

Analysis and Research on Traditional Residential Architecture of Jiangxi

Lin Wang¹, and Juan Guo^{1,*}

¹College of art and design, Wuhan University of technology, Wuhan, 430000, China

²College of Art, Jiangxi University of Finance and Economics, Nanchang 330029, China

^{1*}Xiamen University Tan Kah Kee College, Zhangzhou 363105, China

^{2*}College of art and design, Wuhan University of technology, Wuhan, 430000, China

Abstract. [Objective] Through in-depth study of traditional Gan residential buildings, it is found that in China's traditional culture, nature is more important than architecture. Many people believe that architecture is like a man-made natural object, which can make people return to a feeling of living in nature, and is also a state of ideal life for many residents in China. **[Methods]** By using the analysis method, it is found that the traditional residential building structure of Ganpai is a bucket structure. The basic unit is the 'enter' relationship, which combines the 'enter' relationship, the adjustment of column spacing and the reduction of column to form the '+ -' relationship. Through this way, a unique architectural group layout can be formed. **[Conclusion]** Therefore, we should fully combine traditional materials with modern information means to improve our traditional technology, so as to keep pace with the times, keep pace with the times and keep pace with the times.

1 Introduction

There are currently three traditional houses in Jiangxi Province of China. 1. Wuyuan residence formed under the influence of Huizhou culture. 2. Central residential houses such as Fuzhou, Yingtan, Jinxian, jian and Nanchang formed under the influence of central culture. 3. Hakka culture formed under the influence of Ganzhou residential. There are few researches on Gan-style dwellings at home and abroad, and there is no perfect research system and design thinking. This paper will focus on the analysis of Gan-style traditional dwellings in central Jiangxi. Therefore, it is necessary to study the reconstruction significance of traditional Gan residential buildings. Today, architecture needs to learn from tradition again. Because architecture is more like a man-made natural object, most countries such as China and the West are very focused on ecological architecture, which is the most common problem between eastern and western ideology. In today's architectural process in our country, people still need to learn more ecological architectural concepts and structures from the countryside, and promote a highly integrated lifestyle between man and nature. This issue is particularly urgent and important.

2 Characteristics of Gan residential buildings

The Ganfu Plain and Jitai Basin in Jiangxi Province have been the hometown of rice and fish since ancient times.

This strong economic foundation has promoted the rise of Jiangyou culture in the Tang and Song Dynasties. The cause of humanistic imperial examination and the Jiangyou business group have also developed rapidly, which directly promoted the economic and cultural development of Jiangxi Province and directly promoted the construction of Gan School, which is also known as Jiangyou Architecture. It is mainly distributed throughout Jiangxi Province, Liuyang area of Hunan Province, Xianning area of Hubei Province, Lu'an area of Anhui Province and Sanming area of Fujian Province. Gan-style architecture is the representative of Jiangxi folk houses, with simple layout, simple and elegant, which is the main feature of Gan-style folk houses.

2.1. External characteristics of Gan residential buildings

Gan ancient residential buildings from top view is a "Back" type. Rooms surrounding the courtyard are generally rectangular in plane, combined with "inlet" - shaped units in horizontal and vertical directions, forming a highly complex and broad building group. The main building is tall and regular, but the ancillary rooms vary in height and size. Some places are irregular and surrounded on both sides of the main building. In this way, the shape changes of houses are enriched from the outside. The roof truss is high, about six meters, which is a feature of Gan-style architecture. The density of alleys in the residential area is very high, and many alleys are connected by side doors. If there is an emergency, they

* Corresponding author: juan8991@126.com

can quickly escape, which makes the function of Gan-style buildings greatly improved.

2.2. Internal characteristics of Gan residential buildings

Basic unit "into", the layout of the building is mostly two into three rooms, one room and one hall, three rooms are wide, the lobby and the second bedroom are symmetrical arrangement. Wood frame is inclined beam type and varies according to different uses. The front eaves are often made of beautifully varying brownstones. The bedroom is 1.5 stories high, the lower is used for living, and the upper is used for storage. The hall is large, spacious, without steps, very elegant. The internal floor is laid horizontally by long strip bricks. The shrine is above the side door on both sides of the hall wall. There is a narrow courtyard courtyard in front of the courtyard, not only for lighting and ventilation, but also has the meaning of four waters back to the church, unintentionally make people combined with heaven, showing the 'unity of heaven and man' situation.^[1]

