

Study on Typo-Morphological Characteristics and Evolution of Guangxiao and Liurong Temple Historical District in Guangzhou, China

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Abstract: Liurong Temple and Guangxiao Temple, located in the same block, are the two most important temples in Guangzhou City. With the rapid urbanization process, the historic preservation of its surrounding neighborhoods is facing enormous challenges. Today, this district presents a highly complex picture both in terms of urban morphology and programme. Based on the site investigation and morphological analysis, this paper describes the following morphological features of the block: fragmentation and collage of the street network, border barriers brought about by closed territories such as monasteries, diversified architectural types, and interrupted public space system. According to historical research and comparison of urban fabric in different periods, the author find out that the overlapping of following great changes in different historical stages constitutes today's urban form: the evolution of Guangzhou city wall, the construction and disappearance of the six-vein canals brought about changes in traffic modes, the occupation of monasteries by the army, factory expansion in the period of planned economy, development of real estate in commodity economy era.

The author attempts to reveal the establishment, disintegration, and reorganization of boundaries on urban form at different scales, which is more influenced by social force and the migration and settlement of different populations. This research will inspire the formulation and improvement of policies in the preservation and regeneration of Guangxiao and Liurong Temple district.

1. Introduction

Many East Asian cities share the same characteristics: the city centre, which gathers commercial and cultural activities, spreads around with temples as its core. However, with the decline of the importance of religious sacrificial activities in daily life, the urban areas with temples as the core often face the decline of vitality. The historical blocks with Guangxiao Temple (光孝寺) and Liurong Temple (六榕寺) as the core, located in Guangzhou City (广州) in the Pearl River (珠江) Delta, are currently encountering such problems. Based on Typo-Morphological Approach, this paper investigates and analyses the current situation and historical research of the block, in order to get the current situation and problems faced by the block, and the evolution of urban form development, providing a reference for the further protective planning and renovation of the block.

2. Overview of the Guangxiao-Liurong Block

Located in Yuexiu (越秀) District, Guangzhou City, this block is adjacent to the traditional axis of the Qiyi Road (起义路), backed by Baiyun Mountain (白云山), facing the Pearl River, and has a long geographical and cultural history. There are two ancient temples in the block, Guangxiao Temple and Liurong Temple, which are sacred places of Buddhism in Guangzhou.

Guangxiao Temple is located in No. 109 Guangxiao Road, Guangzhou. It covers an area of more than 30,000 square meters. It has the longest history, the deepest influence and the largest scale in Lingnan area.¹ In the history of Guangxiao Temple, there were many famous monks. They were the famous ancestral court of Zen Buddhism and the Taoist hall for translating scriptures. They were also good places for literati to sing and paint elegantly. Therefore, Guangxiao Temple occupies an important position in the history of Chinese Buddhism and the history of Chinese-foreign exchanges, and has far-reaching influence on Lingnan's politics, economy and culture. Liurong Temple, located on Liurong Road in Guangzhou, is a famous ancient temple with a long history at home and abroad. The Pagoda in the temple is lofty, the trees are lush and the cultural relics are gathered together, leaving many famous people's footprints in history. Liurong Temple was named for the inscription of the temple in Su Shi (苏轼)². It is also called Guangzhou Buddhist Four Holy Places with Guangxiao, Hualin(华林寺) and Haichuang Temple (海幢寺). Liurong Temple, like the flower Pagoda (花塔) in the temple, has always been praised by people. In addition, its historical status and the name of Guangxiao Temple are known as "Guangxiao is famous for its trees, while Jinghui (净慧)³ stands out for its pagoda".

