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Functions and Cultural Symbols of Ancient Chinese Houses from Literary Works

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Abstract Ancient Chinese residential buildings carry profound historical and cultural connotations, and their architectural forms, structural features and decorative elements contain rich cultural symbolism. In this study, through literature analysis and spatial analysis methods, using Tableau data interaction tool and ArcGIS geographic information system, we conduct a systematic research on ancient residential buildings before the Yuan Dynasty in the state-protected units to explore their functional characteristics and cultural symbolism. The research methodology includes spatial analysis of 760 state-protected units, in-depth excavation of the cultural connotations of ancient residential buildings through the interactive analysis of variables such as building types, eras, materials, etc., combined with the theory of creating and translating architectural and cultural terms in literary works. The results show that the proportion of religious buildings among the 1456 monolithic buildings reaches 78.1%, the proportion of bridge and water conservancy buildings is 11.61%, and the proportion of ritual buildings is 7.35%. The building structure is dominated by three forms: raised beam, pierced bucket and dense beam flat roof, in which the number of arch-out jumping layers has a significant impact on the seismic performance of the building. It is found that ancient residential buildings not only have practical functions, but also carry profound cultural symbolism, reflecting the philosophical idea of harmony and unity between human and nature in traditional Chinese culture, which provides important reference for contemporary architectural design and cultural inheritance.

Index Terms Ancient Residential Architecture, Cultural Symbolism, Religious Architecture, Building Structure, Seismic Performance, Cultural Connotation

I. Introduction

As a treasure of Chinese civilization, ancient Chinese houses carry rich cultural connotations and symbolic meanings in addition to practical application functions [1]-[3]. From the design layout of ancient houses to the selection of building materials, all of them show the deep heritage of Chinese traditional culture. For example, the ancient houses pay attention to the feng shui layout, combined with the actual request, the location, shape, orientation, etc. of the house are carefully designed, and strive to integrate with nature, not only with practical functions, but also to support people's reverence for nature and the desire for a better life [4]-[7]. Green bricks and white tiles represent the elegance and grace of ancient houses, while mahogany carvings reflect the exquisite craftsmanship and cultural connotation of traditional Chinese woodcraft [8], [9].

However, since ancient Chinese houses were mainly wooden structures, they are difficult to be preserved permanently, and thus there are very few surviving houses available for study today. The study of the house must seek clues from the historical documents related to architecture, and even from the literary works that widely reflect the conditions of various aspects of the society. Literature is a true representation of social politics, economy, and culture, and it provides important references for the study of the period background, cultural symbols, and functional outlines of ancient houses, and it is the main source for the study of the history and culture of ancient houses [10].

Since the beginning of systematic architectural theory research in China, the connection between ancient Chinese residences and literary works has only been sporadically seen in monographs on Chinese architectural history and architectural culture, with the older generation of architects proposing a similar relationship between architecture and literature from the perspectives of analogy and abstraction [11], [12]. Later, there are occasional interpretations of relatively mature classical literary works, such as Dream of Red Mansions, Peony Pavilion, and Song of the Thatched House Broken by the Autumn Wind, etc., to analyze and study the building materials, housing styles, and ways of use of the times in which they were written. In-depth analysis of the functions and cultural symbols of ancient Chinese residences in literary works contributes reference value to historical research and modern architectural design.

As an important material carrier of Chinese civilization, ancient Chinese residential buildings have experienced thousands of years of historical evolution and formed a unique architectural system and cultural characteristics. These buildings not only reflect the ancient people's exquisite architectural skills, but also contain profound cultural heritage and philosophical ideas. From the early wooden buildings of the Spring and Autumn and Warring States Periods to the mature architectural system of the Yuan Dynasty, ancient Chinese residential buildings have formed distinctive national characteristics in terms of the use of materials, structural design and spatial layout. Among them, the functionality and symbolism of the buildings are integrated with each other, which not only satisfy people's residential needs, but also carry rich cultural connotations. As an important carrier of cultural inheritance, literary works provide an important perspective for us to understand the cultural significance of ancient residential architecture. By analyzing the architectural descriptions in literary works, we can dig deeper into the cultural symbols and spiritual pursuits behind the architecture and reveal the intrinsic connection between ancient architecture and social culture. Meanwhile, the decorative elements, spatial layout and construction techniques of ancient architecture reflect the ancient people's knowledge of nature and pursuit of beauty, reflecting the philosophical concept of the unity of heaven and man in traditional Chinese culture.

