

Analysis on the Spatial Form of Traditional Kiln Houses in Hongjiang Ancient Commercial City in Xiangxi

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Abstract: The ancient commercial city in Hongjiang, Huaihua has a long history and a strong national cultural atmosphere. It is famous for collecting and dispersing Hong oil, wood, and white vinegar. It has the reputation of "Little Nanjing" and "Southwest Metropolis". As an important part of Hongjiang's ancient architecture, the kiln house building carries the regional culture of the ancient commercial city. This article focuses on the main body of the kiln house, and analyzes the characteristics of the scale, form, material, etc. through the spatial form of the streets and lanes of the building, the appearance form of the building, the building structure and the detailed decoration characteristics. The kiln house constructs the unique style of the architecture in Xiangxi, combining practical functions with artistic aesthetics. This article focuses on the research of the kiln house, aiming to provide some reference for the future research and protection of traditional ancient villages.

Keywords: Hongjiang ancient commercial city, kiln house, spatial form, architectural decoration

1. Overview of the ancient commercial city

Hongjiang ancient commercial city is located in Huaihua City, Hunan Province, at the junction of southXiangxi Province, Guizhou Province and Chongqing City, and is located in the Xuefeng Mountain area in the east of the Yunnan-Guizhou Plateau. According to historical records, the ancient city covers an area of approximately 300,000 square kilometers, bordering Qianyang County in the east and Huitong County in the south. It is located in the area with abundant rainfall and developed water system. And it is located at the junction of Yuan River and Wu River. It has convenient water transportation, wide river surface, excellent docks, and convenient material distribution and transportation. It is an important node of the traditional urban spatial system in Xiangxi.^[1] The commercial development of Hongjiang ancient commercial city originated in the country fairs in the Tang Dynasty and was in its heyday during the late Ming and early Qing dynasties. According to *Hongjiang City Chronicles*, during the Xianfeng period of the Qing Dynasty, among the 37,600 population of Hongjiang ancient commercial city, there were 15,000 business people, which shows the flourishing of commerce. Hongjiang ancient commercial city has developed into a commercial city with "merchants gathering, goods and wealth converging, tens of thousands of houses densely arranged, and merchant ships gathering". (Figure 1)

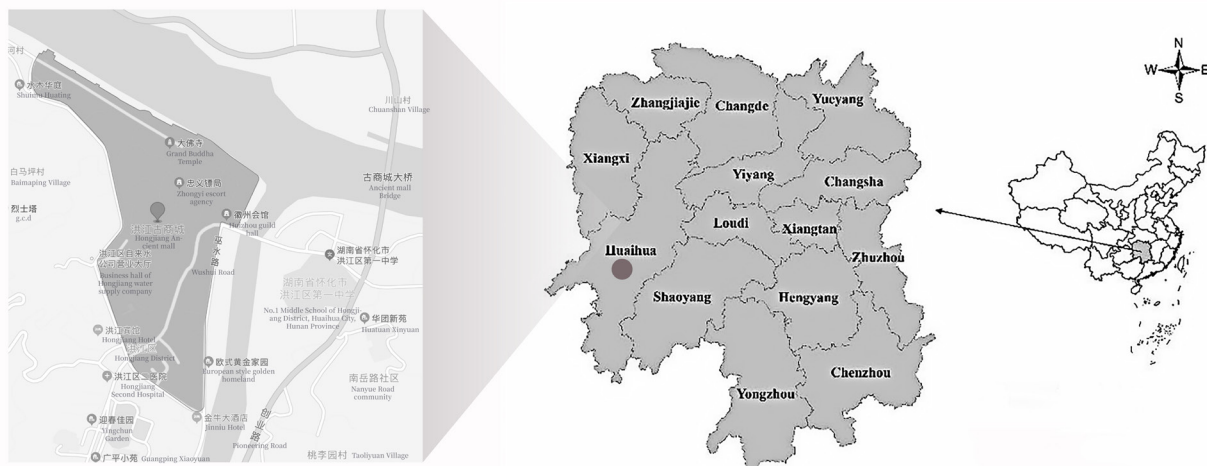


Figure 1. Location map of Hongjiang ancient commercial city (from the author)

Under the influence of commercial development, the population of Jiangxi, Anhui and other places moved in and merged with the local ethnic minorities to form a unique architectural form — the kiln house. Today, Hongjiang still retains nearly 2km² of the ancient city texture, with more than 380 Ming and Qing ancient buildings mainly in the form of kiln houses, including commercial houses, escorts, newspaper offices, workshops, and residential houses.^[2] (Figure 2) Kiln houses and wood-paneled buildings are the two kinds of most common residential forms. Affected by the hilly terrain and climate, they present the overall characteristics of compact planes, closed and towering exterior walls, and open internal spaces. They are unique in local practices such as dry and wet patio, roof sun terrace, architectural decoration and so on.



