

# Research and Prospect of the Spatial System Structure Layout of Villages and Towns

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## Abstract

As my country continues to attach importance to the development of small towns and villages, my country's urbanization rate has continued to rise since the reform and opening up. The development of the past 40 years has greatly expanded the urban space, and the spatial structure of traditional agriculture-based villages and towns is no longer possible. Adapt to the development of social economy. Through the study of the spatial structure of villages and towns, it is possible to comprehensively consider the evolution process, agglomeration characteristics, and current distribution of the villages and towns, which helps to strengthen the traditional villages and towns that have hollow villages, scattered settlements, intensified land use, and serious pollution of the ecological environment. Recognition is an effective way to realize the town leads the village, promote the town by the village, promote the joint development of the town and village, determine the layout and scale of the village rationally, and finally realize the effective way of revitalizing the village.

## Keywords

Spatial structure; Villages and towns; Research review.

## 1. Preface

Since the 1980s, my country has carried out a series of reforms in economic, social, political and other related fields. With the further deepening of reforms, as my country continues to attach importance to the development of small towns and villages, my country's urbanization rate has since reformed It has continued to rise since the opening up, and the development of the past 40 years has greatly expanded the urban space. The spatial structure of villages and towns dominated by traditional agriculture can no longer adapt to the development of social economy. With the simultaneous development of industrialization, informatization, urbanization, and agricultural modernization, large spatial differences have appeared in the level of urbanization in different regions. The traditional dual urban-rural management and development model is facing a greater impact, which is prominently manifested in agriculture, farmers, and rural "agriculture, rural areas and farmers" issues, and presents different characteristics with different stages of development. Accordingly, my country has proposed a series of measures to solve the "three rural issues", including the urban-rural integrated development strategy that originated in the late 1980s, the urban and rural integrated development strategy proposed by the Third Plenary Session of the 16th Central Committee of the Communist Party of China[1], At the Fifth Plenary Session of the Central Committee of the Communist Party of China, the concept of the construction of a new socialist countryside was proposed [2], and the report of the 19th National Congress of the Communist Party of China proposed "implementing the strategy of rural revitalization" [3]. Its purpose is to put forward targeted measures and arrangements to achieve the goal of urban-rural integration and sustainable development in response to the key issues of my country's "three rural" issues in different periods.

Under the influence of the wave of urbanization, the urban construction market has absorbed a large number of migrant workers, and the flow of urban and rural populations has brought about tremendous changes in China's rural areas. As a result, many empty nest villages, left-behind children's villages and impoverished villages have been created, which has changed China's rural society. Structure and natural features. The report of the Nineteenth National Congress of the Communist Party of China put forward the strategy of rural revitalization, which requires focusing on "agriculture," "rural," and "farmers" in accordance with the general requirements of ecologically livable, thriving industry, effective governance, civilized rural customs, and affluent life. And in the "Strategic Planning for Rural Revitalization (2018-2020)", it is proposed to improve the urban-rural layout structure, and the overall arrangement and overall layout of the development, protection, and renovation of the land space according to the main function positioning; develop characteristic towns in accordance with local conditions and strengthen The construction of farmers' living circles centered on township government resident sites will enhance the ability of urban areas to drive the countryside. The land space development plan also deploys agricultural space in accordance with the requirements of the rural revitalization strategy, puts forward the overall requirements for optimizing the layout of rural settlements, controls the total amount of rural construction land, optimizes the structure and spatial layout of agricultural production, and promotes the large-scale development of modern agriculture. Research on the spatial structure of villages and towns can comprehensively consider the evolution process, agglomeration characteristics, and current distribution of villages and towns, which can help strengthen the understanding of traditional villages and towns, such as hollowing of villages, scattered settlements, intensified land use, and serious pollution of the ecological environment. It is an effective way to realize the towns leading the villages, promoting the towns by the villages, and promoting the joint development of the towns and villages, rationally determining the layout and scale of the villages, and finally realizing the revitalization of the villages.

