

Form function and key elements of Fujian Tulou ——A Case Study of Nanjing Tulou

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ABSTRACT: Tulou, the earthen building, is the world cultural heritage. It is famous for its various shapes and structures. However, opinions are different about its concept and classification. Tulou in Nanjing of Fujian Province will be divided into three types in the thesis, that is, round, square and deviant forms, according to the study of architectural forms, functional layout and elements of the construction.

INTRODUCTION

Tulou, the earthen building, has been in the list of the world cultural heritage. However, people from different areas and academic fields didn't reach an agreement on its concept, let alone media reports. Some regarded the buildings made of rammed-earth wall as Tulou; some insisted that Hakka earthen building was equal to Fujian Tulou, while some even believed that Tulou was constructed by the Hakka people. However, none is the exactly right one. Professor Huang Hanmin pointed out that Tulou should be one of the categories of Fujian Tulou, referring to those storied houses distributed in the western and southern areas of Fujian province and the northeastern areas of Guangdong province, which are of the defensive functions owing to the rammed-earth wall and wooden beam column, and the living areas there are set along the periphery to accommodate large families.

CLASSIFICATION AND FUNCTIONAL LAYOUT OF TULOU

Tulou can be divided into round, square (including mansion-style) and deviant forms according to its floor plan, while it can be divided into unit-typed buildings, gallery apartment buildings and special forms.

The round, square and deviant forms feature the same kinds of functional layout: the first floor set as kitchen, the second floor storerooms, and the third floor bedrooms. And windows at the first and second floors are always closed for defense. Only a few are left open. (Figure 1)



Figure 1 Huairen Building, Meilin Village, Meilin Town

ARCHITECTURAL FORMS AND CONSTRUCTION ELEMENTS OF TULOU

Round Tulou

The round shape of Tulou are featured with large-scale round shape, closed-off outside, wide-open inside, good sharing, and always with a large family living together. The round shape is the most common and eye-catching type in Fujian Tulou. There are always 2-4 stairways in each round building, set on both sides of the ancestral hall and the entrance door. At the early stage, only the peripheral wall and staircase of the round buildings were made and supported by rammed-earth

wall, while the rooms were supported by pillars. In that case, the beams were centripetally scattered. Each room was supported by 4-6 beams, while the ancestral hall and entrance door were supported by 6-8 beams. (Figure 2)



Figure 2 Wande Building, Meilin Village, Meilin Town

Owing to the increasing number of Tulou, there wasn't enough cedar wood to be pillars. Therefore, people began to separate and support the adjacent rooms with rammed-earth wall. And the beams were annularly scattered to reduce the number of cedar wood. (Figure 3)



Figure 3 Huaxing Building, Jitou Village, Meilin Town

The round buildings are always featured with the same type of rooftops. Most of them are constructed with the method called scissor tiling, which means making a turnoff on the rooftop of each room, each row of roof tiles branches off in the middle into two-branched rows, just like a scissor, to ensure the water flowing. (Figure 4)



Figure 4 Scissor Tiling on the Rooftop of Round Buildings

(1) Round buildings with internal galleries. This kind of buildings looks the same from outside except the diameters and number of floors. The inner structures and designs are totally different. Some large-scale round buildings always feature one or two smaller round buildings in the center. (Figure 5)



Figure 5 Chengqi Building, Yongding County

There is always a ancestral hall in the center of the inner court of small and medium-sized round buildings. The round or square ancestral halls enrich the construction style of the inner court of round buildings. Huaiyuan Building as a representative, is a four-floor round building with a diameter of 38 meters, where a round ancestral hall is set at the center sometimes serving as the private school of the family(Figure 6). Yuchang Building has a round-corner square ancestral hall in its center(Figure 7).

