within rural territorial system as well as realizing the coordination of structure and complementation of function between urban and rural territorial system (Long *et al.*, 2016a). There is a close relationship between rural restructuring and rural evolution. The process of rural evolution not only refers to the situation of positive promotion, but also means the negative degradation, including slow progress, leap development, transient recession, rejuvenation and other statuses. While rural restructuring is a positive evolution process, which mainly involves two types of cases from the angle of the statuses before and after restructuring: one is the qualitative transformation from recession to revival through effective human intervention for under-developed rural areas; another is a process of upgrading development by taking advantage of the external environment and integrating the internal elements for developed rural areas. Besides, the connotations of rural restructuring are similar to rural development transformation, but there are some differences. Compared with rural development transformation, rural restructuring emphasizes the human intervention and regulation such as integrating critical development elements and optimizing spatial structure with the purpose of changing the rural territorial system from a non-benign state to a benign state, or achieving function upgrading and enhancing the quality of development. In other words, rural restructuring is a process of realizing rural development transformation, and the latter is the result of the former.

Generally, the development and evolution of rural territory occurs in an interaction framework of the kernel system and external system at any time. The intertwined effects of internal and external development elements and the interaction of the subsystems on the rural territory make rural restructuring with the characteristics of comprehensive multidimensionality and temporal evolution (Figure 1).

(1) Comprehensive multidimensionality. Usually, the socio-economic changes are the main storyline of the development of rural territory, and the land use is a mirror of the human socio-economic development. The socio-economic evolution in the rural areas will inevitably change the spatial carrier—land, including its utilization and allocation pattern, and cause rural spatial restructuring (Long, 2014). Therefore, the contents of rural restructuring include spatial restructuring, economic restructuring and social restructuring, three mutually reinforcing and restrictive dimensions.

Initially, as the core of the economic restructuring, industrial cultivation exerts significant impacts on broadening the channels of farmers' employment, achieving the non-agricultural transfer of surplus labor force, enhancing the value of land use and releasing the land consolidation potential, which can also lay down a material basis for the rural spatial and social restructuring with the enhancement of rural self-development ability (Tu *et al.*, 2015). Addi-

tionally, cultivating the social behavioral mainstream of rural development, improving the public service and social security system, inheriting local culture, and narrowing the gap between urban and rural areas not only constitute the important parts of social restructuring, but also become the ultimate goal of rural restructuring. Among the numerous factors affecting rural restructuring, the perfect public service and social security system ensure the effective organization of spatial and economic restructuring. As the most dynamic factor in rural restructuring, social behavioral mainstream can provide intellectual support for rural economic restructuring and push forward rural spatial restructuring via playing a role of organization, coordination and demonstration in the process of restructuring (Tu *et al.*, 2015). Last but not the least, rural space, as the carrier of socio-economic activities, the restructuring of which is of particular significance to provide space for developing scale farm management and non-agricultural industries as well as improving the living conditions and public service facilities via optimizing the town-village hierarchy system and integrating production, living and ecological spaces.

(2) Temporal evolution. The evolution of rural territorial system is a complex nonlinear process, and rural restructuring in certain region may appear fluctuations in a certain period of time. Usually, a complete rural restructuring process usually consists of different development stages divided by different periods, i.e., initial period, developing period, stabilizing period and maturing period (Figure 1). However, with the changes of internal elements and external demands in rural areas, it is possible for rural territory to start a new round of evolution and restructuring process.

As a result of the comprehensive influences of natural resources endowments, economic basis, technical level and other factors, the process of rural restructuring takes on regional