## **2. The Current Situation and Research Significance of the Layout of the Spatial System of Villages and Towns**

The prominent problems facing my country's rural development at this stage are manifested in the hollowing of rural economy, society, and population, resulting in inefficient use of rural resources in terms of time and space. Therefore, it is necessary to address the above background from economic, technical, and policy aspects. Carry out in-depth analysis and research, so as to truly realize the scientific, feasibility and sustainability of rural concentrated housing.

In China with a large agricultural population, villages and towns are the most common form of residence in our country. They are the products of highly unified nature and human beings, politics, economy, society and the environment. Therefore, no matter from which point of view, the past, present and future of villages and towns are issues worthy of attention and should be studied in depth. In the process of rapid urbanization in China, the expansion of urban construction requires the acquisition of a large amount of land resources; and the large-scale construction of new socialist countryside and beautiful villages has triggered a series of constructions such as village mergers and homestead replacements, which directly affected The spatial structure of villages and towns. It can be said that the research on the layout and location optimization of the village and town spatial structure system has important theoretical and practical significance.

The guiding and standardizing role of village and town spatial planning is a powerful measure to achieve balanced growth in the economic, social, cultural, and ecological environment in the process of rural development. Scientific and reasonable spatial planning to coordinate other

plans is a powerful guarantee for realizing urban and rural spatial planning, breaking the dual structure of urban and rural areas, and promoting the sustainable development of urban and rural population, resources and environment. With my country's continuous emphasis on small towns and villages, the optimization and promotion of space in traditional villages and towns has brought new opportunities for change. In order to effectively achieve the strategic goals of rural revitalization and poverty alleviation in old areas, it is necessary to conduct in-depth research on the space of traditional villages and towns and optimize the spatial layout of villages and towns. Through the evaluation of village and town spatial system structure layout and site selection optimization research, the evolution process, agglomeration characteristics, and current distribution of villages and towns can be comprehensively considered, which helps to strengthen the traditional village and town space that has hollowed out villages, scattered settlements, intensified land use, and ecological environment. Recognition of serious pollution and other problems can be more scientific in the site selection and layout of rural residential land concentration, land planning, and adjustment of land use index arrangements, so as to realize the scientific, feasibility and sustainability of rural residential land and effectively improve the efficiency of land use. , Realize the town leads the village, promote the town by the village, promote the development of the town and village, rationally determine the layout and scale of the village, promote the sharing of urban and rural land resources, promote the solution of the rural three-agricultural problem of agricultural farmers, and truly improve the rural living and living conditions , And finally realize the purpose of rural revitalization.

### 3. Definition of the Spatial Structure of Villages and Towns

The place where humans conduct social and economic activities is called "space". Any form of public life and power actions occur in "space", which is the carrier of all social life. It is produced, combined, transformed in the history of human development, and is given different meanings [4]. Villages and towns are a kind of regional complex including villages, market towns and surrounding space formed to meet the conditions for the development of social productive forces [5], mainly including central towns, general towns, central villages, natural villages and their surrounding spaces.

The spatial structure of villages and towns can be understood as within a certain area, the internal spatial economic units (towns, villages) have relatively stable and variable spatial distribution and hierarchical scale relationships. According to the geometric characteristics of the elements of the spatial structure, we can decompose it into three material elements: node, line network and domain surface, as well as the state element of flow [6]. Nodes refer to residential areas in towns and villages at all levels; line networks refer to various infrastructures that play the role of connecting lines between nodes, including road networks, communication networks, energy networks, water systems, etc.; domains refer to certain economic activities in geographic space The state of distribution shown. The three material elements and state elements of flow in the space of villages and towns, as well as their intricate spatial arrangement and interactions and reactions between them, together constitute the spatial structure of villages and towns. Through combing the existing research, Luo Yali understands the connotation of the spatial structure of villages and towns as the inherently stable and variable spatial combination between the village and town entities within a certain area under a certain level of social and economic development, which is the natural ecology of the region. The spatial coupling of structure, economic structure and social cultural structure reflects the characteristics of the distribution of villages and towns in the region and the relationship of combination [7].