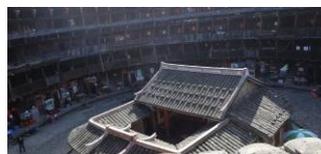


Figure 6 Huaiyuan Building, Kanxia Village, Meilin Town
Figure 7 Yuchang Building, Xiaban Village, Shuyang Town

The gallery apartment round buildings were constructed at a relatively late stage. The ancestral halls of these buildings were set at the first floor facing directly toward the entrance door and the internal courtyards were spacious. Some of the round buildings constructed at a relatively early stage set their ancestral halls in the center of the internal courtyard. According to local residents, the location of the ancestral hall is mainly decided by the owner of the building. Besides, there are two different ways on setting the ancestral halls at the first floor facing directly toward the entrance door are also featured with two different kinds of ceilings , that is, whether to insert the porch or not. For example, the ancestral hall of the Huaxing Building in Jitou Village, Meilin Town didn't insert any windows. (Figure 8)



Figure 8 Huaxing Building in Jitou Village, Meilin Town

The ancestral halls with porch always feature a higher story height. Some of the ceilings are made into round-ridge roof, such as the Cuimei Building in Pushan Village, Meilin Town(Figure 9).Some are featured with the enclosed roof, such as the Fuchang Building in Jitou Village Meilin Town. (Figure10)



Figure9 Cuimei Building, Pushan Village, Meilin Town

Figure10 Fuchang Building, Jitou Village Meilin Town

(2) Unit-typed round buildings. Unit-typed round buildings are composed of various smaller units. And not all the floors are set with inner galleries, so as to keep the privacy of each unit. Basically, there are entrance door, courtyard, stairway in each of the unit, with Eryi Building in Hua'an County and Longjian Building in Jiufeng Town(Figure11), Pinghe County as its representatives. There is not any unit-typed round buildings in Nanjing County. The Nanqing Building in Meilin Village is famous for its special construction style of square internally and round externally. And the round part is a typical unit-typed construction: two stories height with single stairway, setting two rooms into one unit.



Figure11 Nanqing Building, Meilin Village, Meilin Town

(3) Special forms of round buildings. In Nanjing County, Wenchang Building, located in Tianluo Village, Shuyang Town, is an oval-shaped building with inner galleries enjoying the equal popularity with the square-shaped Buyun Building and the round-shaped Zhenchang Building, Ruiyun Building and Hechang Building. Wenchang Building, facing southwest, is located in the southwest of Buyun Building. It is 11.8 meters high (3 floors) and each floor is composed of 32 rooms with 2 stairways, one entrance door and one well. In the peripheral wall, there are 3 bartizans and 4 embrasures. The foundation wall is 1.2 meters thick. And the internal courtyard is paved with rubbles. (Figure12)

Yude Building is located in Taxia Village, Shuyang Town, Nanjing County. The fore body is 4 stories high with 10 rooms at each floor, 1 balcony and 2 stairways. Half of the Yude Building has collapsed, and the other half part is only supported by a peripheral wall, just like an apron. Therefore, Yude Building is also called "Apron Building". (Figure13)



Figure12 Wenchang Building, Tianluo Village, Shuyang Town
Figure13 Yude Building, Taxia Village, Shuyang Town

Square Buildings

Both the number and the style of square-shaped buildings come top among other shapes of Tulou. Most of them with internal gallery are square and rectangle. Most of the unit-typed square buildings are featured with two right-angle corners at the front side and two round corners at the back side. Only a few of them are of four round corners. There are also different kinds of roof constructions. Some are of four walls of same height owing to the same number of stories in the four sides; in some buildings, the wall with the ancestral hall is higher than other three walls; in other buildings, the wall near the entrance door is lower than other three walls. (Figure14)



Figure14 The different types of Tulou roof

The ancestral hall of round buildings is located in the first floor facing the entrance door, or in the center of the building, or even in the back side of the building, which is similar with that of the square buildings. For example, the Nanqing Building has its ancestral hall set in the first floor facing the entrance door with porch. (Figure15) The Jining Building has its ancestral hall set in the first floor facing the entrance door(Figure16)



Figure15 Nanqing Building Figure16 The Jining Building

Shengqing Building has its ancestral in the centre.(Figure17) The Yongsheng Building is featured with a three-room and one-hall ancestral hall with half-timbered construction. (Figure18)



Figure17 Shengqing Building Figure18 Yongsheng Building

(1)The square-shaped buildings with internal galleries. The galleries of this kind of building are of quadrangle (Figure19)hexagon (Figure20),



octagon (Figure19) and irregular shapes (Figure20) And the shape is mainly decided by the owner of the building.



