



# Research Hotspots and Trends in Fujian's Defensive Rural Dwellings

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**Abstract.** This paper integrates three types of defensive dwellings in Fujian—Tulou, Tubao, and Zhuangzhai—into a unified research framework, aiming to deeply analyze the core issues of Fujian's vernacular defensive dwellings. Using CiteSpace software, this paper conducts a visual analysis of 1281 academic papers on Fujian's defensive dwellings collected from CNKI (China National Knowledge Infrastructure). The study found that the research sample size of Tulou is significantly larger than that of Tubao and Zhuangzhai, and there is a greater focus on Hakka culture in cultural attribute studies. Additionally, the study reveals that author collaboration networks are relatively weak, interdisciplinary exchanges and cooperation are limited, and interaction among research institutions needs to be strengthened.

**Keywords:** Fujian Tulou, Tubaos, Zhuangzhai, CiteSpace.

## 1 Introduction

Fujian, abbreviated as Min, is defined in the "Shuowen Jiezi" as "Min, Southeast Yue, snake species." <sup>1</sup>suggesting that the original inhabitants worshiped snakes and were part of the Baiyue. Fujian is mountainous, with dense vegetation and numerous rivers. <sup>2</sup>The crisscrossing mountains and rivers divide Fujian into many relatively independent geographical units, earning it the nickname "Mountain Kingdom of Southeast." During the Warring States period, the Chu and Yue fought, and after King Wei of Chu killed King Wujiang of Yue, the Yue Kingdom disintegrated and perished. Some Yue people fled to Fujian, where they merged with the local Min people to establish the Minyue Kingdom, with its capital in Fuzhou. During the reign of Emperor Wu of Han, the flourishing Minyue Kingdom seriously threatened the Han Dynasty's rule, leading Emperor Wu to dispatch troops to conquer and destroy it. Thereafter, the Minyue people gradually integrated with the Han people, becoming part of the Chinese nation. Historically, multiple large-scale southward migration movements caused by wars in

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Z. Chen et al. (eds.), *Proceedings of the 2024 International Conference on Humanities, Arts, and Cultural Industry Development (HACID 2024)*, Advances in Social Science, Education and Humanities Research 861, [https://doi.org/10.2991/978-2-38476-281-1\\_34](https://doi.org/10.2991/978-2-38476-281-1_34)

the north have strengthened the exchanges and integration between Fujian and the Central Plains.

With the continuous southward migration of northern immigrants, the contradiction of "many people and limited land" in Fujian became increasingly prominent during the Ming and Qing dynasties. Additionally, Fujian's numerous mountains and hills made transportation difficult, and the ancient government's control over rural and mountainous areas was particularly weak. Against this backdrop, conflicts between immigrants and indigenous people, clan feuds, banditry, and raids by Japanese pirates severely threatened people's lives and property, prompting the widespread construction of defensive buildings<sup>3</sup>. In the past century, indigenous Chinese construction knowledge has been examined, interpreted, and reconstructed through specific frameworks imposed by various perspectives.<sup>4</sup>Fujian vernacular defensive dwellings refer to traditional houses built primarily for defense in rural areas of Fujian. These buildings not only serve residential and ritual purposes but also emphasize defensiveness, with tall outer walls typically made of rammed earth, stone, bamboo, and wood, enclosing a small community inside. Specific types include Tulou, Tubaos, and Zhuangzhai. These three types of buildings show a high degree of similarity in function, construction reasons, and the communities that built them. Although there is currently no direct evidence of an inheritance and development relationship among these three types of buildings, they can be considered of the same origin in terms of construction period, distribution, architectural form, rammed earth technique, structural features, and cultural attributes.

In 2008, Fujian Tulou was listed as a UNESCO World Cultural Heritage site and officially included in the World Cultural Heritage list. Although Tubaos and Zhuangzhai in central Fujian have also received academic attention, their research progress is still relatively limited compared to Tulou. The issues of protection and inheritance faced in Tulou research also exist in Tubaos and Zhuangzhai research. Given the high similarity among these three types of buildings, incorporating them into the unified concept of Fujian vernacular defensive dwellings for study will help improve research efficiency and save research resources.