## 4. Documents Related to the Spatial Layout of Villages and Towns at Home and Abroad

The spatial layout of villages and towns has always been an important subject of academic research at home and abroad. Through combing the research literature on the spatial layout of villages and towns over the years, it can be roughly divided into the basic pattern of the spatial structure of villages and towns, the distribution characteristics of the spatial layout of villages and towns, and the influence of the spatial structure of villages and towns. Factors of these three aspects of research.

### 4.1. The Basic Model of the Spatial Structure of Villages and Towns

First of all, from the perspective of the basic model of the spatial structure of villages and towns, some scholars have summarized the manifestations of the overall spatial structure of villages and towns in China. Zeng Juxin (1996) summarized the spatial structure of villages and towns as "There are three basic modes of "aggregation type", "discrete type" and "strip type" [8]. Villages and towns with the characteristics of "agglomeration" spatial structure often have strong service functions and are usually surrounded by large tracts of farmland; villages and towns with "discrete" spatial structure generally locate their infrastructure service facilities in the center of the space. Residents' living places are scattered around the farmland near the water and roads; for the villages and towns with a "strip-shaped" spatial structure, the biggest feature is that the residences of the village and town residents will be arranged on both sides of the road or the river. The farmland will also extend to both sides accordingly, and the spatial layout presents an obvious strip arrangement structure. Zhang Jianming and Wang Ning (2005) investigated and analyzed the current situation of villages in counties (cities) in our country, and concluded that there are five main types of village spatial structure layout: circular radial balanced distribution, circular radial non-balanced distribution, Line-type balanced distribution points, line-type non-balanced distribution points, and mixed-type distribution points [9]. Some scholars have conducted in-depth research on the spatial structure of villages and towns in specific regions of my country. Zhang Chunhua (2004) took villages and towns in Jiangsu Province as an example, summarized the evolution process of the spatial layout of villages and towns in the county, analyzed its influencing factors, and formulated a comprehensive evaluation index system. , Put forward a reasonable layout plan [10]. Wang Wenjing (2007) took the spatial structure of villages and towns in Yidu as an example, conducted an in-depth analysis of the evolution of typical villages and towns, and summed up ways to control and guide the reasonable and orderly development of the spatial structure of villages and towns, and provide a theoretical reference for the spatial layout of villages and towns [11].

### 4.2. Distribution Characteristics of the Spatial Layout of Villages and Towns

From the perspective of the distribution characteristics of the spatial layout of villages and towns, Cao Xiangming and Zhou Ruoqi (2008) studied the distribution characteristics of the village and town system in the small watershed of the Loess Plateau in Chunhua County, Shaanxi Province, and proposed a "branched" village and town system space suitable for the region. The structure and the pattern of the "big dispersion-small aggregation" village and town system [12]. Guan Xiaoke et al. (2010) studied the spatial distribution characteristics of villages and towns in Pinggu District, Beijing, and concluded that the distribution of villages and towns in this area has the characteristics of low agglomeration, scattered residential address distribution, and lack of scientific standards [13]. Guo Xiaodong et al. (2013) took Qin'an County, Gansu Province as the research object, based on GIS and statistical analysis methods, analyzed the basic characteristics of the spatial distribution of villages and towns in the region, and calculated that the spatial distribution of villages and towns is closely related to natural

geographic conditions such as altitude, slope, and rivers. Settlement patches show an obvious normal distribution with changes in elevation and slope, with significant differences in spatial distribution [14]. Feng Yongjie and Lang Lingyun (2017) studied Xishan County in Henan Province and believed that the spatial structure of villages and towns in this area has a "point-axis" distribution feature, that is, villages and towns in flat areas are basically distributed along roads, while villages and towns in mountainous areas are mainly distributed. Unfolding along the ditches in the mountains, the whole presents a band-like development in space [15], which provides important reference significance for the spatial structure of the village and town system with complex topographic characteristics.

