

# A review of Citespace-based research on domestic village spaces

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**Abstract:** Village space is not only the main site for farmers to carry out production and labour activities and lifestyle and behaviour, but also the main carrier of the village's vernacular memory transmission. However, with the in-depth development of China's rural modernization and revitalization plan, the issue of village space design has also received more in-depth attention from more experts. In this paper, the knowledge map of Chinese village space research was visualized and analyzed by using modern scientific research tools such as Citespace, an information-based visualization software, as a search source from 2002 to 2022, and the knowledge map of key words, research institutions and authors of articles published in Chinese village space research was drawn. The research results show that: (1) village space is an important part of the study of villages and a gathering point for rural issues, and the development of village research can help the further implementation of the rural revitalization strategy; (2) the fields of tourism, geography, sociology, humanities and architecture provide different perspectives on the study of village space, and there is a significant crossover of disciplines; (3) the research on village space in the past two decades has mainly focused on spatial form, spatial structure, spatial distribution, and public space.

**Key words:** village space; Citespace; spatial structure; spatial morphology

## I. Data Sources and Research Methodology

### 1.1 Data sources

The CNKI database is a national database of academic journals in China, and it is also a common and recognized database used in the scientific knowledge mapping and analysis work.<sup>[2]</sup> In this paper, we used the academic journals included in CNKI as the core database, searched with the theme term "village space" and the search path "article summary", excluding the samples of conferences, dissertations, foreign language literature, newspapers, etc., and obtained All the papers were exported in refworks format to Citespace software for processing.

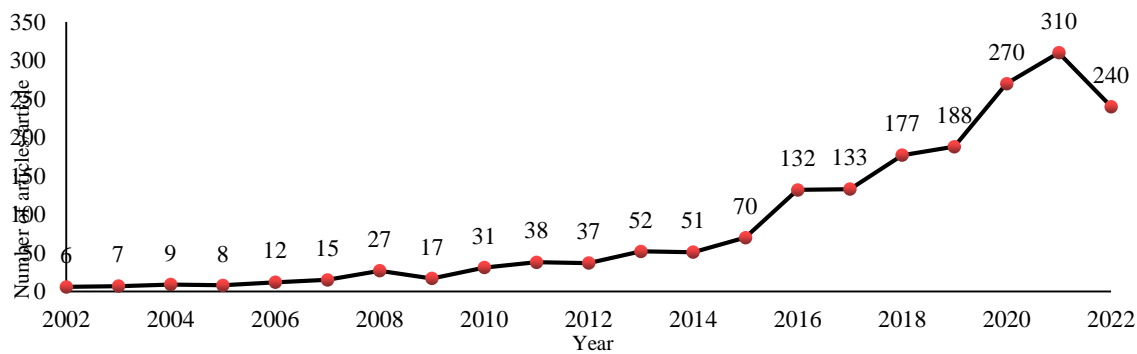
### 1.2 Research Methodology

There are currently more methods for mapping knowledge, such as SPASS, VOSviewer, Citespace, etc. In this paper, we use the more common Citespace visualisation software. Four new sub-folders are created in the folder named "data", "input", "output" and "project" respectively. project", put the exported refwork format into "input" and copy the data into "data", then open Citespace to import the data and After the new project was created, the analysis slice time was set to one year, from 2002 to 2022, and 1830 pieces of valid literature data were further obtained. authors, etc. to build a knowledge map for further analysis.

## II. Statistical and visual analysis of data

### 2.1 Annual trends in literature publication

In terms of the trend of publications from 2002-2022 (as shown in Figure 1), the overall number of papers on village space research shows an increasing trend. 2002-2014 period, the number of papers on village space research increased from 6 in 2002 to 51 in 2014, the annual growth rate of literature in this period is relatively stable; 2014-2020 period, the growth rate is faster, in 2014 The first batch of new urbanization pilot list was announced and the rural issues were more prominent, the number of literature grew rapidly, reaching a peak of 310 papers on village space research in 2020; the number of papers on village space research showed a certain decline in the period of 2020-2022.



**Figure 1** Statistical map of annual publication distribution of village space research papers, 2002-2022 (Photo credit: Author's own drawing)

**2.2 Analysis of authors and research institutions**

The authors are the main body of scientific research, and information on the number of articles published by authors can, to a certain extent, reveal the authors' contribution to the direction of scholarship. After importing 1830 papers into Citespace software and making relevant settings, the author clustering knowledge graph was derived, and the top authors were filtered to obtain the number of articles and related years for nine authors (see Table 1). As the table shows, Li Bohua, Wei Baohui and Chen Xiaohua are the top authors in terms of the number of articles published and are experts in the field of village space research, and their scientific contributions to this discipline have set the direction for village space research.

