Analysis on the Characteristics of Traditional Dwellings in Guangwu City, Shanxi Province

2020, Vol.1 No.5
© Art & Design Research 2020
DOI: 10.37420/j.adr.2020.024
https://masonpublish.org

Yanjun Li*, Shuangqi Chen
Shaanxi University of Science & Technology, Xi'an 710021, China
The Hi-TECH College, Xi'an University of Technology, Xi'an 713700, China
*Corresponding author, e-mail: ylw55668@163.com

Abstract

The "Guangwu City" in the north of Shanxi Province is one of the representative military castles. Through the methods of on-the-spot mapping, on-the-spot shooting and literature analysis, this paper analyzes the spatial pattern and defense structure of the castle from the point of view of natural conditions, military defense requirements, ancient city form, residential shape, architectural layout and decorative style, as well as the road, residential group layout, residential morphological characteristics, construction technology, decoration style and so on. Finally, the study summarizes the differences of the defensive fortress city, in order to provide some reference for the follow-up research.

Keywords

Northern Shanxi; Guangwu City; Castle shape; Residential features; Decorative features

Overview of Guangwu City

Xinzhou City, Shuozhou City and Datong City in the north of Shanxi Province are often called "North of Shanxi Area". Guangwu City is located in Zhangjiazhuang, with Cuiwei Mountain in the south, adjacent to Daixian County and Shanyin County in the north (Figure 1). At the same time, Guangwu City is located at the foot of the ancient Great Wall outside Yanmen pass in the ancient defense system, which forms a huge "three passes" system with Yanmen Pass, Ningwu Pass and Pian Pass. Among them, Yanmen Pass is the largest and core of the three passes, so it is known as "the key to the north gate". In order to enhance and consolidate the military defense force, on the basis of Yanmen Pass, the "Guangwu City" in the Liao and Jin Dynasties and the "New Guang

Wucheng" in the Wanli Year of the Ming Dynasty were built. The distance between the two cities is 5 kilometers, because in the event of war, the two cities can cooperate and support each other, which is conducive to military deployment. Therefore, in ancient times, Guangwu City became a battleground for soldiers because of its important geographical location, and gradually formed a boundary area with the collection of military defense, Internal and external traffic arteries, farming culture and nomadic culture.

Nowadays, with the disappearance of the concept of war towns and borders, Guangwu City has gradually evolved from a military castle into a historical and cultural relic with a unique style. This has changed the defense function of its original military fortress to a certain extent, and has become an important exchange and transportation hub for the flow of people, economic exchanges, and goods distribution, forming a new core area for exchanges and trade circulation inside and outside the customs.

Structural Analysis of Guangwu City

Guangwu Ancient City is located on the northeast edge of the Loess Plateau, bordering on the grassland. The terrain is flat and the vision is wide. The surrounding area can be engaged in farming, animal husbandry and material exchange. During the construction of the ancient city, we not only considered to resist foreign enemies and ensure the safety of the people, but also considered that the castle could produce weapons, garrison barracks, reserve materials and settle down the families of generals and soldiers. At the same time, it also needed to meet the needs of daily production and life. Therefore, it adopted the most common military fortress form in ancient times. The castle was built with reference to the military defense standards in ancient times, which is strong and durable. Today, the ancient city still retains its original majestic appearance (Figure 2).



Figure 1 Location Map of Guangwu City (From: Author repainted)



Figure 2 A View of Guangwu City (From: Xinhua Net)

The Structure of the City Wall

The castle is a regular rectangle surrounded by walls, measuring 338 meters in width from east to west, 489 meters in length from north to south, and 1,654 meters in circumference.The city wall contains a 1.7-meter parapet with a total height of 8.3 meters. The base of the wall is 5 meters thick with stone rib foot, and the top of the wall is 3.4 meters thick. On the East (figure 4) , south and west sides of the wall are large gates, each about 3 meters wide and 6.5 meters high. At the same time, there were barbican gates outside the city gates, but they were badly damaged by the age of disrepair. Judging from the decoration of the three gates, the east gate is more gorgeous and beautiful. In addition to the use of rubbed brickwork, there are brick carvings on the arch hole, ornament on the main ridge , drip tiles, blue stone plaque inlaid under the bucket arch, and the shape of vertical flower gate on both sides of the plaque. In order to enhance the defense ability, the wooden door with solid couch structure was strengthened with iron sheets and door nails. The city wall was rammed with local sandy loess for masonry. The outer contour of the city wall is made of sandy loess and fired blue bricks. The difference is that Guangwu City does not have a north gate. It is understood that because the north is directly opposite the frontier fortresses, the wall of the northern section is thickened to increase the wall's ability to resist attack and fire.