### 4.3. Influencing Factors of the Spatial Structure of Villages and Towns

Regarding the influencing factors of the spatial structure of villages and towns, Shen Xiang (2006) conducted on-site exploration and sample surveys of villages in Jiangsu Province and found that the farming radius of farmland would affect the layout and scale of villages [16]. Xing Gurui et al. (2007) believe that the spatial distribution of rural tribes will be affected by urbanization. In the process of urbanization, land use, population, industries, facilities and concepts will all affect the evolution of rural settlement space [17]. Hai Beibei et al. took the rural settlements of Gongyi City from 1990 to 2010 as the research object. By observing the characteristics of their scale structure, spatial distribution, and morphological structure changes, they concluded that location conditions, social and economic factors, etc., will affect the spatial layout of farmer settlements. [18]. Through combing the literature, it is found that the main factors affecting the spatial structure of villages and towns can be divided into three categories: natural conditions, humanities and society, and economic development.

## 5. Realistic Application of Spatial Layout of Villages and Towns at Home and Abroad

The layout of the spatial structure of villages and towns has a significant impact on the development of the rural economy, and with the changes in social economy, the original spatial structure of villages and towns is often incompatible. This requires the intervention of the government to promote the development of villages and towns through a series of reforms. Optimization of space structure. In order to support the greater development of agriculture and rural areas, and the greater improvement of farmers' lives, my country has carried out a series of reforms in the field of land management to promote the gradual resolution of the three rural issues, including the improvement of rural living conditions. In terms of urban and rural land use policies, various regions have successively proposed policies to promote the coordinated development of urban and rural areas, including the linkage of increase and decrease of urban and rural construction land, Chongqing's "land ticket", Chengdu's "Three Concentrations", Jiangsu's "Wanqing Farm Project", and Zhejiang The "Thousands of Villages Demonstration and Ten Thousand Villages Renovation Project", etc., are all related to the increase and decrease of urban and rural construction land [19]. For example: Suining County combines the "Pilot for Comprehensive Land Remediation of Old Yellow River Basin" and "Adjustment of Land Use for Construction in the Same Township" and other ministerial and provincial pilot policies. Based on the principle of "concentrating village groups to planning layout points", based on the original urban and rural planning layout, the county's 400 administrative villages and 3470 natural villages will be further optimized and adjusted into 1 county main city, 5 county border central towns, and 10 The "1+5+10+138" layout structure of characteristic small towns and 138 farmers' concentrated residences realizes the moderate agglomeration of agricultural population, promotes the gathering of farmers in cities and towns, and improves the living standards and living conditions of farmers [20]. Zhejiang Province has introduced a policy system of "intra-regional land development rights transfer" with "discount, reclamation

indicators" and "areas to be replaced" as the two basic elements; at the same time, it has creatively introduced land development rights across The market mechanism of regional transactions has established a policy system of "trans-regional land development rights transactions" with three main contents: "discounted index paid adjustment", "basic farmland exchanging protection", and "exchanging land to supplement cultivated land". Thus finally formed a set of "Zhejiang model" [21].

The current status of land management and utilization in foreign countries is developing in the direction of integration, diversification and ecologicalization. The goal of foreign land management and utilization is to improve agricultural operation conditions, improve residents' living and living environment, provide use for urban construction and large-scale infrastructure construction, and protect the landscape and ecological environment [22]. For example, when foreign rural settlements carry out land consolidation, they pay attention to improving the living environment of residents and protecting rural natural landscapes, combining the consolidation of rural settlements with the overall regional development. For example, when rebuilding villages and towns in Germany, the main methods include: improving and adding public facilities in the village, such as green spaces, street gardens, sports facilities, entertainment venues, and celebration venues; improving the transportation facilities in the village, building sidewalks and pedestrian areas; repairing and transforming Idle old houses allow them to be reused and to protect and shape the rural natural landscape. After a series of reorganization measures, the rural natural and social environmental conditions have been improved, making it more suitable for the life and production of residents. When Russia is carrying out land consolidation, in order to ensure that the layout of the rural residential area system is conducive to future long-term development, the implementation of rural urbanization, various buildings are located in a reasonable location and moderately occupying land, are easy to use, and are conducive to environmental protection [23]. The land can be optimally allocated under different spatial scales, which greatly improves the efficiency of land use and is conducive to the sustainable use of land. It can be seen that foreign land use management systems have been gradually improved [24].

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