The data analysis was carried out in Citespace software with the issuing institutions, and the relevant settings were made to derive a clustered knowledge map of the main issuing institutions (as in Figure 2). The data information of the presented knowledge map was copied to an excel sheet for statistics, and the number of papers and years of the main issuing institutions were obtained (as in Table 2). The figure shows that there is a close link between the School of Geographical Sciences of South China Normal University and the School of Geographical Sciences and Planning of Sun Yat-sen University and the School of Architecture of South China University of Technology for the exchange of village spatial research, which is also related to their geographical location, however, there is less collaboration on village research papers from other institutions. From the table, it can be seen that the institutions with a high number of research papers on village space include the School of Architecture of South China University of Technology, which has published 29 papers on the subject, the School of Architecture of Xi'an University of Architecture and Technology, which has published 28 papers, and the School of Architecture and Planning of Anhui University of Architecture, which has published 28 papers, indicating that research on village space in China is mainly concentrated in architecture-related institutions.

**Table 1** Statistics of leading authors of articles 2002-2022

Author	Number of articles issued	Year
Lee Pak Wah	15	2009
Wei Bao Fei	11	2017
Chen Xiaohua	11	2018
Liu Shuhu	8	2011
Liu Peilin	8	2012
Dawei Xiao	7	2014
Chu Jinlong	7	2014
Dou Yin Di	7	2015
Zhang Jie	6	2004

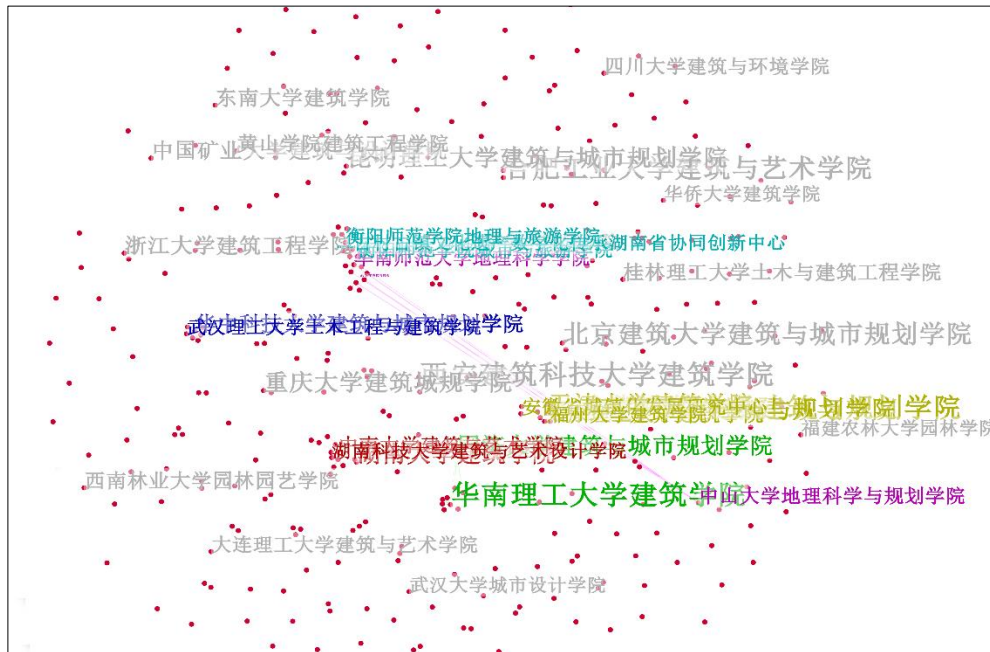


Figure 2 Cluster mapping of issuing institutions 2002-2022

Table 2 Statistics on the number of articles issued by issuing institutions, 2002-2022

Issuing body	Number of articles/article	Year
School of Architecture, South China University of Technology	29	2002
School of Architecture, Xi'an University of Architecture and Technology	29	2016
School of Architecture and Planning, Anhui University of Architecture	28	2018
School of Architecture and Art, Hefei University of Technology	25	2003
School of Architecture and Urban Planning, Beijing University of Architecture	22	2014
School of Architecture and Planning, Jilin University of Architecture	19	2016
School of Architecture, Tianjin University	18	2015
School of Architecture and Urban Planning, Kunming University of Technology	17	2015
School of Architecture, Hunan University	16	2016
School of Architecture and Urban Planning, Chongqing University	16	2008
School of Architecture and Urban Planning, Tongji University	15	2006