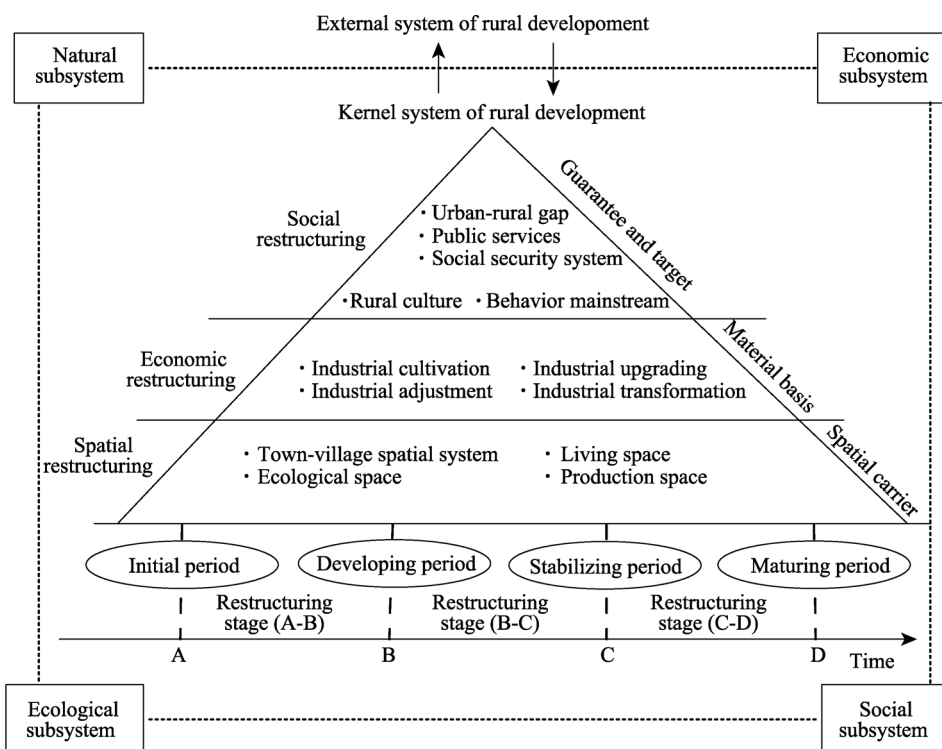


Figure 1 The concept and connotations of rural restructuring

differences in terms of experiencing stage and its stage characteristics. In some rural areas, the initial period may last a long period failing to enter the next stage of rural restructuring due to lack of driving force of restructuring, or the restructuring process may appear the end just after the initial period. On the contrary, it is possible for parts of the rural areas not to go through the initial period, and directly jump into the developing period, which presents the characteristics of cross-stage in the process of restructuring. Rural restructuring in different stages has its typical characteristics and mechanism. It is necessary to take human intervention to boost the whole process of restructuring through grasping the characteristics of different stages and the temporal evolution rules of rural restructuring.

2.2 The mechanism pushing forward rural restructuring based on the evolution of “elements-structure-function”

During 1990-2014, China's urbanization rate rose from 26.41% to 54.77%, with an annual increase rate of 1.18% (NBSC, 1991, 2015), and the continuous out-flow of rural population is one of the major driving forces of rapid urbanization. According to the Peasant Laborer Monitoring Report in 2014, the total number of migrant workers in China was 274 million, and the average age of migrant workers was 38.3 years old, of which 20–49 years old migrant workers accounted for 79.4%. With the continual boost of rapid urbanization, the evolution of “elements-structure-function” of rural territory has broken utterly the traditional spatial structure and socio-economic forms in rural China, which triggers rural restructuring.

Affected by the rising opportunity cost of farming owing to non-agricultural employment of rural population, coupled with the influence of increasingly high cost of grain-growing, the economic value of farmland has been reduced relatively (Long *et al.*, 2016a), which has caused regional deagriculturalization, non-grain preference and extensive utilization of farmland, and many of the plentiful commodity grain producing base has irreversibly evolved into urbanized areas as a consequence (Long, 2014). Along with the outflow of massive rural population, the rural housing land has not shrunk as expected due to the urban-rural dual institutional barriers in household registration, land use policy and social security, together with the undefined collective property rights (Long *et al.*, 2007). Instead, the issue of derelict, abandoned and inefficient use of rural housing land has become increasingly prominent in rural China (Long, 2014), which has further generated obstacles for the layout of the industry, the optimization of public infrastructure and the allocation of social services. With the change of production elements like labor force, technology and so on, there is an urgent need to reallocate the land use right among different management mainstream. However, hampered by underdeveloped non-agricultural industries, the fragmentation of cultivated land and unclear property rights of rural land, it is difficult to realize the transfer and large-scale management for farmland, as well as reuse and circulation for vacant and derelict rural housing land (Long *et al.*, 2016a). In addition, water and soil are contaminated and damaged rapidly in some rural areas owing to the disordered layout of township and village enterprises, less strict control of pollutants emission and the improper handling of agricultural production and living pollution in the past years, which has directly resulted in the severe deterioration of the rural ecological space (Long, 2014). In a word, the spatial morphology of rural China takes on a trend of decentralization of living space, disordering of production space and deterioration of ecological space.