This study adopts diversified research methods, firstly, combing the relevant contents of literary works involving ancient residential architecture through the literature research method, and analyzing the law of creation and translation of architectural cultural terms and their cultural connotations. Secondly, the data analysis method is applied to quantitatively analyze the ancient residential buildings before the Yuan Dynasty in the state-protected units by using modern technological means such as Tableau and ArcGIS, so as to reveal the overall appearance of the ancient residential buildings in terms of spatial and temporal distribution, building types, structural characteristics and other dimensions. The functional characteristics and cultural values of different types of buildings were explored by systematically analyzing 1,456 single buildings in 760 state-protected units.

II. Creation and translation of cultural terminology of ancient Chinese houses

II. A. Creating translations based on the metaphorical thinking carried by the terminology

Metaphor is an important cognitive method in literature, which is a bridge for human beings to pass through the known to the unknown. The development of science is often abstract and esoteric, so scientists sometimes have to express new things with the help of metaphors in literature, and thus metaphors have become a very important means of conceptual expression in the translation of scientific and technological terms. With regard to the metaphorically-named cultural terms of ancient Chinese residential architecture, Liang Sicheng, a famous researcher of ancient Chinese residential architecture, translates the terms of ancient Chinese residential architecture by retaining the original metaphors or creating metaphors according to the original context on the basis of his in-depth study of the metaphorical thinking of the terms of literary works. The following is an example of his English translations of “flying eaves” and “ang mouth” [13].

II. B. Creating translations based on the cultural symbols carried by the terminology

For the cultural terms of ancient residential architecture in literary works that contain the symbolic meaning of Chinese culture and profound historical background knowledge, they can be transcreated according to the reader's aesthetic habits. For example, in literary works of ancient Chinese residential architecture, "hanging fish" usually refers to a kind of ornament hanging under the eaves, and its shape is mostly in the shape of a fish, which means "more than every year, auspicious and wishful". However, if it is literally translated as hang-ing fish, it may be confusing for the target audience, as they may not be able to understand the translation due to a lack of cultural background knowledge and symbolism behind this ornament. Therefore, we can use expressions that conform to the reader's aesthetic habits to transcreate "hanging fish" as auspicious fish pendant. In the English translation of the term, the word auspicious accurately conveys the symbolic meaning of "auspicious ruyi", and pendant aptly expresses the unique cultural characteristics of "hanging fish" as an ornament of ancient Chinese residential buildings. Such translations facilitate the understanding and acceptance of ancient Chinese residential architecture by the target audience.

II. C. Creation of translations based on the cultural connotations carried by terms

Some cultural terms of ancient residential architecture in literature can be created and translated according to the appearance. In terms of the overall appearance of ancient Chinese residential buildings, the roof is the most characteristic part of them, and it is a very important constituent factor in the stylistic art of traditional Chinese architecture.

III. Age and type distribution of ancient Chinese residential remains

III. A. Research methodology and data sources

III. A. 1) Research methodology

This paper utilizes Tableau data interaction tool and Arcgis geographic information system to spatially analyze the ancient residential buildings before the Yuan Dynasty in the national protection units. Through the interaction and analysis of different variables, such as the type, era, material and region of ancient residential buildings, we study the distribution pattern of ancient residential buildings in time and space and type under different variables, and then explore the factors influencing the survival of ancient residential buildings before the Yuan Dynasty.