### 2.3 Analysis of emergent words

The main research hotspots of village space since 2002 are "village morphology, spatial structure, village, village space, ancient village, space, street space, cultural landscape". 2004-2013 is the period when "village morphology" and "spatial structure" emerged (Figure 3). The period from 2004 to 2013 was the time when "village morphology" and "spatial structure" emerged, and this was also the period of the 11th Five-Year Plan, in which it was clearly proposed that Deepening rural reform and building a new socialist countryside<sup>[3]</sup> This is also the period of the Eleventh Five-Year Plan, which clearly states the need to deepen rural reform and build a new socialist countryside, and during which research on village morphology and spatial structure will help deepen rural reform.

**Top 8 Keywords with the Strongest Citation Bursts**

Keywords	Year	Strength	Begin	End	2002 - 2022
村落形态	2004	4.09	2004	2013	
空间结构	2004	3.41	2004	2010	
村落	2005	12.15	2005	2017	
村落空间	2002	10.51	2006	2016	
古村落	2002	16.55	2010	2016	
空间	2005	4.55	2010	2015	
街巷空间	2015	3.49	2017	2019	
文化景观	2018	3.12	2018	2020	

Figure 3 Mapping of village spatial research emergent terms 2002-2022

**2.4 Keyword clustering analysis**

The keyword clustering analysis is a high level overview of the subject matter of the literature. In the co-occurrence network Citespace software analysis, the "keywords" option was selected and the time slice was set to one year. The distribution is: #0 spatial distribution, #1 spatial morphology, #2 village space, #3 village, #4 public space, #5 ancient village, etc. From the figure, it can be seen that the research on village space shows a diversified trend, for example, the research on village space includes not only spatial distribution but also spatial structure and spatial morphology; at the same time, the research on village space is closely integrated with the social hot issues of rural revitalization, which reflects the characteristics of the research on village with the times.

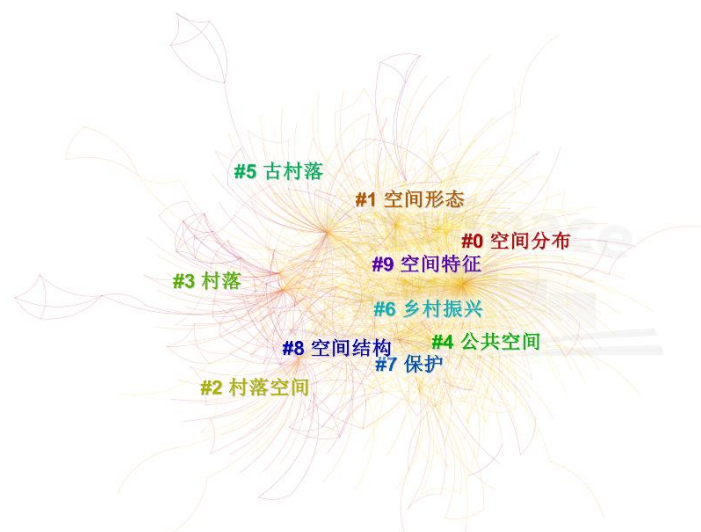


Figure 4 Knowledge mapping of spatial keyword co-occurrence networks in villages 2002-2022

**2.5 Keyword time zone mapping analysis**

The keyword time zone map mainly reflects the historical development of hot events in the research field over time, and the relative size of the diamond symbols shows a positive and negative correlation with the frequency of keyword searches (see Figure 4). In the period 2002-2005, the number of keywords searched for was 1.5.<sup>[4]</sup> Between 2002 and 2005, the keywords "village space", "traditional village" and "spatial syntax" were more prominent, and the research on village space was still far from clear. After 2005, the government put forward a new policy of new rural construction, which triggered the boom of rural tourism, "From 2010 to 2015, keywords such as "spatial characteristics" and "spatial pattern" were highlighted, reflecting the further research on village space by relevant scholars. After 2015, the 19th National Congress put forward the strategy of rural revitalization, and the study of villages became a hot topic again, with "habitat environment", "rural revitalization", "street culture The prominence of such key terms as "human living environment", "rural revitalization", "street culture", "accessibility" and "cultural heritage" reflects a further in-depth study of village space, which is more comprehensive and specific.