Under the background of the reducing of farmland resource and the decreasing of grain

production, as well as the negative effects of large-scale outflow and concurrent occupation of rural labor force on manpower input and science-technology popularizing of agricultural development, the traditional function of agricultural production in some areas has been gradually declined (Liu, 2011). At the same time, the rural industry has presented non-agricultural and diversified trends. With the acceleration of the flow of economic elements between urban and rural areas as well as different regions, labor-intensive industries have emerged in certain rural areas with good location and better economic base. Especially in recent years, some villages, relying on the original ecological rural and natural landscape together with the varied traditional customs, take advantage of location being adjacent to the famous scenic spots or urban edge to develop rural tourism, the ecological function and cultural function have become increasingly prominent in those rural areas (Tu *et al.*, 2015). Accompanied with the evolution of economic forms, production functions of rural territory have transformed from the traditional single agricultural production gradually to the industrial, leisure services and other multifunction accordingly.

The continuous unilateral outflow of rural labor has changed the population structure (mainly including the age, gender, education level) in the rural areas, which further resulted in the problems such as aging population, low-educated labor force, lack of talents and the decline of grassroots organizations in rural areas (Long *et al.*, 2016a). Meanwhile, with the changes of marginal productivity brought about by the introduction of new production tools (Long *et al.*, 2016a), various forms of moderate-scale agricultural management, such as helping to plough and sow, land trusteeship and stock cooperation, are gradually developing, which greatly promote the emergence of family farms, professional investors, farmer professional cooperatives and other new business entities. The phenomenon shows that the differentiation of social class is increasingly apparent in rural China. According to the statistical data from the Ministry of Agriculture, there were 877 thousand family farms totally in China by the end of 2012, with operating cultivated land 11.7 million ha, accounting for 13.4% of China's total farmland. The average management scale of family farm reached 13.3 ha, and was nearly 27 times that of contracted farmland per household in China (Long *et al.*, 2016a).

To summarize, under the background of globalization, industrialization, urbanization and informatization, elements-structure-function of rural territory have undergone dramatic evolution triggered by the flow of urban-rural development elements, the innovation of production tools, the change of dominated economic value and the national existing policy system, which profoundly changed the spatial pattern, economic forms and social relations in rural areas, and inevitably brought about a series of challenges to the sustainable rural development. To cope with the changes and outcomes, it is urgent for the local participants to take actions timely to restructure rural space, economy and society through integrating elements, recombining structure and optimizing function in rural territorial system (Yang *et al.*, 2015), and ultimately build a new platform to promote the implementation of new-type urbanization, agricultural modernization and other national strategies concerning integrated urban-rural development.

3 Approaches of rural restructuring

Based on the above theoretical framework, rural restructuring in practice is a systematic

project, involving three aspects, i.e., spatial restructuring, economic restructuring and social restructuring, the approaches of which are described as follows:

3.1 Spatial restructuring

The scattered spatial distribution of Chinese traditional rural settlements and the phenomenon of idle rural housing land at present have affected the flowing process of production elements, and increased the cost of economic development considerably (Long *et al.*, 2016a, 2016b). Moreover, owing to lacking of scale benefit and output efficiency for public resources investment, the allocation of educational, medical and public infrastructures have been insufficient in some parts of rural China, which has exerted the far-reaching influences to the production space, living space and ecological space in rural China (Long, 2014). Rural spatial restructuring is a process of achieving optimal adjustment and even fundamental change of rural territorial space by optimizing town-village spatial system and restructuring the rural production, living and ecological spaces (Long, 2014; Long *et al.*, 2016a).

(1) Establishing town-village spatial system at county level. Rural spatial restructuring initially relies on constructing the spatial agglomeration axis and the structure network of town-village planning taking into account the overall rural settlements scale, traffic network, regional cooperation, industrial development, employment characteristics, farming radius, the services scope of public facilities and other factors, which contribute to forming a three-level rural settlements system composed of central town, major town and central village for the purpose of strengthening the effective convergence and mutual support of the urban-rural territory in the aspects of space and function (Long *et al.*, 2016a). Moreover, considering the node role of central town and major town in the energy transmission chain of urban-rural territorial system, there should be a greater concern to accelerate the restructuring of central town and major town, by intensifying the cultivation of characteristic industry, improving public service facilities as well as enhancing comprehensive service function, in order to strengthen economic agglomeration function and exert the radiation and driving roles in the development of rural hinterland (Long *et al.*, 2016a).