III. A. 2) Data sources

The data information of the national protection units involved in this paper comes from the official website of the State Administration of Cultural Heritage, mainly including the name, era, address and other data of the ancient residential buildings. The latitude and longitude coordinates of the ancient residential buildings used in this paper are obtained according to the published addresses and public information, relying on the Baidu map to pick up the coordinate system, and are spatially located and corrected through the Geographic Information System (GIS). Building material qualitative reference to relevant journals, papers and other materials, according to the main load-bearing structure of the building is divided into earth, wood, brick, stone, etc.; building type according to the historical status of the building, the use of the current situation is divided into different types of water conservancy projects, queues, pagodas, temples, shrines, altar temples, bridges and so on. For the group type of buildings existing in the national protection units, the type, material and era of each building in the group are sorted out individually to ensure that the single buildings of different periods can be included in the analysis in order to reflect the overall appearance of different historical periods. It should be noted in particular that, subject to the limitations of the research data, the successive repairs and maintenance of cultural relics are not included in the scope of statistical analysis, and only the completion date of the endowed buildings is taken as a criterion. After sorting out, a total of 760 national protection units were included in the scope of the study, and after splitting and sorting out the cultural relics constituting a single protection unit, a total of 1,456 monolithic buildings and structures were included in the scope of the study.

III. B. Overall situation analysis

Among the 1,456 individual buildings in 760 national key protection units, there are 57 brick and stone buildings from the Zhou to Northern and Southern Dynasties, 10 wooden structures and 173 brick and stone buildings from the Sui, Tang and Five Dynasties periods, 184 wooden structures and 401 brick and stone buildings from the Song, Liao and Jin Dynasties, and 295 wooden structures and 336 brick and stone buildings from the Yuan Dynasty. The comparison results of the number of buildings (national protected buildings) in each province (autonomous region, municipality) before the Yuan Dynasty are shown in Figure 1. Among them, 1 to 28 represent Shanxi, Henan, Ningxia, Zhejiang, Hebei, Shaanxi, Shandong, Sichuan and Jiangsu respectively. Qinghai, Fujian, Beijing, Jiangxi, Liaoning, Guangdong, Gansu, Anhui, Hubei, Yunnan, Tianjin, Tibet, Hunan, Guangxi, Chongqing, Shanghai, Hainan, Inner Mongolia, Jilin.

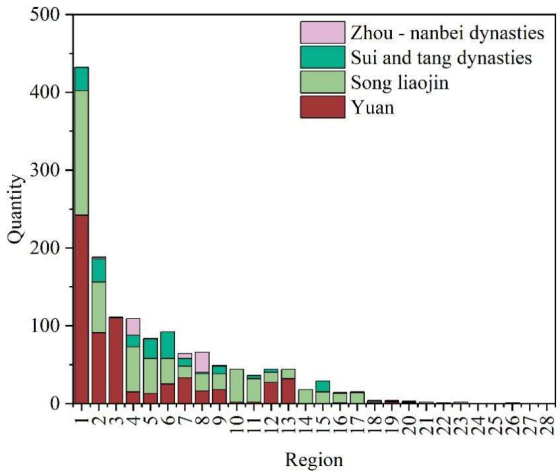


Figure 1: The comparison of the number of buildings (national insurance)

The distribution of the number of different types of pre-Yuan Dynasty buildings (National Heritage) is shown in Figure 2. 1~17 represent towers, temples, water conservancies, altars and temples, bridges, sutra blocks, queens, citadels and fortresses, ancestral halls, postal transportation, mansions, yamen offices, astronomical, pagodas, workshops and factories, pavilions, and tunnels, respectively.

Existing buildings before the Yuan Dynasty, according to the function can be roughly divided into religious buildings, bridges and water conservancy buildings, sacrificial buildings, defensive buildings, residential buildings, monumental buildings and so on. Among them, pagodas, temples, scripture buildings mainly religious buildings have the largest stock, totaling 1,137, accounting for 78.1%.