The study takes 603,000 square meters of blocks around the two temples as the research scope. The specific scope is as follows: Jiefang (解放) North Road in the east, Renmin (人民) North Road in the west, Zhongshan (中山) Six Road in the south, Dongfeng (东风) West Road in the north. The four roads are the main roads of the city, and the blocks are nearly a shape of square. Among them, the Southeast part, as a part of "Wuxianguan (五仙观) – Huaisheng Temple (怀圣寺) – Liurong Temple Historical and Cultural Block", was included in the "Protection Planning of Guangzhou Historic and Cultural City". There are many other streets with good protection of traditional style and features in the block. Residential, commercial, religious and cultural functions are mixed in the neighborhood, with a total of seven communities: Pengjiaxiang (彭家巷) Community, Daogucang (稻谷仓) Community, Wenyuanxiang(文园巷) Community, Jiunanhai (旧南海) Community belong to Liurong Street, Taojiaxiang (陶家巷) Community, Zhushouxiang (祝寿巷) Community belong to Guangta (光塔) Street.

3. Typo-Morphological Analysis

3.1. Plots and Spatial Structures

The road in this block is divided into three levels: (Figure 1)

- Motor lane: road for motor vehicles in the block, the ground is generally asphalt road. They are Panfu Road(盘福路), Haizhu North Road (海珠北路), Liurong Road, Jinghui Road, Guangxiao Road, Guangde Road (广德路), Jiangjun West Road (将军东路), Yingbin Road (迎宾路), Shiyi Avenue (市一大道), Pengjiaxiang Road, and Bailing Road (百灵路). Among them, Panfu Road and Haizhu North Road are connected to form the central axis running through the north and south of the block, which divides the East and west

of the block. The main city road and Bailing Road are connected to form the axis running through the East and west of the block.

- Pedestrians. Pedestrians are the only roads in the block for pedestrians and bicycles, and the ground is usually paved with slate or other pavement. Their ends are usually connected to the motor lane.
- Alleys: only for pedestrians, relatively narrow, generally the end of the road. The b and c streets retain the small-scale characteristics of traditional streets and lanes.

The plots are as follows:

- Temples and religious facilities. The main plots in this block are Guangxiao Temple and Liurong Temple. (The purple plot in Figure 4 is Guangxiao Temple on the left and Liurong Temple on the right.) Among them, the area of Liurong Temple is approximately rectangular with regular boundary and surrounded by streets on all sides. However, the shape of Guangxiao Temple is complex, its boundary is uneven, and it is not near the street on both sides. It is interlaced with the surrounding land.
- Public service facilities. The main plots are Guangzhou First People's Hospital, which covers a large area in the northwest of the plot, and Yinghuang Hotel, Guangdong Province, which covers a large area in the east. Four other secondary and primary schools are scattered across the streets.
- Other residential and commercial plots. Each of these plots occupies a relatively small area, which is generally divided by the street network, and some of the communities are closed communities.

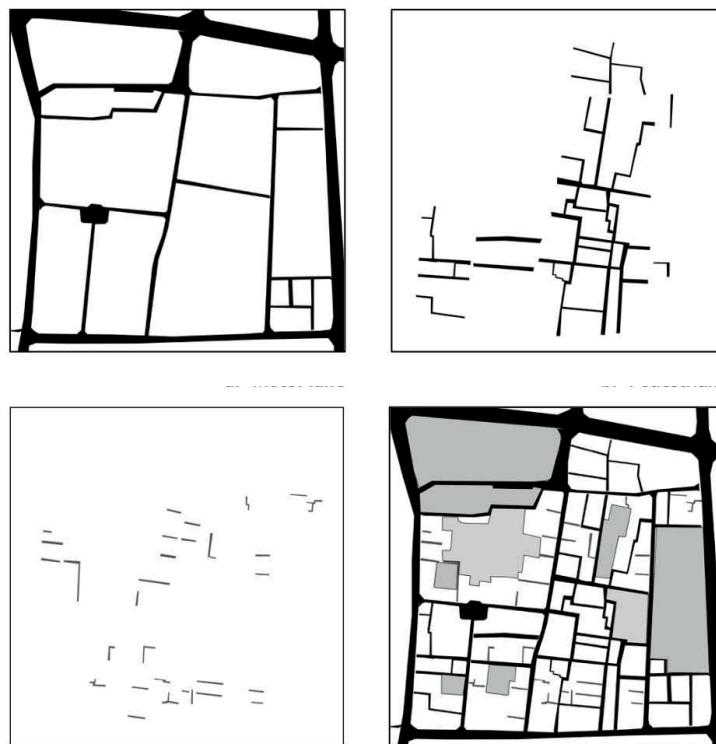


Figure 1. *Spatial Structures Analysis (a. motor lane; b. pedestrians; c. alleys; d. plots).*