The Layout and Form of the Castle

As a major military city, Guangwu City not only has the functions of political, military, economic and cultural, it can accommodate a certain amount of army, weapons workshops and materials, but also needs to meet the daily life of residents, soldiers and their families, and more needs Has an indestructible defense function, more than anything else, it needs to be impregnable. Therefore, there are also urn cities and moats outside the city as external barriers. A defensive fortress settlement space has been built in the city, in which there are straight " 井 " shaped mesh roads and circular roads, orderly residential courtyards and uniform wall courtyards, all of which make the field of vision open and the space spacious. Moreover, it is beneficial for officers and soldiers to gather quickly in times of war, reflecting a strong combat function. In a word, the spatial and functional orientation of the ancient city is in accordance with the chessboard layout of the ancient military castle, showing five distinct levels of spatial organization relations: the Great Wall, the moat, the walls of the urn city, streets and alleys, and residential courtyards.



Figure 3 Current Status of the East City Wall (From: Author's own photo)



Figure 4 Current Status of East Gate (From: Author's own photo)

Guangwu City is an enclosed space surrounded by city walls. An east-west street is formed between East Gate and West Gate, which intersects the north-south street, showing a " 十 " shaped structure with a width of about 7-8 meters (Kang, 2015). And on this basis, the four streets and eight lanes (Shi, 2018) run through the " 井 " shape network layout (Figure 5). The residential courtyard is divided into areas along the " 井 " shaped streets and lanes. Although each courtyard varies in size and regulation, the walls along the primary and secondary roads are generally regular.

The Form of Residential and Courtyard

According to historical records, in the heyday of Guangwu City, there were more than 200 households (Kang, 2019), each of which was a quadrangle or triple courtyard unit, and most of these residents were the families and descendants of soldiers guarding the frontiers. Most of the existing dwellings were built during the Ming and Qing Dynasties. The most primitive dwellings were naturally destroyed due to time, and were later rebuilt or rebuilt, but the reconstruction still retains the neat and regular shape of the streets (Figure 6). Due to the long history, special geographical location and conventional functional requirements, these have created the city culture, architectural form, architectural language and decorative style under the characteristics of the military fortress of Guangwu City.

(1) The Form of Residential Courtyard

Guangwu City is located in the semi-arid area of warm temperate zone. Although the terrain is flat, the climate is cold and lasts for a long time. Therefore, most of the local courtyards are enclosed by rectangles which are long from north to south and short from east to west, so as to get more light and prevent the invasion of winter cold wind. Because of this, the orientation of residential courtyards not only faces south, but also faces north. In addition, there are also courtyards with gates facing east and west facing the street, maintaining the same plane pattern as the castle, which is long from north to south and short from east to west. The boundary of the courtyard is clear,

compact, orderly arranged and well-organized.



Figure 5 Current status of black and white background in the city (From: Author repainted)



Figure 6 Current situation of a certain street (From: Author's own photo)

In terms of shape, the larger courtyards with two or more rows quadrangles, there are also standard quadrangles (Figure 7 and 8), and smaller triple courtyard. Each house is connected with the courtyard wall to form the courtyard group in the city. The layout of the courtyard follows the traditional layout method and aesthetic standard of quadrangle, and its style is simple and practical to meet the needs of practicality and defense. In the plane form, the enclosed space is mostly in the shape of " 回 ", and the monomer configuration is often "one living room and two bedrooms". Five-room upper room is set as "three living rooms and two bedrooms". But in terms of the volume of the building, it is generally smaller than the traditional standard size, and the size of the doors and windows of the building is also smaller than the conventional size. In terms of ritual system, the courtyard always kept the height of south room and east-west wing room lower than that of main room (north room), so as to show the hierarchical order characteristics of feudal society.



Figure 7 The current situation of a standard courtyard (From: Photo by the author)

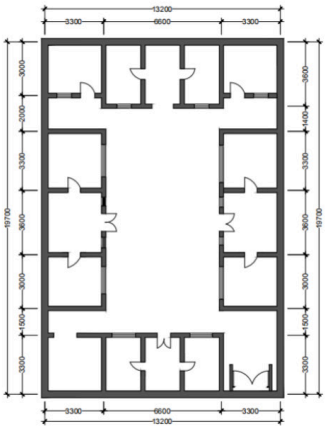


Figure 8 A standard quadrangle courtyard (From: Hand drawn by the author)

(2) The Structure and Technology of Residential Buildings

In terms of structure, the dwellings in Guangwu City also reflect the characteristics of adapting measures to local conditions and local materials: it adopts the hard mountain type wood beam lifting structure, and the materials are built by mixing the local soil, wood and stone. Due to the small diameter of timber in this area, two layers of beams are erected along the direction from the front to the back of the house, forming a triangle. The eaves are relatively low, and there are short columns between the beams of each layer. The purlins are placed on the short columns, and the rafters are placed on the purlins, forming a bobbin tile roll roof (Figure 9) or a checkerboard (no tiles) roll roof (Figure 10) , which the surface is covered with blue tiles, and the lower surface is covered with reed and gray cement. Some families also use flat roof, and the roof adopts the structure characteristics of concrete and grass reinforced mud plastering or chessboard top surface.