Bridges and water conservancy buildings that were built early, continue for a long time and have important economic value total 169, accounting for 11.61%. Altar temples, stone queues, ancestral halls and other buildings of a sacrificial nature totaled 107, accounting for 7.35%. There are 15 other defensive citadels and 5 mansions. Overall, the types of existing buildings mainly focus on three major categories: religious, bridge and water conservancy, and sacrificial buildings.

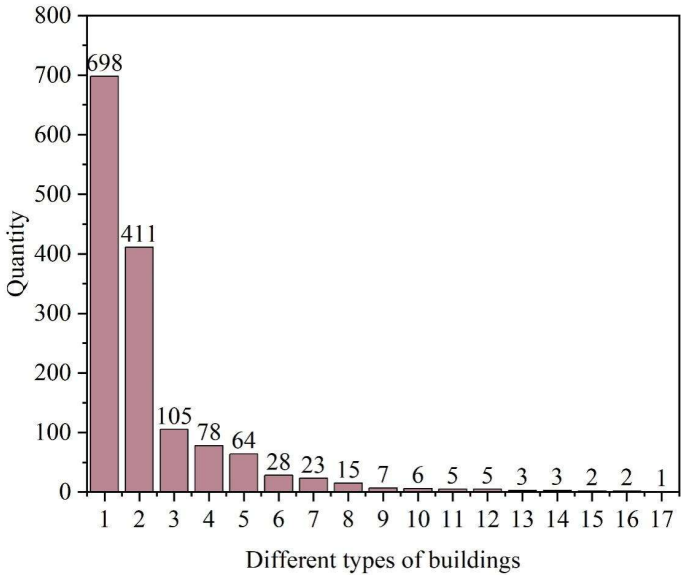


Figure 2: The number of buildings in different types of yuan dynasties

III. C. Structural characteristics and classification of ancient residential buildings

Classical Chinese wooden building according to its characteristics are divided into lifting beams, through the bucket type and dense beams and flat roof type.

(1)Raised Beam Type

Main features: the beams of the raised beam type are laid along the depth, with multiple layers, and the beams of the upper layer are shorter than those of the lower layer. At each layer, pads or short columns are set up to disperse the concentrated force coming from the upper layer of girders. It can also be seen that the girder closest to the roof has a short column supporting the roof purlin to form a three-dimensional triangle with the roof purlin, which is very stable, and the column frame and the layer of girders form a joist. The purlins are set on the adjacent two bays based on the floor girders, which connects each bay along the opening direction. Immediately after that, rafters are set between each two storey beams to keep the frame well stabilized in the opening direction. In this way, the spatial skeleton of an ancient residential building of the raised-beam house is formed. The roof is laid on the space skeleton, and the load on the roof and the self-weight of the roof are transferred from the rafters to the purlins, and then from the purlins to the beams, and then from the beams to the columns, and then from the columns to the foundations; if the columns are set up with paving layer, the load on the beams is transferred from the paving layer to the columns, and then from the columns to the foundations. This is the beam lifting ancient residential building force transfer system.

(2)Through the bucket type

Main Characteristics:The biggest difference between through-door wood construction and raised beam construction is that through-door construction has no beams. So the purlins are erected directly above the columns. Since there is no layer beam to lift the purlins, the columns of the triangular roof vary in height with the height of the roof. Rafters are provided over the purlins as in the raised beam type to increase the stability of the frame in the