## **2 Data Sources and Research Methods**

### **2.1 Data Sources**

The literature for this study was sourced from the CNKI database. To obtain comprehensive data, the journal search was conducted with the following settings: subject = "Tulou" OR "Tubaos" OR "Zhuangzhai", source type = all journals, search condition = "exact", literature type = "academic journals", with no time limit. The search was performed on March 7, 2024. A total of 2558 articles were retrieved. After filtering out those not relevant to the research content or of low analytical value, 1281 journal articles remained as the sample.

## 2.2 Research Methods

CiteSpace software was developed in 2003 by Professor Chaomei Chen of Drexel University and the WISE Laboratory of Dalian University of Technology<sup>5</sup>. It is a literature analysis tool based on the Java environment. This paper uses the advanced version of the knowledge visualization software CiteSpace 6.3.R1 to conduct a co-occurrence analysis of 1281 journal articles in the research field of Fujian vernacular defensive dwellings. When setting the software parameters, the time zone span is set from January 1985 to December 2024, and Time Slicing is set to 1, meaning one year is taken as a time slice within the time range. Based on the interpretation of the maps, this paper objectively analyzes the development status, hot issues, and research trends of Fujian vernacular defensive dwellings, and explores future research directions worth focusing on in this field.

## 3 Basic Data Statistics and Analysis

### 3.1 Annual Publication Volume Statistical Analysis

By conducting a quantitative analysis of the relevant journal articles retrieved from the CNKI website and plotting a line chart, the publication status of research on Fujian vernacular defensive dwellings was obtained (see Figure 1). From the publication data, the first phase of research on Fujian vernacular defensive dwellings in China was before 1999. During this period, the research was still in its infancy, with a total of 61 articles published over 14 years, averaging 4.5 articles per year. The second phase was from 2000 to 2006. During this period, the number of publications increased compared to the previous phase, with a total of 131 articles published over seven years, averaging 18.7 articles per year, showing a slow upward trend. The third phase was from 2007 to 2010. During this four-year period, a total of 234 articles were published, averaging 58.5 articles per year. The rapid increase in publication volume during this period is mainly related to the inclusion of Fujian Tulou in the UNESCO World Cultural Heritage list in 2008, which brought significant attention to Fujian Tulou. The fourth phase was from 2011 to 2024. During this 14-year period, a total of 857 articles were published, averaging 61.2 articles per year. During this period, the publication volume tended to stabilize, with the annual minimum number of publications not falling below 50 articles, and reaching a peak of 94 articles in 2019. This indicates that after 2011, domestic scholars have maintained a high level of enthusiasm and attention towards the research and development of Fujian vernacular defensive dwellings. It is expected that by the end of 2024, the number of publications related to Fujian vernacular defensive dwellings will exceed 60 articles.

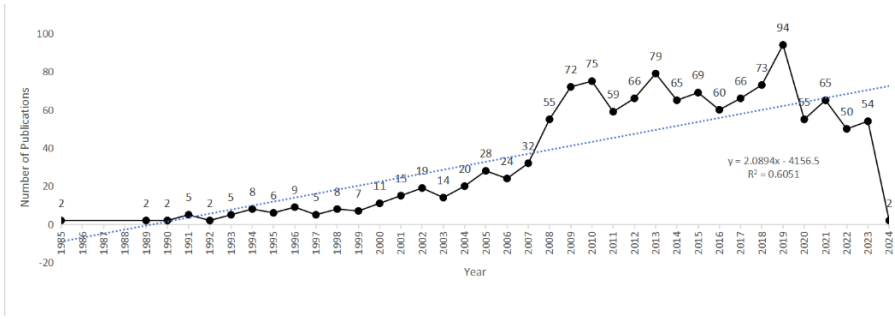


Fig. 1. Annual Publication Volume of Literature on Fujian Vernacular Defensive Dwellings by Year (1985-2024)

### 3.2 Keyword Co-occurrence Analysis

First, select the Keyword module in the Node Types column, and choose the keywords that appear in 10% of the time slices (1 year) to draw the keyword co-occurrence and clustering table. This will be used to analyze the research hotspots in this field.