(2) Restructuring the production, living and ecological spaces at village level. Taking the spatial distribution characteristics of scattered, idle and disordered rural settlements into account, it is necessary to probe the diversified regional models of pushing forward rural settlements spatial restructuring, such as agglomeration model through village relocation and combination, intensive model through village inner integration and preservation model for characteristic village, according to natural environment, socio-economic development, cultural customs and other features of territorial differences. After that, more attentions are needed to be paid to strengthen rural infrastructure construction through the scientific assessment on the allocation suitability of public facilities and infrastructures in order to optimize a livable rural space (Long *et al.*, 2016a). In view of the status quo of the fragmentation of cultivated land operation and the disorderly distribution of township enterprises, promoting the construction of large-scale high standard basic farmland as well as strengthening the centralized layout of non-agricultural industry is an effective way to restructure intensive and efficient rural production space, which have been favored to provide spaces for the development of modern agriculture and the cultivation of new rural economic forms (Long, 2014).

Besides, it is significant to restructure the environment friendly and rural ecological space harmoniously by gradually implementing pollution-free agricultural production, establishing

ecological interception system, strengthening the comprehensive treatment of pollutants, improving ecosystem corridor and other means (Long *et al.*, 2016a), so as to provide healthy and beautiful rural ecological space for the rural industrial development and rural residents.

3.2 Economic restructuring

Owing to its close correlation with absorbing rural employment, increasing farmers' income, improving land use efficiency and building rural infrastructures etc., the prosperity of rural economy usually plays a leading role in realizing rural spatial and social restructuring. Therefore, remodeling the new impetus of rural economic development, with industrial cultivation as the core, is the fundamental issue to be solved in rural restructuring (Long *et al.*, 2016a). While rural economic reshaping rests on opening up the flow channels of urban-rural development elements, so as to make internal system of rural territory full of vitality and generate output value (unique rural culture, eco-environment amenity) to external system (urban areas) (Zhao, 2013). Under the background of the changes of intrinsic development elements, as well as the emergence of new technologies and new economic modes, it is an indispensable way to reshape the rural economy by making full use of the new elements of economic development, innovating rural traditional industries and cultivating new rural economic forms.

(1) Innovating rural traditional industries. Chinese traditional agriculture has the features of decentralized management, inefficient production and low organization level, which led to lack of competitiveness with the advance of international allocation of the agricultural products in the context of globalization. Consequently, it is calling for urgently innovating rural traditional industries through optimizing agricultural industrial structure (the proportion of the planting, animal husbandry, forestry, fishery and other production departments), product structure (e.g., the ratio of grain, oil, vegetables, fruits and other products) and variety and quality structure (the proportion of different variety types, e.g., durum wheat and ordinary wheat), as well as accelerating the construction of agricultural product market information system, quality standard system and quarantine system, so as to facilitate the establishment of modern agricultural industrial system. Moreover, it is essential to strengthen the organic combination of production, post-processing, market circulation and brand cultivation, so as to realize the specialization, standardization, intensive and large-scale production by promoting the ownership registration and certification issuing of rural contracted farmland, actively developing various forms of moderate-scale management, supporting leading enterprises and characteristic industrial bases, and establishing the benefit sharing mechanism that connects leading enterprises with farmer cooperation and peasants (Long *et al.*, 2016a, 2016b). At the same time, great attention should be paid to protect the water and soil resources, which are the foundation of agricultural production, and promote the key technology such as new varieties of breeding, cultivation, soil conservation, water-saving irrigation, disaster reduction and prevention etc., so as to form a modern science and technology support system guaranteeing the safety of national grain production and the quality of agricultural products.