Figure 2. Distribution map of kiln houses in the ancient city (from the author)

2. The spatial form of streets and lanes composed of kiln houses

The ancient commercial city has a long history of development. The economic level of each period is different, and the planning programs and policies are also different. This has led to differences in the shape of the kiln houses, and in the streets and lanes they constitute, with a large gap in the ratio of width to height. In the early days, the economic development of the ancient commercial city was relatively lagging, and the kiln houses on both sides of the streets and lanes were relatively small in scale, mostly with two floors. Therefore, the aspect ratio of the streets and lanes is about 0.9, giving people a more comfortable spatial scale. With the development of the economy, a commercial center appeared in the ancient commercial city. The kiln houses built by the wealthy merchants were larger in shape, and the aspect ratio between the towering walls and the street space was about 0.4, which lengthened the depth of the streets and gave people a sense of deep tranquility. On the contrary, people's viewing angles transferred to the architectural decoration on both sides. (Picture 3 and Picture 4)

Affected by the unique local mountainous terrain, national culture and aesthetic concepts, the kiln houses were built in different locations according to local conditions. The streets and lanes meander along with the houses, and the spaces of large and small streets are closely intertwined. Some streets and lanes are built along the way to enhance the interestingness of the streets and lanes; some streets and lanes adopt a broken line method to increase the sense of hierarchy of the space; some are perpendicular to the contour lines, forming a stepped space with different heights; some are parallel to the contour line, and give people a slow and open feeling of space. The kiln houses take the mountain as the skeleton and water as the bloodline. They are laid out in accordance with the Eight Diagrams of Yin and Yang, scattered among the “seven steep streets, eight streets and nine lanes”. (Picture 5 and Picture 6)

Each street is paved with bluestone slabs, and the texture of the street and the buildings on both sides is consistent, rough and simple. The stone slabs in the streets are carved with bronze coins. The square and round image of the bronze coin coincides with the ancient merchants' way of doing business, and it is consistent with the ancient pursuit of "the integration of wealth and discipline". During the rainy season, the area where the Hongjiang ancient commercial city is located has abundant rainfall. Excessive rainwater flows into the drainage channel from the surface along the hollow of the ancient coin, and finally drains into Yuan River and Wu River. This reflects the perfect combination of practicality and beauty of the streets.



Figure 3. Entrance of Hongjiang ancient commercial city (from the author)



Figure 4. The dwellings in the ancient city (from the author)



Figure 5. Gentle street space (from the author)



Figure 6. Undulating street space (from the author)

3. The external space form of the kiln house building

The most important and common wall structure of the kiln house is the brick wall structure. This kind of kiln house uses blue bricks as the material for building gables, with a relatively stable structure, a towering and stable shape, and strong safety performance. There are still many buildings with complete lime mortar walls. The overall color of the wall is fresh and elegant, but it is also rough and bold. The horse head wall is also widely used on the fire wall, and its design is relatively light. In addition to brick walls, the kiln house also has wooden boards, adobes, and stone walls. The splicing of the wooden boards has two forms, vertical and horizontal, and is painted with unique tung oil, retaining the original and simple cultural atmosphere. The partitions composed of wooden boards can often be flexibly disassembled and assembled to increase or decrease the space, and are used for storage or rental. Due to the poor moisture resistance of the material, the bottom of the adobe wall is made of masonry, lime mortar is painted on the outside, and bamboo grass is used as an enclosure. The base stone wall is masonry made of pebbles, flakes, and block stones, and the wall stone has been processed to a certain extent, showing a rich texture effect. ^[3] (Figure 7 and Figure 8)



Figure 7. The pharmacy in the ancient city (from the author)



Figure 8. Multi-floor dwelling (from the author)



Figure 9. The entry of the former residence of Gao (from the author)



Figure 10. The door cover for entry (from the author)

The entrance space is an important transitional space between the interior and exterior of the kiln house, and adopts the eight-shaped entrance of the traditional houses in Xiangxi. As the image of the entrance space, the characters of “eight” break the tightness and boring feeling of the long and narrow street space. In addition, in terms of practicality, the recessed space facilitates the loading and unloading and transfer of commercial materials, which is very convenient and caters to people’s psychological needs for the entrance space. Almost all entrances are equipped with door covers. Most of the door covers are made of wooden structure, and the shape and structure are relatively simple. The complicated carved details are removed, but there is a simple atmosphere, adding a bit of book fragrance to the monotonous space, and the facade is more rhythmic. (Figure 9 and Figure 10)