Keyword co-occurrence analysis reveals the core content and the frequency of keywords in the research field. In the graph, the color of the relationship lines transitions from dark blue to orange-red, reflecting the progression of time, while the size of the nodes indicates the frequency of keyword occurrences. As shown in Figure 2, the total number of nodes is 203, and the total number of links is 225. In addition to high-frequency keywords, larger nodes such as Tulou culture, World Heritage, rural tourism, Yongtai Zhuangzhai, and central Fujian Tubaos frequently appear in the 1281 journal articles, indicating a high level of attention to these topics. Meanwhile, smaller nodes such as tourism, Hakka people, and vernacular architecture indicate sustained interest in other topics. The larger nodes in the graph, such as Tulou and Hakka culture, are all orange-red, highlighting the recent focus on the architectural body and cultural attributes in research.

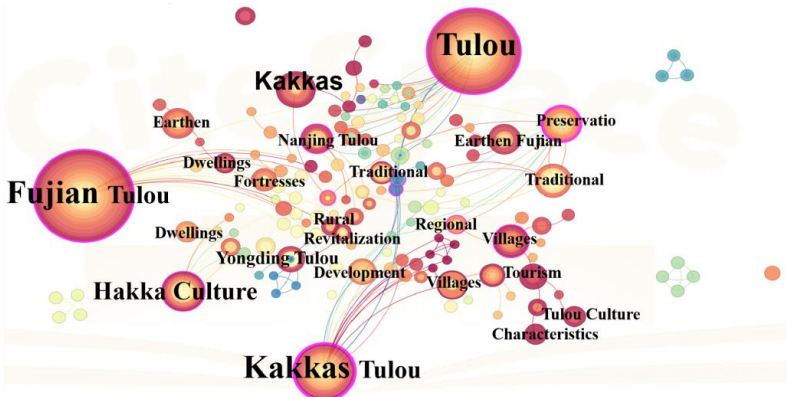


Fig. 2. Keyword Co-occurrence Map of Research on Fujian Vernacular Defensive Buildings

### 3.3 Keyword Clustering Analysis

The application of keyword clustering maps helps to summarize the current state and hotspots of research on Fujian's defensive rural dwellings. In the keyword clustering map in Figure 3, there are 9 labels representing 9 clusters, with cluster numbers ranging from #0 to #8, and the corresponding number of documents decreasing from largest to smallest. Through the analysis of the keyword clustering map, it is found that the research on Fujian's defensive rural dwellings mainly centers on Tulou, with a focus on the architectural essence and cultural attributes. In terms of the architectural essence, research topics involve building materials, rammed earth techniques, and morphological features, while the issues of conservation and development are also of great concern. On the cultural level, the focus is mainly on Hakka culture, as the defensive rural buildings in Fujian, Guangdong, and Jiangxi provinces are associated with the Hakka ethnic group to varying degrees.

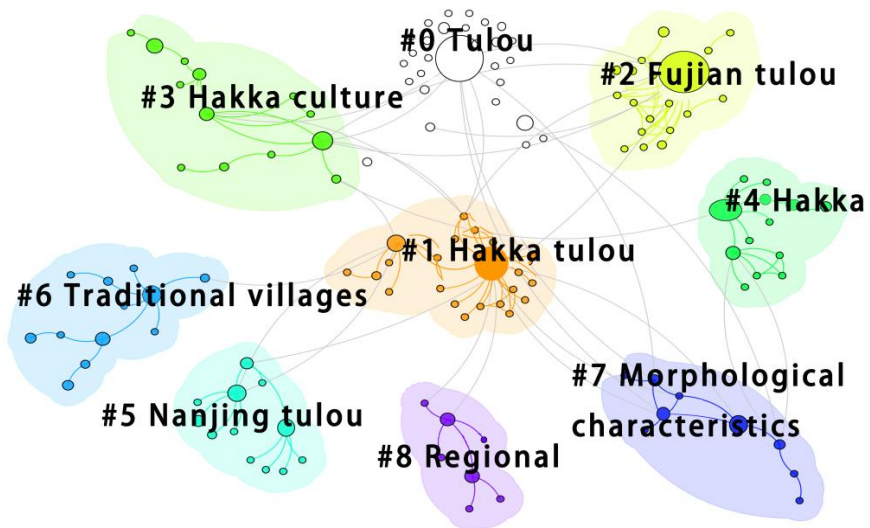


Fig. 3. Keyword Clustering Map of Research on Fujian Vernacular Defensive Dwellings

## 4 Conclusions

With the help of the analysis software CiteSpace, this paper summarizes important information on prolific authors, leading institutions, research hotspots, and changing trends in the study of Fujian vernacular defensive dwellings. The conclusions are as follows.