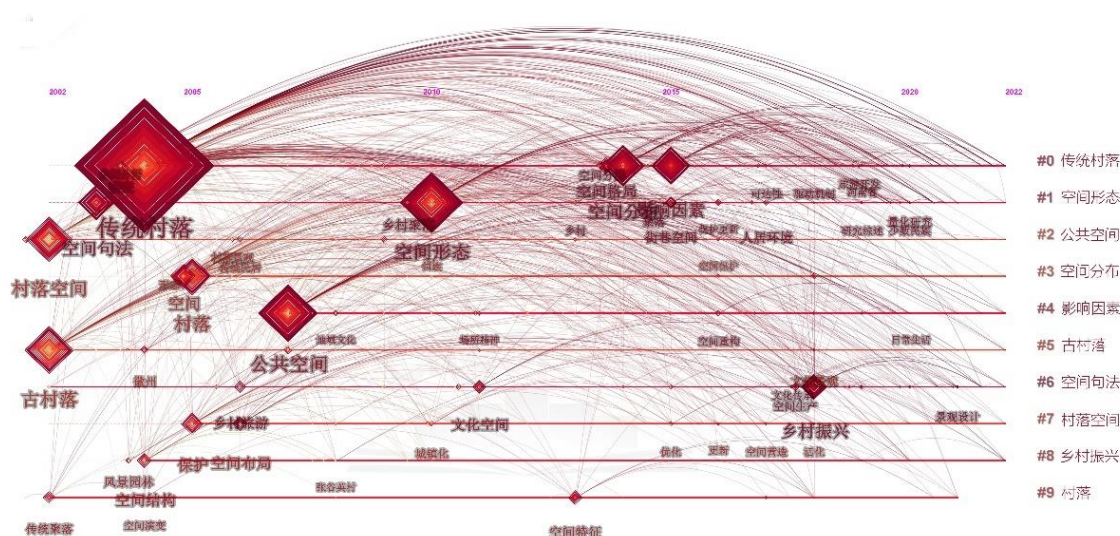


Figure 5 Timeline mapping of spatial keywords for villages 2002-2022

### III. Overview of village spatial systems

The following conclusions can be drawn from the analysis of the knowledge map: (1) village space is an important part of the study of villages and a gathering point for rural issues, and the development of village research can help the further implementation of the rural revitalization strategy; (2) the fields of tourism, geography, sociology, humanities and architecture provide different perspectives on the study of village space, and there is a significant crossover of disciplines; (3) in the past two decades, village space has mainly focused on spatial morphology, traditional villages, spatial structure, spatial distribution, and public space. Therefore, village space can be simply summarised as a research science involving various disciplines on spatial morphology, spatial structure, spatial distribution and public space in traditional villages.

#### 3.1 Spatial form

The spatial form of the village is part of the cultural DNA of the village territory.<sup>[5]</sup> The spatial form of a village is part of its cultural DNA. At present, the main scholars in China have focused on the mechanism of spatial morphology, the factors affecting spatial morphology, and the strategies for optimising spatial morphology. For example, Wu Liping<sup>[6]</sup> et al. explored how the spatial pattern of Jiao Xi village evolves and how the spatial structure is formed based on spatial analysis related software and spatial syntax; Fu Yichun<sup>[7]</sup> et al. analysed the spatial morphology of traditional villages in Hebei Province and the influencing factors by means of mapping expression methods, hotspot analysis and diversity indices; Wang Tie Feng<sup>[8]</sup> et al. took Longchuan village in Jixi County, Anhui Province, as an example, and used the spatial sentence method to select four main variables, namely integration, selection, synergy and comprehensibility, to propose corresponding strategies for optimising the spatial form of villages; Fu Juan<sup>[9]</sup> et al. used GIS to construct a database of morphological attributes of 19 traditional villages in the Zengcheng area.

On the whole, domestic scholars' research on village spatial form has mostly been conducted from the perspective of village morphological characteristics, the laws of village morphological evolution and village morphological conservation, and the research methods are mostly theoretical, lacking quantitative practical research on village spatial form.