(2) Actively fostering new forms of rural industry. Owing to its high vegetation coverage, low-density population distribution as well as the main preservation of traditional and regional culture, cultural and ecological functions should be emphasized in the process of industrial reshaping in rural areas (Tu *et al.*, 2015). Currently, to cope with the demands of

personalized and diversified consumption market, exporting rural cultural and production elements with scarce value to the urban (Zhao, 2013), is of great importance to activating the rural economic system. Taking the differences between urban and rural as well as the multi-functional value of rural areas into account, it is suggested that new forms of rural industry like providing services for retired and old people, preserving people's health, as well as eco-tourism industry should be encouraged strongly in order to pour vitality and power into rural economic revitalization (Long *et al.*, 2016a).

3.3 Social restructuring

Accompanied with the advance of rapid urbanization as well as the implementation of village relocation and combination, China's traditional village community characterized by agricultural civilization, acquaintance society and clan relations have been disassembled, and rural social development is facing the decline of autonomous organization, the weakening of rural management mainstream and the disappearance of cultural memory symbols (Long *et al.*, 2016a). Especially along with the cancellation of the agricultural tax nationwide in 2006, the public affairs service function of rural grassroots administrative organization taking the village committee and the villagers' congress system as the mainstream, has been further weakened (Long *et al.*, 2016a). Therefore, it is crucial to restructure rural society by means of establishing the rural organization system, cultivating new-type rural management mainstream, and protecting the characteristic rural cultural landscape.

(1) Improving the rural organization system, and cultivating new-type rural development mainstream. To some extent, the rural rejuvenation depends on giving full play to the autonomy function of grassroots governance mainstream through establishing diversified rural organization system, such as village committee, economic industrial organizations, social intermediary organizations, public service organizations, etc. (Zhang, 2009; Long *et al.*, 2016a). In particular, it should pay more attention to innovating the village cadres' selection system by encouraging local elite to govern the village, which would not only contribute to improving the management ability of the rural autonomous organization, but also help to promoting rural economic development. At the same time, the perfecting of the rural governance organization also relies on the establishment of the balance mechanism of rural democracy at the grassroots through building the villagers' congress system, so as to effectively play the participation and supervision role of farmers in public affairs and administrative management (Zhang, 2009). Facing to the new problems of weakening traditional agricultural management mainstream as well as the new situation of farmers differentiation, it is urgent to speed up the system construction to develop a new-type professional farmer (Zhang, 2009), so as to actively cultivate the new management mainstream engaged in modern agricultural production (Long *et al.*, 2016a). Additionally, it is also important to strengthen the policy support for fostering various types of rural elite, e.g. developing normalized training mechanism by giving full play the role of entrepreneurial guidance of civil economic organizations to rural elites, as well as guaranteeing the legitimate rights of rural entrepreneurs by forming the equity incentive and other related benefit sharing mechanism, which are beneficial to play all kinds of rural talents' demonstration and leading effects on entrepreneurship development (Long *et al.*, 2016a).

(2) Protecting the unique rural cultural landscape, and enhancing the rural cultural function. The formation of cultural landscape is influenced deeply by various factors like natural

environment, production mode and social culture. As the carrier of regional culture as well as the “fossil” of social and cultural evolution in a certain period, characteristic rural settlements and folk customs exhibit the function of cultural heritage in rural areas. Therefore, protecting the rural material and non-material cultural landscape, particularly the traditional rural settlements, is an effective way to conserve the historical and cultural context, inherit rural memory and retain nostalgia (Liu, 2015). As for the protection of rural cultural landscape, on the one hand, it is essential to strengthen the guidance of related law, policies, planning and management mechanism at national level, e.g. speeding up the formulation of the policies and documents regulating the implementation range of village relocation and combination as soon as possible, compiling scientific planning based on the principle of obeying different types and grades as well as constructing the financing mechanism and the normalized regulatory mechanism to protecting the characteristic villages. On the other hand, it should highlight the significance of developing cultural and creative industries by taking advantage of characteristic rural culture on the basis of improving support ability of infrastructure construction and public service, which is an inevitable approach to seeking the economic driving force to protect characteristic culture, and also meet the emotional attachment and spiritual needs for traditional rural culture, local memories and rural nostalgia (Liu, 2015).