2.3. Structural characteristics of Gan residential buildings

Gan ancient residential buildings are basically supported by wooden structures. The eaves are supported obliquely without bucket arch. The lower edge of the shaped roof is the direct eaves, and the front eaves line is arranged and depressed in a word. The exterior walls of buildings in "Into" an area are mostly sleepy bricks, Nanchang and Fuzhou are mostly single-dot sleepy bricks, and the lower part of the wall is mostly hemp stone and lime tile. The building of the structure is half-high and surrounded by brick walls. There is often a hidden double-slope roof behind the overlapping horsehead wall^[2-3]. On both sides of the horsehead wall is generally not as early as Hui-style building closure, upwarping high, stepped, arch or cloudy, do fire, wind, theft. The brick or soil external walls only play a protective role. Most of the ancient houses of Gan School left now are of Qing Dynasty style, and only a few have joined the beam lifting structure because of the need to reduce the number of columns or change the space. Therefore, many houses exterior walls collapsed, while the wooden structure is intact.

2.4. The Fengshui characteristics of Gan residential buildings

The great wealth of Jiangxi businessmen and the officials of the imperial examination returned to their hometown in Yijin, which naturally resulted in the purchase of farmland and the establishment of real estate. In that era, the establishment of real estate was much more important than the purchase of farmland, because it was related to the prosperity of future generations and the main family. In the Gan earth, Jitai basin, choose a superior treasure, open the door to close the land, the water mouth is clean, this is the layout of

each village must be considered first. In addition to the site selection, orientation and form of the building should be in line with the geomantic concept, Gan-style architectural villages generally place ancestral halls and theatres in the geographical center of the village. Jiangxi is the birthplace of the situation school fengshui culture, in the village planning, Gan school residential buildings affected by the situation school fengshui culture, open doors, closed doors, Shuikou building layout,^[4] the surrounding trees, lakes, rivers, mountains are also regarded as elements of fengshui. Not only the choice of geomancy, but also keen to build ancient towers, bridges, digging rivers, ponds and other ways to create auspicious meaning, forming a 'harmony between man and nature' and the environment into one geomancy.

3 Research Methods and Analysis

Through the analysis, it is found that the traditional residential building structure of Gan School is a bucket structure. The basic unit is the 'enter' relationship, which combines the 'enter' relationship, the adjustment of column spacing and the reduction of column to form the '+ -' relationship. Through this way, a unique architectural group layout can be formed. The wall bricks are used together with sleeping bricks and single bucket bricks, resulting in rich mechanism effects on the wall surface. Keep a font shape of horsehead walls on both sides of the building. The lower end of the roof is directly eaves, the front eaves line has a type and concave type. The lower part of the wall is carved with modern hemp and relief. Solve the traditional Gan residential stone carving and brick carving decoration 'head heavy foot light' problem. Their seams are carefully calculated to ensure that no wild grass grows in the seams. The ground is paved with stone, not cement. Maintain scenery purity and natural purity.^[5] History and modern knowledge reconstruct each other and fit each other to dig the historical connotation of Gan-style residential buildings.

The relationship between 'column spacing and + -', the most critical technology of ancient architecture, is developed from the mathematical relationship between plane, elevation and profile and the combination relationship between group space^[6]. In-situ materials, the use of old things, retain the horsehead wall of a font shape and roof under the eaves and front eaves of a font and concave type. The combination of stone carving in central Jiangxi and brick carving decoration in southern Jiangxi is used in the 'high' and 'low' of buildings to explore the new vitality of traditional architectural culture in contemporary architectural design. Reflect the charm of tradition, protect the inner peace, to retain an inch of land for traditional cultural buildings in the city of Cheshui Malong, a complete draw on the Chinese traditional architectural culture thousands of years of historical accumulation. (See Fig. 1 – Fig. 5 and Table1)



Fig. 1 Relationship between ' Jin ' and Gan traditional residences



Fig. 4 The brick and stone effect of traditional houses of Gan School



Fig.2 Relationship between ' Column Distance and + - ' of Gan Style Traditional Dwellings



Fig. 5 Piercing bucket structure of Gan traditional residence

Table 1. Basic Survey of the Main Structures of Gan Traditional Dwellings

Founding time	ming dynasty		dynasty	remark
Building storey	One layer to two layers		Depending on function	remark
Structural style	Bucket-through structure		usual structure form	remark
Architectu ral pattern	Three in three		Depending on function	remark
Building use	Folk house		Depending on function	remark
Building material quantity	beams	wearfang	wall	dist'Column ance and + - ' relationship.
	23	12	3	