From plots and street diagrams, we can see that the street network of this block is fragmented. Although the block is basically a grid network, there are only two streets running through the whole block, and the rest of the streets are end-to-end. This is particularly evident in alleys. A large number of lanes are cul-de-sacs, and most of them are distributed along the East-West direction. Considering the characteristics of land division, one of the main reasons for the “fragmentation” is that there are a large number of monasteries and public service facilities in the block, which have closed walls to separate the interior and exterior, forming a lot of barriers at the border.

3.2. Street Space Analysis

The above characteristics of “fragmentation” are more obvious in the areas around the two temples, so we mainly select the areas around the two temples for street space analysis.

3.2.1. Liurong Road and Cangqian Street (仓前街)

The above characteristics of “fragmentation” are more obvious in the areas around the two temples, so we mainly select the areas around the two temples for street space analysis.

Liurong Road, 12 meters wide, is a one-way road for motor vehicles from south to north. Liurong Temple is located in the middle section of Liurong Road, so Liurong Road is one of the necessary places for tourists to visit Guangzhou. There are shops selling Buddhist supplies and providing services related to Fengshui (风水) and fortune calculation near Liurong Temple. On one side of the road, there is a 3-meter-high wall of the Yingbin hotel, and only a sidewalk on the side of the Liurong Temple.

Cangqian Street is located between Haizhu North Road and Liurong Road. It is 5-7 meters wide and paved with stone slabs. On both sides of the road are multi-storey residential buildings with Buddhist supplies and shops in religious and geomantic industries on the ground floor.

3.2.2. Haizhu North Road and Jinghui Road

Haizhu North Road, 10 meters wide, is a one-way motor vehicle line from south to north. On both sides of the road, there are 2-3 storeys of residential buildings, whose street space is refrigeration equipment shops. Nine-storey residential buildings are distributed on both sides of the intersection of Haizhu North Road and Jinghui Road.

Jinghui Road is a one-way motor vehicle line from east to west with a width of meters. On both sides of the road, there are 5-9 floors of mixed commercial and residential buildings, and the street floor space is shops.

3.2.3. Guangxiao Road and Zhongshan Six Road

Guangxiao Road, 9 meters wide, is a one-way motor vehicle line from south to north. The south end is a 22-storey high-rise building, and the other sections are low-rise shops on both sides. The northern section is adjacent to Guangxiao Temple, and there are many shops selling vegetarian food and Buddhist utensils. Zhongshan Sixth Road, 16 meters wide and four lanes in both directions, is a main road in Guangzhou. The 2-4-storey arcades on both sides of the eastern section of the road are well preserved, while the style and features of the west section of the arcade buildings have been destroyed.

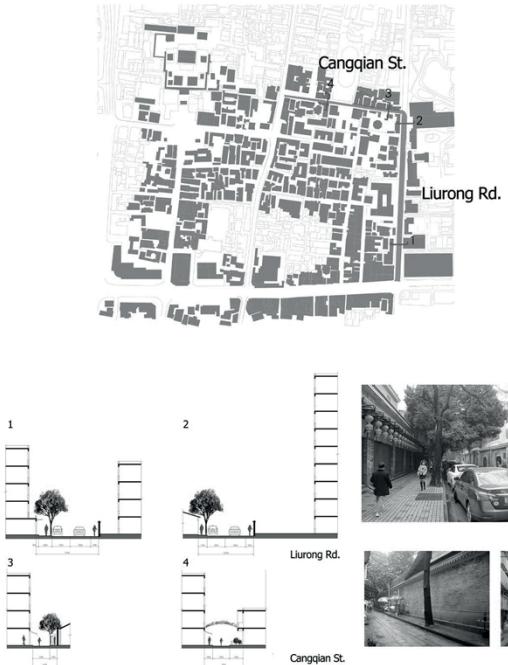


Fig. 2.1.