In the kiln house in the ancient city, the part beyond the facade of the building must be a roof terrace. The combination of the space of the roof terrace is more random, with two, three or four empty walls. The top surface is covered with plates or tiles, and the supporting pillars extend out of the roof, so there is less handling of handover with the roof. The main functions of the roof terrace: drying grains and clothing, enjoying the heat in summer, and warning of enemy conditions.^[4] The roof terrace highlights the ups and downs of agility, and forms a virtual and real contrast with the fire wall, forming the distinctive architectural features of the kiln house. (Figure 11 and Figure 12)

The roof has various forms, and the upturned roof and the tough ridge make the appearance of the building more majestic. The slope of the roof is divided into long and short. The short side faces inward and the long side faces outward. It has a strong centripetality, and the surrounding slopes are inclined to the middle, converging in the square patio in the middle. Based on the topography, the roof visually presents a varied skyline outline, and the generated rhythm is organically combined with the natural ecology. (Figure 13 and Figure 14)



Figure 11. The roof terrace No. 1 (from the author)



Figure 12. The roof terrace No. 2 (from the author)



Figure 13. The roof of dwellings No. 1 (from the author)



Figure 14. The roof of dwellings No. 2 (from the author)

4. The internal structure and decorative art of the kiln house

Taking the central courtyard as the core of the courtyard is one of the characteristics of traditional Chinese ancient architecture. The patios of the ancient city kiln house are mainly divided into four categories: entrance patios, movable patios, functional patios, and spiritual patios. If the form of the patio is different, the spatial scale will change accordingly, and the function of the courtyard will also change. The entrance patio connects the indoor and outdoor spaces and plays a role in transportation; as the core space, the movable patio belongs to the indoor activity place; the functional patio belongs to the living area of the dwellings, with toilets, kitchens, utility rooms, etc.; spirituality The patio has functions such as sacrifices and entertainment. ^[5] (Figure 15 and Figure 16)

The doors of the kiln house are divided into three types: solid doors, frame doors and grille doors. The solid door is made of polished wooden boards, and a keel is installed behind the door, which is firm and practical, and has a good defense effect. It is used in the gate of commercial houses and houses. Compared with the real door, the frame door has a simple diamond or square carving. The grille doors are often used in the interior halls of kiln houses, and the number of doors is divided into four, six, and eight. (Figure 17 and Figure 18)

The windows have a variety of forms such as straight, flat, and flower windows. Straight corrugated windows are used on the outside of buildings, with simple structure, low cost, sturdiness, time and labor saving, and wide application. The casement window is more detailed and can be rotated around the axis, and the pattern composition principle is the same as that of the flower window. The flower window form of the kiln house is one of the most important forms. It adopts a large area of hollow and slender window frame treatment, combined with plain weave, ice crack, twill and so on. There are also engraving patterns. The themes of the patterns are mainly divine beasts, but there are also themes showing the work of the

residents and folk myths. ^[6] (Figure 19 and Figure 20)

The beams, columns, railings, etc. are constructed on a practical basis and incorporate decorative techniques. The surface is carved with patterns and finished with paint. There are two types of decorative patterns. One is plant themes, such as lotus and curly grass, which are generally located on both sides; the other is animal themes, such as tigers, lions, unicorns, etc., located in the middle, with strong ornamental properties. This reflects the aesthetic pursuit of people at that time. ^[7]



Figure 15. The courtyard of dwellings No. 1 (from the author)



Figure 16. The courtyard of dwellings No. 2 (from the author)



Figure 17. The gate of the old-style Chinese private bank (from the author)



Figure 18. The gate of a dwelling (from the author)



Figure 19. The windows of a dwelling No. 1 (from the author)



Figure 20. The windows of a dwelling No. 2 (from the author)

5. The problems the ancient commercial city is facing

The cultural relics of the Hongjiang ancient commercial city have been highly valued by the local government and cultural relics departments, and the ancient architectural community is relatively intact. However, many problems have also appeared in the process of long-term tourism development. Due to uneven forces on the walls and other places of the house, obvious depressions and highlights have appeared; even larger cracks have appeared in some places; the foundation stone of the wall has been weathered and corroded all the year round. What's more serious is that in the wooden kiln houses, many wooden frame structures are severely damaged and crumbling; the decorative carvings on the gates of most courtyards have fallen off, and the milk nails of the iron gates are rusty, which has faded the former gorgeous scene.^[8] The main indoor structure is relatively stable, but the wooden doors and windows have deteriorated to varying degrees, the walls and patios have been deformed, and the decorative materials have fallen off. In response to the problems that arise, it is necessary to formulate corresponding protection mechanisms based on the layout of the streets and lanes of the ancient shopping mall and the actual situation of the ancient buildings. Focus on the protection planning of ancient buildings, and implement different levels of protection measures and strengths according to the differences of different levels and preservation conditions to more accurately solve the current problems. Summarize and count the ancient buildings, carry out anticipatory protection planning, and specify the phased model, so that the buildings of the Hongjiang ancient commercial city can be efficiently and accurately protected and updated.

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