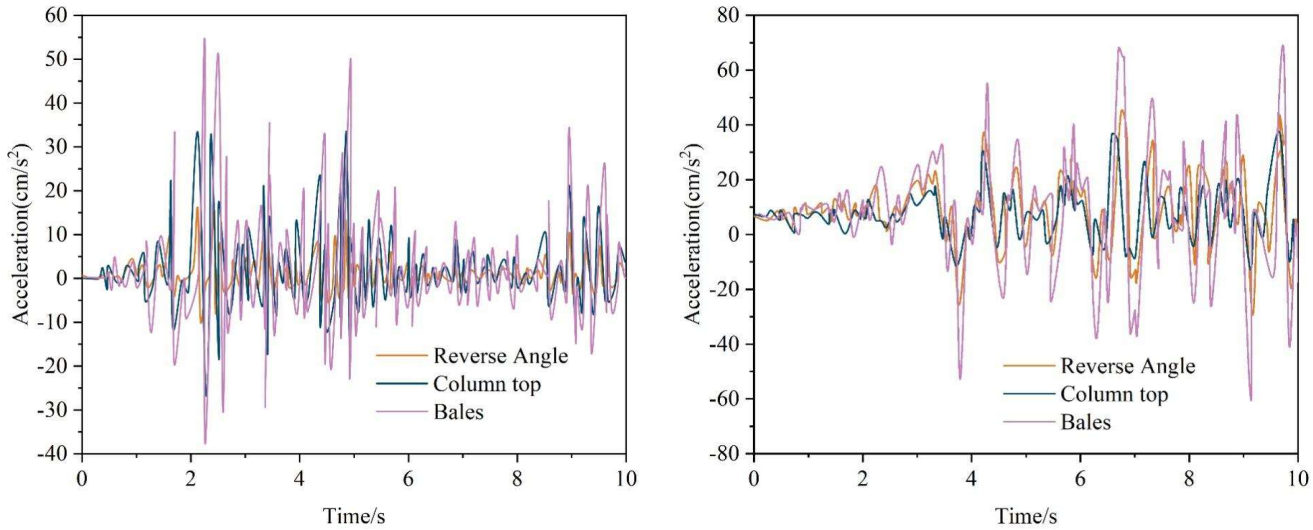
opening direction. In the depth direction, the columns are connected to each other with wooden squares, which penetrate the body of the columns. The columns, purlins and wooden squares together form the column frame. In the opening direction, neighboring column frames are also connected with wooden square, called “Doo Fang”. Increase the wholeness of the direction of the opening. Generally, there is a column under each purlin, which is its initial form. Depending on the size of the house, different structures such as “three purlins, three pillars and one penetration”, “five purlins, five pillars and two penetrations” and “eleven purlins, eleven pillars and five penetrations” can be used. In this way, the spatial skeleton of an ancient residential architecture through-fang house is formed. From the main skeleton, we can see that if the columns are getting more and more dense, then the number of floors will be more and more through the square, dense to a certain extent will affect the rationality of the house space, so in order to solve this problem, the columns from the original each floor to every floor to every other floor, which is very similar to the frame-shear wall structure in the current reinforced concrete structure. Because the slope of the penetrating structure is determined by the height change of the columns, so there is no way to change the roof line of the penetrating structure too much, generally in the end of the roof ridge, using some pads to make the end of the house is slightly warped, and the line is more beautiful.

(3)Dense beam flat roof type

Main features: dense beam flat roof type ancient residential building is one of the three structures inside the structure of the simplest, in the house perimeter masonry brick wall, the internal interval of a certain distance to set a row of columns, in the columns and walls directly on the purlin, purlin on the rafters, so that the formation of a flat-roofed structure of the spatial framework. The roofing on the rafters is also known as flat roofing, so it is also called “flat roofing”. The roof load and self-weight are transferred from the rafters to the purlins, and the purlins are directly transferred to the columns and walls, and then the columns and walls are transferred to the foundation. This is the force transmission system of the ancient house building with dense beam and flat roof.