4 Research prospect

Aiming at resolving the realistic dilemma brought about by the rapid urban-rural development transformation, the study of rural restructuring in the future needs to pay more attentions to the following aspects:

(1) Process and pattern of long-term and multi-scale rural restructuring. Geography emphasizes the research on the spatial distribution pattern and temporal evolution process of geographical elements (Cai, 2011; Fu, 2014), which involve time and space scales. Exploring the spatial distribution law and the temporal evolution law of geographical elements at different time and space scales, is conducive to provide scientific basis for simulating and predicting the development trend of geographical matter and taking appropriate human intervention to ensure its development along the expected path. The study of rural restructuring needs to focus on the process and pattern of restructuring from the perspectives of elements mobility, structural optimization and functional evolution, and explore the characteristics of spatial distribution and temporal evolution of the typical region, county, town and village, respectively, and reveal the laws of spatial distribution and temporal evolution at different time and space scales.

(2) Mechanism of rural restructuring. Interactively influenced by various factors such as natural environment, socio-economic development, historical and cultural features, macro-regional policies, etc., the mechanism of rural restructuring driven by the interaction of the internal and external factors in rural territory, is significantly diversified in different regions and at different periods. It is necessary to identify the main controlling factors and dynamic mechanism from the perspective of “elements-structure-function”, based on analyzing different types of factors affecting rural restructuring, i.e., the endogenous factors and exogenous factors as well as subjective factors and objective factors, to explore the interactive rules of internal and external factors, to comparatively analyze the relationship between

the process and the mechanism of rural restructuring at different time and space scales, and to summarize the general law and mechanism of rural restructuring.

(3) Regional models of rural restructuring. The models of rural restructuring refer to the theoretical summary of the development path with distinct characteristics and relative stability, which reflect the interaction law of elements and the mode of economic operation. The formation of rural restructuring is influenced by natural resources, economic development, productivity level, historical tradition, government behavior and other factors. Considering the terrain conditions, the economic development level and the models of industrial development, e.g., the models in plain areas, mountainous and hilly areas, metropolitan suburbs, developed areas or underdeveloped areas, as well as the models led by modern agriculture or driven by industrial development, it is important to research different types of models of rural restructuring by comparatively analyzing the internal and external factors, the operating mechanism, basic characteristics, obstacles and regulatory path so as to provide useful reference for the practice of rural restructuring in other similar regions.

(4) Rural planning technology system and standard. At present, the technologies at national level guiding rural restructuring in China involve *Standards for Town Planning* (GB50188-2007) and *Technical Specification for Village Consolidation* (GB50445-2008). Due to lacking of effective guidance for rural restructuring aiming at various territorial types, phases and capacities of rural development, the cohesion and complementarity should be emphasized in arranging the restructuring project, such as the rural residential system adjustment, industrial development and the public facilities allocation. As a consequence, aiming at the key technologies and fields such as rural spatial planning, public infrastructure configuration and industrial cultivation, it is an urgent need to carry out integration and demonstration research through multidisciplinary cooperation concerning geography, sociology, architecture and other disciplines, and ultimately form a series of the technology standards and operating specification of rural planning for different territory types and developing phases (Long *et al.*, 2016a), so as to provide technical support for the management of rural restructuring practice.

(5) Policy and institutional innovations of rural restructuring. Currently, a series of prominent issues concerning China's rural development, e.g., weakening behavior mainstream, low-efficient land use and insufficient infrastructure, are closely related to the defective institution and policy. Meanwhile, rural restructuring in the aspects of space, economy and society, has direct or indirect connection with land use, finance, social security and other institutions of resources allocation, which constitute the macro policy environment of rural restructuring (Long *et al.*, 2016a). Therefore, it is necessary to strengthen the research on policy support system for the purpose of enhancing the efficiency of resource utilization and promoting the orderly flow of the production elements in the practice of rural restructuring, and provide scientific basis for restructuring the contours of state intervention in rural societies and economies (Woods, 2012; Long *et al.*, 2016a).

(6) The impacts of globalization on rural restructuring. Rural China is constantly being integrated into the global socio-economic network, and the internationalization of production elements configuration like goods, capital and labor force, has exerted tremendous influences on the economy, society and culture in rural China. For instance, the influx of agricultural products with super quality has brought about gigantic lash to traditional agriculture, the globalization of capital market has further exacerbated the deagriculturalization of agri-

cultural population and rural land, and the expansion of global culture and modern technology has led to a double effects on Chinese countryside, which make rural China not only face the transformation from traditional agricultural society to modern industrial and urbanized society, but also face the risk of losing local culture and national culture (Long *et al.*, 2016a). It is necessary to fully understand the impacts of globalization on China's rural restructuring and to strengthen the relevant research.