Fig. 3 Horsehead Wall of Gan Traditional Dwellings

4 Conclusion

I think we have to think calmly about what we need now ? A ' mountain - water - city - residence ' system ecological relationship should be established. While absorbing and mastering the knowledge of modern architecture, the starting point of design thinking will return to Chinese tradition. The use of ancient Chinese Yin and Yang five elements such as the theory of ' according to the mountains to build houses, near the water village ' concept. The local residential buildings are improved and optimized in theory and design. The construction is planned according to the network from the plane layout, and the surrounding natural environment is also constructed around the network. Do a step not chaotic, one not fall, a lot [8]. Obviously, the living environment has a subtle influence on the relationship between people. Although the development of residential buildings from open type to closed type is

the development trend, it should also open up public activity space or semi-open space for residents while developing closed residence⁹. To promote the healthy development of interpersonal communication and interpersonal relationship. Is to solve today 's China 's modern residential building 'the sound of dogs hear each other, old death does not exchange ' ecological problems. From a higher perspective, it reflects the traditional concept of the combination of yin and yang, and the combination of rigidity and softness, which is also the basis of different local cultures. Design is not always about imagination, but about observing and exploring the details of life. As a unique relationship model, it has the meaning of ' harmonious order '. As a unique institutional embodiment, it has the meaning of "thoroughness and stability". As a unique spiritual expression, it has the meaning of ' introspection humility, ' ' sincerity and simplicity ' and ' elegance '. One of the important reasons for challenging and disintegrating traditional design thinking and establishing a continuous and systematic cognitive model rooted in the current Chinese architecture discipline is that traditional forms can meet the needs of people 's lives today. Of course, if it is not used, even if it pays attention to tradition in form, tradition will still die out in the future, so we have no future. We must apply traditional crafts in traditional materials and modern architectural groups through various ways, which is not only a challenge in the development of China 's current architectural history, but also an important problem in the transformation of global architecture. The craftsmen master the traditional craft, is a kind of life craft, is carries on the examination and the diagnosis to the present construction practice condition and its correlation thought and the value orientation, thus leads the future design road. Make it to the extreme so as to obtain wide recognition from the international architectural community.

Acknowledgments

The work of this paper is sponsored by 2018 Jiangxi Jiangxi Province art science planning research project "Wangkou ancient village Vernacular Settlement architectural art research" (Project No.: 2018261)

The work of this paper is sponsored by Young and Middle-aged Teacher Education Research Project of Fujian Education Department (Project No.: JAT200917)

References

1. Li Mingzhong. ancient villages and dwellings in Jiangxi Province [M]. Jiangxi People's Publishing House. 2006. 24-67.
2. Wang Shu. The Narration and Geometry of Natural Appearance. Notes on the Design of Ningbo Historical Museum [J]. *Time + Architecture*. 2009 (03) 68-32.
3. Peng Yigang. Analysis of Traditional Chinese Garden [M]. China Architecture & Building Press. 1986.1-2.

4. Wang Shu. WE ARE IN NEED OF REENTERING A NATURAL PHILOSOPHY [J]. *World Architecture*. 2012 (05) 20-21.
5. Wang Shu, Lu Wenyu. Poetics of Construction with Recycled Materials, A World Resembling the Nature [J]. *Time + Architecture*. 2012 (02) 66-69.
6. Wang Shu. Inquiring the Hills from Beyond the Bank, An Aggregation of Diversified Architectural Typology [J]. *Architectural Journal*.2014 (01) 43-47.
7. Kong Yuhang, Xin shanchao., Zhang Nan. Transformation and Reconstruction: The Application of Traditional Wisdom in Architectural Design[J]. *Architectural Journal*. 2020 (01) 23-29.
8. Wang Lin. Study on the Local Settlement of Wangkou Ancient Village[J]. *Chinese & Overseas Architecture*. 2020 (06) 53-55.
9. Bai Yunxiang. A Brief History of Civilian Residential Housing in China [M]. Social Sciences Academic Press. 2011 (07) 1866.
10. Sun Deming. Chinese Tadtional Culture and Contemporary Design [M]. Social Sciences Academic Press. 2015 (9) 3486.