III. D. Seismic mitigation of ancient residential buildings

Although the seismic performance of ancient Chinese residential buildings is good, the number of them is only a small part of the present-day architectural groups in China, as the treasure of Chinese historical relics, they are rich in historical, cultural and scientific values, and they are irreplaceable. Because the ancient residential buildings basically have very little intersection with people's life, work and study nowadays, and have suffered from the ravages of wind and rain, many wars and earthquakes over a long period of time, and have been damaged to a large extent in terms of timber intactness and structural safety, it is quite important to study and strengthen the many ancient residential buildings. The acceleration time course curves of the rebound point, the top of the column and the gable square under different seismic effects are shown in Fig. 3.



(a) El-Centro wave (b) Taft wave

Figure 3: The time diagram of the acceleration

Research on the effect of paving layer on energy consumption and seismic damping is mainly reflected in the following: by changing the number of layers of the arch out of the jump, the establishment of two kinds of finite element model with different number of layers of the jump and model two, modal analysis and dynamic time course

analysis, comparison of the arch out of the jump with different number of layers of the hall-type structure of the energy consumption and seismic damping performance according to the two kinds of seismic waves under the action of the two models of the acceleration of different parts of the peak values shown in Table 1.

Table 1: The node acceleration peak of the model three nodes

	Seismic wave	The opposite point (cm/s^2)	The top (cm/s^2)	The blight (cm/s^2)
Model 1	El-Centro wave	11.5824	25.2341	38.0527
	Taft wave	22.3421	40.4329	52.4362
Model 2	El-Centro wave	16.0217	32.8143	38.3369
	Taft wave	27.114	42.7319	74.5318

From the figure and table, it can be seen that.

(1) The value of acceleration at the rebound point of the structure under horizontal seismic action is very small, thus better protecting the superstructure system.

(2)Under the action of Taft wave, the acceleration of the top of the column of model 1 is 40.4329cm/s2, and the acceleration of the top of the column of model 2 is 42.7319cm/s2.The acceleration of the gable square of model 1 is 52.4362cm/s2, and the acceleration of the gable square of model 2 is 74.5318cm/s2.It shows that under the action of horizontal earthquake, the more the number of the layers of the arch out of the jump, the better the effect of the anti-seismic.

(3) Under different kinds of seismic loads, the acceleration of the same model is also very different, as can be seen from the power time curve diagram, the moment of the peak structural acceleration is not the same, which may be related to the spectral characteristics of the wave.

(4) The significance of today's architecture, according to the analysis of the ancient residential buildings in the arch of the energy consumption of seismic reduction can be seen, the more the arch jumps out of the structure, the better the flexibility, the stronger the ability to absorb seismic energy, which further verifies that we are in the prevention of earthquakes in the “soft to conquer hard” principle. This further shows that, whether it is the strengthening of ancient residential buildings or the earthquake prevention of today's buildings, under the premise of structural safety, the use of flexible materials in important parts can better achieve the purpose of structural energy dissipation and seismic reduction.

III. E. Analysis of Cultural Symbols of Ancient Residential Architecture

III. E. 1) Analysis of the Meaning of Cultural Symbols of Religious Architecture

The clan temples in ancient Chinese literature are not only a place of communication between gods and believers, but also a carrier of religious culture, showing the connotation and spiritual pursuit of Chinese religious culture. Based on the western standpoint and western language, he analyzes the religious symbolism carried by the architecture of zongtemple halls by showing the spatial layout and decorative details of zongtemple buildings. Considering that the external and internal decorations of the ancestral temple halls are often related to deities, immortals and historical stories, and that the layout of the halls has relevance to Chinese philosophical and religious thoughts, the religious symbolism carried by Chinese ancestral temple architecture is felt, i.e., the harmonious relationship between man and nature. The harmonious relationship between man and nature and man's dependence on nature is expressed as an esoteric religious thought in the architecture of the ancestral temple. The Chinese have their own set of mythological systems, and the concepts and ideas of this natural religion “are most fully expressed in the rituals of the emperor, such as sacrifices to the sun, the moon, the stars, the earth and agriculture”. This dialectical unity of philosophical and religious views of the Trinity is reflected in the typical symmetry of ancient Chinese residential architecture and the central axis of the architectural complex, and the mythological and historical themes in the architectural decorations and the carvings of the gods and auspicious symbols further enhance the religious and cultural colors of the architecture of the clan temples and classical Chinese philosophical ideas.