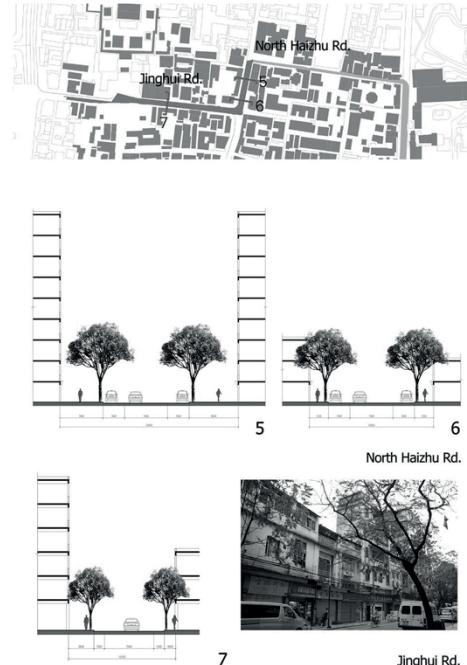


Fig. 2.2.

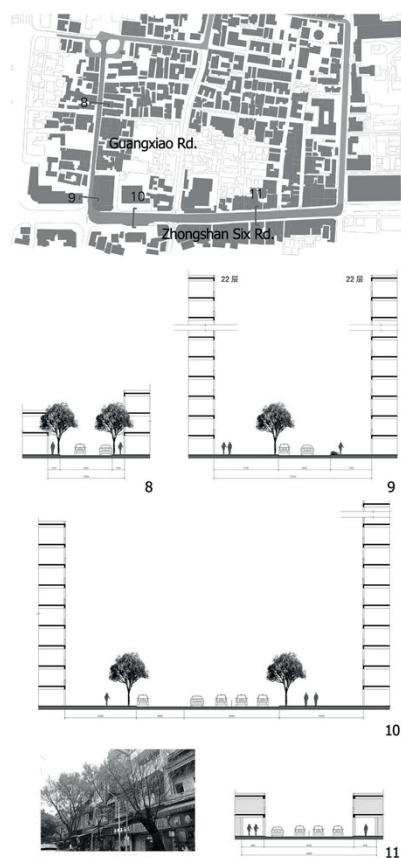


Fig. 2.3.

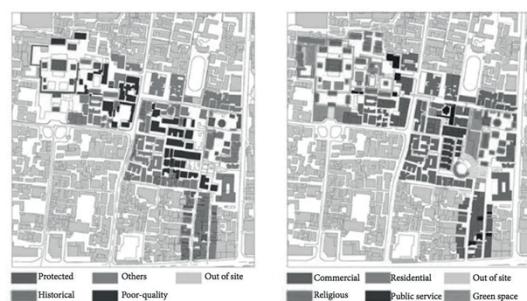


Fig. 2.4.



Fig. 2.5.

Figure 2. Street Space Analysis (fig. 2.1 Liurong Road and Cangqian Street; fig. 2.2 Haizhu North Road and Jinghui Road; fig. 2.3 Guangxiao Road and Zhongshan Six Road; fig. 2.4 Classification of Architectural Types: by Function; fig. 2.5 Building Height).

3.3. Analysis of Building Types

Although it is a historic block, the stock of historic buildings in this block is limited. Historic buildings are mainly distributed on both sides of Huiji West Road (惠吉西路). The building heights along Guangxiao Road, Jinghui Road, Haizhu North Road, Cangqian Street, Liurong Road and Zhongshan Six Road are obviously different. Zhongshan Sixth Road is a well-preserved arcade street, while Guangxiao Road has some arcades, which form a continuous pedestrian space together with the canopy of shops along the street. Most of the buildings along the street are 3 stories or less, with pleasant scale. Jinghui Street – Haizhu North Road – Cangqian Street is an important link between the two temples, along which there are a large number of 4 – 6 storeys of residential buildings.