First, basic data shows that the average annual publication volume for research on Fujian vernacular defensive dwellings over the past decade is 65.7 articles, reflecting a high level of enthusiasm and attention from the academic community in this field. However, research on Tulou accounts for most of the publication volume, while Tu-baos and Zhuangzhai receive relatively less attention. In terms of author publications

and collaboration networks, the cooperation is relatively dispersed, with no significant collaboration network formed. Most collaborations occur between students and teachers, lacking communication among core authors. This indicates the need to strengthen communication among influential scholars to inspire innovative ideas and promote in-depth research. Additionally, the School of Civil Engineering and the School of Architecture at Huaqiao University lead in publication volume. However, the analysis of inter-institutional collaboration networks shows that cross-school, cross-regional, and cross-disciplinary cooperation is not yet evident, indicating that the construction of collaboration networks in this field needs to be further strengthened.

Second, research hotspot analysis reveals that, through literature review and synonym integration, the main keywords include Fujian Tulou, Hakka culture, protective measures, traditional villages, tourism development, Tubaos, rural revitalization, regionalism, and Zhuangzhai. These keywords encompass architectural research on Tulou, Tubaos, and Zhuangzhai, strategies for traditional villages and rural revitalization, and building protection and development. The keyword time zone distribution map shows that the academic community continuously focuses on the cultural characteristics, revitalization, and rural revitalization of defensive dwellings. Currently, building protection and revitalization have become the main research focus.

The research on Fujian vernacular defensive dwellings presents the following characteristics: First, the research content and hotspots can keep pace with the times, closely aligning with national policies and guidelines, highlighting the scientific and contemporary features of the ethnology discipline. Second, the theoretical research foundation is weak. Fujian vernacular defensive dwellings not only reflect the historical culture of the Fujian region but also embody the wisdom of ancient people's concept of harmony between man and nature. Since buildings have a significant impact on the environment, it is essential to pay greater attention to environmental performance in architectural design<sup>6</sup>. Architecture needs to regain its ability to control the environment in an environmentally sustainable way<sup>7</sup>. In the current advocacy for green design, Sustainable Building harmonize with the surrounding environment, not only flexibly responding to changing conditions but also improving spatial energy efficiency<sup>8</sup>.

## References

1. Xu, S. (2016). *Shuowen Jiezi*. Hangzhou: Zhejiang Ancient Books Publishing House. p. 446.
2. Liao, S., & Li, Y. (2018). *Fujian Geography*. Beijing: Beijing Normal University Press. p. 16.
3. Ye, W., & Li, G. (2021). A Review of the Literature on Fujian Earth Buildings. *Industrial Design*, (11), 146-147.
4. Zhan, Y., & Ruan, H. (2019). Geometric Experiments in Architectural Education: Rediscovering the Craftsmanship in Chinese Indigenous Architecture. *New Arts*, 40(08), 65-75.
5. Chen, C. (2006). CiteSpace II: Detecting and visualizing emerging trends and transient patterns in scientific literature. *Journal of the American Society for information Science and Technology*, 57(3), 359-377.

6. Wang, W., Zmeureanu, R., & Rivard, H. (2005). Applying multi-objective genetic algorithms in green building design optimization. *Building and environment*, 40(11), 1512-1525.
7. Kim, D. K. (2006). The natural environment control system of Korean traditional architecture: Comparison with Korean contemporary architecture. *Building and environment*, 41(12), 1905-1912.
8. Shin, S., & Park, S. (2019). A Study on the Eco-friendly Spatial Elements in the Fujian Tulou Region. *Journal of the Korean Institute of Spatial Design*, 14(2), 135-144.

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