5 Discussion and conclusions

5.1 Discussion

Undoubtedly, China's rural restructuring is deeply influenced by the macro strategy of national socio-economic development. Since 2004, the central government has implemented a series of measures and policies, e.g., the "Building New Countryside", the "Construction of Beautiful Villages", the "Transfer of Management Right of Contracted Land in Rural Areas" and the "Linking up Increased Urban Construction Land with Decreased Rural Construction Land" for the purpose of facilitating the orderly flow and optimal utilization of scarce resources as well as promoting rural spatial, economic and social restructuring. To some extent, the government-led top-down rural restructuring policies have been in favor of improving the living environment for rural resident, enhancing the economic efficiency of land resource and establishing platform for the development of modern agriculture and non-agricultural industries. However, it has also brought about some negative effects in practice.

In terms of rural spatial restructuring, it puts too much emphasis on increasing disposable land quotas for urban construction through dismantling decentralized rural settlements and constructing high-rise building in the practice of massive rural relocation and combination, but less taking into account the convenience of living and production for rural residents, which resulted in the dislocation and contradiction between top-down arrangement of spatial restructuring and the actual needs of grassroots. Besides, the stereotyped new community construction overlooks the traditional culture and territorial differences, which makes traditional rural settlements culture facing the risk of loss. As for economic restructuring, in recent years, Chinese government encourages the industrial and commercial capital to engage in the large-scale planting and breeding industries in countryside. Numerous industrial and commercial capital takes advantages of capital and technology to develop large-scale agricultural management, which not only facilitates the agricultural transformation, but also infringes the market shares of small-scale households, generating a crowding-out effect in some rural areas (Zhang, 2014; Long *et al.*, 2016a). Besides, due to lacking of comprehensive considerations of the complementarity of "population-land-industry" rural development elements and systematic understanding of "production-living-ecological" rural spatial restructuring, there universally exists the phenomenon of highlighting building new houses but ignoring industrial cultivation and self-development capacity building of social behavior mainstream in practice.

Accordingly, it is necessary to re-examine the value and target orientation of rural restructuring. As for the factors affecting rural development, natural resources endowments as the prerequisite, economic foundation as the material base, and local residents' needs as the ultimate goal, all of which are the indispensable elements promoting sustainable rural de-

velopment. Besides, owing to the high vegetation coverage and the reservation of traditional culture and regional culture, the cultural function and ecological function are the unique value of rural areas, which are different from the city. Therefore, based on the value and target orientation of improving the economic efficiency, maintaining social equity, protecting the ecological environment and promoting the sustainable resources utilization, it needs to actively probe the differentiated models of industrial development, spatial restructuring and social governance, via coordinating the relationships among industrial development and environmental protection, new community construction and public services allocation, and rural spatial restructuring and cultural inheritance.

5.2 Conclusions

Rural restructuring is a process of reshaping socio-economic morphology and spatial pattern in rural territory in response to the changes of elements both in kernel system and external system of rural development, by optimally allocating and efficiently managing the material and non-material elements in the two systems. It aims at ultimately optimizing the structure and promoting the function within rural territorial system as well as realizing the coordination of structure and complementation of function between urban and rural territorial system. The intertwined effects of internal and external development elements and the interaction of the subsystems on the rural territory make the rural restructuring with the characteristics of comprehensive multidimensionality and temporal evolution.

With the continual boost of rapid urbanization, the evolution of “elements-structure-function” of rural territory has broken utterly the traditional spatial structure and socio-economic forms in rural China, which triggers rural restructuring and brings about a series of challenges to sustainable rural development. It is urgent for the local participants to take actions timely to restructure rural space, economy and society through integrating elements, recombining structure and optimizing function in rural territorial system. Accordingly, the approaches of rural restructuring include the three aspects of spatial restructuring, economic restructuring and social restructuring.

Aiming at resolving the realistic dilemma brought about by the rapid urban-rural development transformation, the study of rural restructuring in the future needs to pay more attentions to the aspects of long-term and multi-scale process and pattern, mechanism, regional models, rural planning technology system and standard, policy and institutional innovations concerning rural restructuring as well as the impacts of globalization on rural restructuring, in order to serve the current national strategic demands and cope with the changes of rural development elements in the process of urban-rural development transformation.

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