III. E. 2) Functional Evolution and Cultural Analysis of Ancestral Hall Buildings

In ancient China, ancestor worship was one of the centers of traditional Chinese culture, represented in literature by ancestral halls, which played an important pillar role in this segment as places of worship. Inside the ancestral halls, tablets or idols of ancestors, heroes, etc. were enshrined, and family members would hold regular ceremonies to show their respect and prayers for their ancestors. However, as China was in the midst of a tumultuous era, the concept of traditional rituals gradually faded and new cultural concepts continued to spread. As a result, the space that originally belonged to the ancestral hall was squeezed and the function of the ancestral hall evolved. Therefore,

Ernst Bergschmidt focused his attention and research on the evolution of the function of the ancestral hall in Chinese clan temple architecture. The changes in the function of the ancestral hall in different historical periods and social contexts are a manifestation of the changing relationship between religious beliefs and social changes in China, and the evolution of this function is closely related to the family system and feudal rites in ancient Chinese society.

III. E. 3) Analysis of the artistic elements of pavilion architecture

Pavilion and pavilion architecture is an architectural form with quite a Chinese style, which is very much in line with traditional Chinese ideology. In his literary works, he pays more attention to the basic structure and stylistic features of pavilions, and he also conducts a systematic study of various pavilions in different regions with very different shapes, structures and functions. This includes an overall comparative study of pavilions in different regions and periods, as well as a study of the style characteristics and evolution trends of pavilions. In addition, the detailed decorations and carvings of pavilions often depend on the purpose of use, and he believes that most of the decorations and carvings of pavilions are related to local history, culture and religious beliefs, and have unique artistic value and cultural significance.

III. E. 4) Cultural Analysis of Shape Characteristics of Architectural Decoration Patterns

Architectural decorative pattern is one of the common decorative elements in traditional Chinese architecture, which has rich artistic value and cultural significance. During the study of Chinese literature, in addition to the architectural research, the research methods of other disciplines, such as sociology and religion, were fully utilized to analyze the Chinese customs from the architectural decorative patterns. He learned about the spiritual qualities of Chinese people in different regions, with a strong humanistic concern. In the study of pattern connotation, he cuts in from the common decorative patterns in different buildings, such as flowers, animals and figures, and analyzes the origin and meaning of these patterns, pointing out that the architectural decorative patterns are often influenced by the local natural environment, history and culture, and religious beliefs, and reflect people's knowledge and understanding of nature, life and the universe. In ancient Chinese residential architecture, the design of any part of the building was the result of careful arrangement. In his research, Ernst Bergschmidt discovered the cultural connotations of decorative pattern modeling in ancient Chinese residential architecture. This also fits in with the focus of the study of ancient Chinese residential architecture. Through the study, it helps us to see a different ancient Chinese residential architecture from the perspective of architectural culturology.