The galleries are opened (Figure21) or closed (Figure22), Or it is the combination of both type (Figure23)



Some galleries have eaves. And there is always the stor ehouse under the gallery eave. Hegui Building, located in Pushan Village of Meilin Town Manjing County, is a representative of it. Hegui Building is five stories high, 36.6 meters wide and 28.6 meters deep, with only one entrance door. There is a single-story rectangle forecourt outside the building. In the center of the building, stands an ancestral hall with a small yard and corridors. In the Hegui Building, 24 rooms on each floor are symmetrically scattered along the four sides of the rectangle, with one stairway at the each corner. There are two wells in the internal courtyard, one with clear water and the other with turbid water. What surprises us most is that the Hegui Building is built on the swamps. (Figure24)



Figure24 Hegui Building, Pushan Village ,Meilin Town

(2) Unit-typed square buildings. Unit-typed square buildings are composed of various smaller units. Each unit has its own entrance door, hallway, small yard, dining room serving as living room at the same time, and bedroom. On one side of the bedroom stands a wooden stairway. Xishuang Building in Xi'an Village, Xiazhai Town, Heping County is a representative of unit-typed square building.

(3) Special-shaped square buildings. There are various kinds of special-shaped square buildings in Nanjing County. The Changyuan Building in Shiqiao Village of Shuyang Town, Nanjing County (Figure27) is a typical horizontally long hillside building, which is also called folding-chair building. The building is constructed alongside the creek. Due to the great differences in height, it should be supported by a parapet wall, which rises from the bed of creek with 46 meters in length and 5.2 meters in height. The rear wall of the ground floor is erected with the support of mountain slope. A horizontally long courtyard is surrounded by a one-story dining room in the south of the building facing the creek, a three-story structure in the north leaning against the hill and two-story height rooms in the east and west. The ground floor is composed of a kitchen and a hall at the center worshipping the Goddess of Mercy. The second and third floors are bedrooms. We can have a good view from the corridor. Owing to the cobblestone construction at the foot of front wall, the whole building looks like growing from the ground.

Beside the Changyuan Building, stands the Hanwei Building, which is also built alongside the creek. The heights of each part of the building gradually increase according to the terrain. There are two larger-scale courtyards in the center of the building. The viewing deck alongside the creek is the other feature, where we can listen to the sound of flowing water and appreciate the beautiful scenery at the same time. (Figure25



Figure25 Changyuan Building, Shiqiao Village, Shuyang Town

Figure26 Hanwei Building, Shiqiao Village, Shuyang Town

Deviant-shaped Buildings

Besides round, square buildings, there are still a small number of buildings that is hard to be classified due to the deviant shapes. Those buildings feature freedom layouts in accordance with terrains. And the distinctive construction styles also make them stand out in Fujian Tulou. Those buildings can be classified by plane configuration into concaves, pentagons, octagons, half moon shapes, U shape, etc.; however, it can also be classified by construction style into horseshoe style, pentagon style, octagon style, umbrella style, the eight diagrams style, etc. The Nanxun Building in Hekeng Village of Shuyang Town, Nanjing County is a classic pentagon-style building with a triangle internal courtyard, which is totally different from Shunyuan Building with irregular pentagon shapes. In fact, Nanxun Building is most the same with other kinds of square buildings except the south-west corner seems to be cut off. (Figure27



Figure27Nanxun Building, Shiqiao Village, Shuyang Town

Yongsheng is a three-story semicircle building (Figure28) There is an L-shaped building in Hekeng Village, Shuyang Town, Nanjing County.(Figure29



Figure28Yongsheng Building, Jitou Village, Meilin Town

Figure29-L-shaped building

CONCLUSION

Tulou, the earthen building, varies in the architecture forms. However, it features the uniform functional layout and almost the same constructional elements.

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