#### 3.2 Spatial structure

"Spatial Structure", i.e. the association between architectural forms and individual buildings, and between architectural structures and the space of the village site in the pattern of traditional Chinese residential villages. Yang Guiqing<sup>[10]</sup> et al. in their participation in the study of the spatial structure model of the traditional residential village of Wuyan Ancient Village in Huangyan, Zhejiang Province, and the research problem of the association model of the traditional family social structure, by reconstructing the three-dimensional model of the residential village space and calculating the relative position relationship between the residential architectural structure and the traditional street space, in order to achieve further research to explore the spatial association between the traditional family social structure and the traditional village structure spatially; Yang Junning<sup>[11]</sup> et al. explored the spatial structure and influencing factors of traditional villages in eastern Fujian by combining spatial analysis in GIS; Luo Xiaowei<sup>[12]</sup> explored the relationship between water environment and the location of

traditional villages and classified the villages into different types; Dai Xiaoling<sup>[13]</sup> et al. used the spatial sentence method to analyse the modeling of villages and found that the natural native villages have a double structure, and the villages will form a homogeneous relationship between the functional layout and the public space pattern in the process of morphological evolution; Fang Jingjing<sup>[14]</sup> et al. on the textual analysis based on the rural revitalisation strategy, by analysing the way in which the spatial view of villages changes and the sense of place is recreated, they understand how the ideal scenario of contemporary space adapts to the requirements of production methods.

For the analysis of the spatial structure of villages, the current research in China is more from a quantitative perspective, exploring the functional correlation between the places within the spatial structure, while there are also studies that focus on the outside of the spatial structure to describe the connections within the spatial structure and the interactions that occur between them.

### **3.3 Spatial distribution**

Domestic scholars have mainly used the ArcGIS spatial analysis platform to analyse the spatial distribution characteristics and influencing factors for the spatial distribution of villages. For example, Li Jiangsu<sup>[15]</sup> et al. used the kernel density method to identify the core and sub-core of traditional Chinese villages and constructed a "grid analysis-spatial autocorrelation-geographic weighted regression" method to study the influencing factors and conducted practical analysis.<sup>[16]</sup> et al. studied the topography, slope, elevation and hydrology of traditional Chinese villages and proposed solutions to protect them.<sup>[17]</sup> et al. used GIS as an analytical tool to explore the inner patterns of the spatial distribution of traditional Hakka villages within the Meizhou region, using different historical periods as nodes.

On the whole, the research content of spatial distribution is relatively single, and Arcgis is also the most common method used in the research, more from the distribution of spatial distribution characteristics of elevation, topography, hydrology and other aspects to study the relevant influencing factors, with developmental theoretical analysis to guide the application of empirical technology of basic research methods is still insufficient.

### **3.4 Public spaces**

The public space of the village is an important link between the physical environment and the intangible culture, an important place of activity in addition to the private space, a place where the forces counterbalance each other<sup>[18]</sup>. Yi Qingqing<sup>[19]</sup> In this study, the historical study of traditional village structures in ancient times is combined with the digital processing technology of today, which provides many novel ideas for a comprehensive study of the spatial layout of modern traditional villages; Fang Qunli<sup>[20]</sup> A model of visitor satisfaction in Huizhou village space is constructed from the perspective of different needs of visitors' behaviour, providing a new perspective for the study of village space; Zhou Meizi<sup>[21]</sup> introduces the spirit of place theory into the study of village public spaces, providing new thinking for the continuation and protection of the spirit of place in public spaces.

In the context of rural revitalisation, the study of village public space is closely integrated with tourism studies, and there are many links to explore the public space of villages from the behaviour of tourists; the combination of digital technology and traditional village public space is also a new Digital technology is also a new trend.

## **IV. CONCLUDING REMARKS**

Through the analysis of the knowledge map and the further systematic review of the theory of village space, the following suggestions can be made for future research on village space: Firstly, a comprehensive research theory should be constructed by combining other disciplines. Different disciplines have different research focuses, so on the basis of the original academic achievements, the research strengths of different disciplines should be brought into play to continuously improve the disciplinary theories. Secondly, innovative research methods. Quantitative research includes Arcgis technology, spatial syntax, three-dimensional models, integrated image acquisition and identification, etc. However, at present, there are relatively few studies on such village spaces, and the combination of quantitative analysis and qualitative research should become the future direction of village research. Thirdly, it should be closely integrated with social needs. With the further implementation of the national rural revitalisation strategy, the study of village space should keep pace with the times and closely integrate with the modern cultural production and lifestyle of human beings in the village space, rise from theoretical empirical analysis to the frontier theory of humanities and applied science development, and explore a new perspective of sociological research methodology in the new era.

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