IV. Conclusion

Through the systematic analysis of ancient residential buildings before the Yuan Dynasty, it is found that the existing building types are mainly concentrated in three major categories: a total of 1,137 religious buildings, mainly pagodas, temples, and scripture buildings; 169 bridges and water conservancy buildings; and 107 sacrificial buildings, such as altar temples, stone queens, and ancestral halls. The structural features of the buildings show diversified characteristics. The lifting beam structure disperses the load through the layer beams, which has good stability; the piercing bucket structure takes the column frame as the main body, which strengthens the unity of the building; and the dense beam flat-roofed structure is simple and practical, which adapts to the architectural needs of different regions. The seismic performance study shows that the number of layers of the arch has a significant effect on the seismic effect of the building, and the acceleration at the top of the column in Model 1 is 40.4329 square centimeters per second, which is significantly better than that in Model 2, which is 42.7319 square centimeters per second, which verifies the principle of seismic resistance of “softness over rigidity”. At the level of cultural symbols, ancient residential buildings carried rich spiritual connotations, religious buildings embodied the philosophical idea of the harmony and unity between human beings and nature, ancestral halls reflected the social characteristics of the family system and feudal rites, pavilions demonstrated the diversity of regional cultures, and decorative motifs embodied the cognitive understanding of people's knowledge and understanding of nature, life and the universe. These findings provide an important theoretical basis and practical reference for the protection and inheritance of Chinese outstanding traditional architectural culture, as well as for guiding contemporary architectural design practice.

References

[1] Fu, J., Zhou, J., & Deng, Y. (2021). Heritage values of ancient vernacular residences in traditional villages in Western Hunan, China: Spatial patterns and influencing factors. Building and Environment, 188, 107473.

[2] Zhang, D. (2015). Classical courtyard houses of Beijing: architecture as cultural artifact. Space and Communication, 1(1), 47-68.

[3] Huang, B. X., Chiou, S. C., & Li, W. Y. (2019). Study on courtyard residence and cultural sustainability: Reading Chinese traditional Siheyuan through Space Syntax. Sustainability, 11(6), 1582.

[4] Huang, X., Xu, H., Xie, N., Xu, M., & Zhao, J. (2021, February). Analysis of spatial structure and living culture of patio and courtyard dwellings in southern Hubei from the perspective of “cultural ecology”--taking Ruijin Chuanfang ancient residence as an example. In IOP Conference Series: Earth and Environmental Science (Vol. 675, No. 1, p. 012020). IOP Publishing.
[5] Ivashko, Y., Kuśnierz-Krupa, D., & Chang, P. (2020). History of origin and development, compositional and morphological features of park pavilions in Ancient China. Landscape architecture. Scientific Journal of Latvia University of Agriculture, 15(15), 78-85.
[6] Tong, L. P., & Chen, Z. Y. (2012). Ancient energy-saving housing-earth-dwelling cave residences. Advanced materials research, 347, 4104-4108.
[7] Wang, G., Cui, X., Song, W., & Hao, Y. (2025). Spatial Climate Adaptation Characteristics and Optimization Strategies of Traditional Residential Courtyards in Cold Locations: A Case Study of Xiaoyi Ancient City in Shanxi Province, China. Buildings, 15(10), 1659.
[8] Shu, C. X., Cantisani, E., Fratini, F., Rasmussen, K. L., Rovero, L., Stipo, G., & Vettori, S. (2017). China’s brick history and conservation: laboratory results of Shanghai samples from 19th to 20th century. Construction and Building Materials, 151, 789-800.
[9] Yang, X., Li, C., Wang, L., Yang, C., Zhang, S., Gao, J., & Qiu, J. (2024). The Characteristics of Ancient Residence Wood from the Qing Dynasty in Yunnan Province. Coatings, 14(2), 200.
[10] Wang, Y. (2024). Translating Four-Character Structures in Chinese Literary Works on Traditional Architecture—A Case Analysis of Canal Towns South of the Yangtze and Folk Houses South of the Yangtze. Theory & Practice in Language Studies (TPLS), 14(10).
[11] Tan, T. Y., & Hui, M. T. T. (2023). Introduction: Conceptualising Chinese Court literary cultures. Nanyang Journal of Chinese Literature and Culture, 2023(4).
[12] Shen, F., & Xiao, J. (2025). HISTORY OF CHINESE ARCHITECTURE. PALGRAVE MACMILLAN.
[13] Ding Grace K C,Ge Janet X & Phillips Peter. (2011). Cradle-to-Gate Analysis of Materials Used in Historic and Modern Housing in China. Advanced Materials Research,374-377(374-377),2029-2036.