Figure 9 Bobbin tile roll roof
(From: Photo by the author)



Figure 10 Checkerboard (no tiles) roll roof
(From: Photo by the author)

Different from other areas, Guangwu City is characterized by high altitude and latitude, severe winter and long duration. It is greatly affected by the Siberian cold current, with short sunshine duration, rare annual precipitation, large sandstorm and long duration, and frequent wars. Therefore, the residential buildings are all single-story in shape, with shallow eaves and only 3.5 meters away from the floor. The roof structure is low, and the drainage system is simple.

Due to the above reasons, the architectural technology of residential buildings in Guangwu City has the following characteristics: adopting adobe masonry thick-wall, small volume, multi-purpose roll roof, shallow eaves, little drainage system, simple and practical decoration style.

This provides the living space with "warm in winter and cool in summer" conditions, as well as minimizes the destructive power of wind and sand on the building, and ensures the durability of residential buildings. The residential structure and technology of Guangwu City embodies the process of ancestors understanding nature, adapting to nature, and using nature. It is a model case

of scientifically and rationally creating residential space, and it is also the crystallization of the wisdom of the ancestors.

Features of Decorative Art of Residential

The decorative art of the residential buildings in Guangwu City is based on practicality, simple, rugged, and unique, which can play a finishing touch, and can also provide psychological comfort to civilians in the era of frequent wars. Therefore, most people do not pursue luxury and excessive details in the decoration, but only slightly embellish the conventional structure. Almost every households decorate different wood carvings on the front door arches (Figure 11), front eaves doors and windows, column heads, indoor partitions, etc., and stone carvings of flowers, birds, and beasts will be used on the gate pier and pillar stones, so as to show the pursuit of art and good life in the simple residential building space.

Of course, there are also courtyards deep in the streets with high demand for decoration, such as collecting brick carvings, wood carvings and stone carvings. Some of the front eaves walls of some main rooms are decorated with exquisite partition doors and windows. In particular, some rooms are exquisite from the top to the wall. For example, there are a series of dragon shaped ornament, peony hanging ridge, water grinding technology, geometric pattern of porch head, cloud grass pattern hanging fish, elegant wind board, exquisite dripping tile and so on (Figure 12). These decorative arts and patterns are simple and lively, elegant in style and exquisite in workmanship. They provide the residents with spiritual artistic enjoyment, convey their desire for a better life, and add elegance to the ancient city.



Figure 11 The frontal frame structure and wood carving of the gate
(From: Photo by the author)



Figure 12 Brick carving process diagram of main room gable and front eaves wall
(From: Photo by the author)

Conclusion

As an important defensive military fortress, Guangwu City has left precious material and non-material cultural heritage materials for future generations, and has become an object we can watch at present. Based on the field investigation of the castle, this paper makes a comprehensive analysis of its structure, spatial layout, residential courtyard, construction form and decoration style. It finds that the castle has the dual characteristics of "defense function first, living life second". It also refines the regional characteristics and simple concept of reasonable construction. At the same time, we sum up the distinctive features of the castle, such as regular and magnificent, thick north city walls, no city gates, tight residential courtyards, short building volume, simple and practical structure, cheap materials, simple decoration and so on.

References

Shanxi Provincial History Research Institute. (1996). *General Records of Shanxi (Volume II) · Geographical Records*. Beijing: Zhonghua Publishing House.

Shanxi Institute of Local Records. (2013). *Shanxi Provincial History·Ancient Architecture History*. Beijing: Zhonghua Publishing House.

Kang, J. W. (2015). Jiuguangwu village, Shanyin County, Shuozhou City. *Monthly Journal of Literature and History*, 55(7), 60.

Cao, H. H. (2014). Analysis and detection of the Qing brick of the Ming Dynasty Great Wall in Guangwu, Shanxi Province. *Ancient garden technology*, 32(4), 58.

Shi, F, Z. (2018). The spatial characteristics and architectural art of the fortresses along the border in northern Shanxi Province. *Literature and art research*, 40(2), 162-163.