“Residential space + ground floor commercial space”, this type of building constitutes the base of the whole block. Existing buildings can be divided into two periods before 1949 and after 1949 for morphological-typological analysis:

3.3.1. Bamboo House Joint-Row Residential Area – Matrix of Texture (1941-1949)

Demolition of city walls and construction of roads were the main urban construction in the period of the Republic of China, but a comparative analysis of the road network system recorded by historical maps shows that it did not change the urban fabric of Guangzhou. Although the buildings in Guangzhou were basically renovated during the Republic of China, it was the renovation and construction of the old texture in the late Qing Dynasty. This is because the land ownership system of Guangzhou City during the Republic of China was a multi-compound structure: Public ownership and private ownership coexist, but private ownership is dominant, the boundaries of residential areas are difficult to change, the plane remains unchanged, and increasing the number of floors is the only way to improve the construction intensity. Self-built housing projects are common in this old city renewal. Most of its builders are ordinary citizens. Due to the limitation of site and capital, the bamboo house joint row residential area has become the most important type of residential area in the city. Bamboo dwellings are the “matrix” of texture in our research area, and other types of dwellings are mosaic.

The bamboo house in the Republic of China is a brick-concrete structure. The width of the bamboo house is limited to 4 meters. Most of the load-bearing bodies are brick masonry. It is the type “variation” of the traditional bamboo house in adapting to some social and economic characteristics of the Republic of China. This kind of construction experience transforms the traditional residential type from bungalow to apartment building. Architectural types are based on the traditional bamboo tube houses fixed in the Ming and Qing Dynasties. The plane form basically remains unchanged, but changes have been made in the number of stories, building structure, elevation form and decoration, and materials. It's basically a one-story apartment. Sometimes several families build their own houses together, each floor needs an independent entrance and staircase to the ground.

3.3.2. Multi-storey Residential Buildings (1950-1979)

During the period after the founding of the People's Republic of China, urban land was basically allocated by the state to land-use units for use indefinitely and gratuitously. The two most common flat forms of building and residence are corridor-to-corridor type and ladder-to-lad-

der type. In the past 20 years, the number of building floors has increased to 3-5 floors, and some of them have been upgraded to 5-7 floors of residential buildings. The size of the house has increased, and the appearance of the house still follows most of the simplicity of the 1950s. The exterior wall is mainly decorated by plaster. The exterior facade can be decorated by material, color and components. The structure is mainly brick-concrete structure, and it was not until the 1970s that reinforced concrete structure was gradually used. At this stage, the contradiction between supply and demand caused by population increase and land restriction promotes the emergence of high-rise patio houses. Its excessive volume destroys the texture of the original low-rise bamboo house and multi-storey building. Since 1980, Guangzhou's real estate industry has been restarted and dilapidated multi-storey buildings have been replaced.

4. Historical Research and Urban Form Evolution

4.1. Temples: from outside the city wall to inside the city

It can be seen from the historical map that before the formation of the size of Guangzhou City today, two ancient temples in the plot had been formed, both of which were outside the city site at that time. During the three hundred years of the Northern Song Dynasty, Guangzhou City was expanded and renovated many times. During the Qingli (庆历) and Xining (熙宁) reigns of the Northern Song Dynasty, three cities (Central City, West City and East City) were built. The Guangxiao Temple and the Six Rong Temple are also surrounded by the walls of the Western City. The whole block is enclosed by the city wall, which promotes the formation and development of the surrounding buildings.

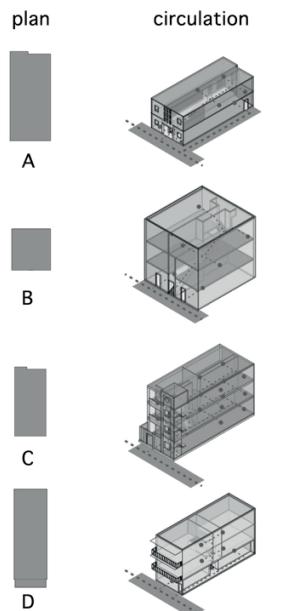


Fig. 3.1.

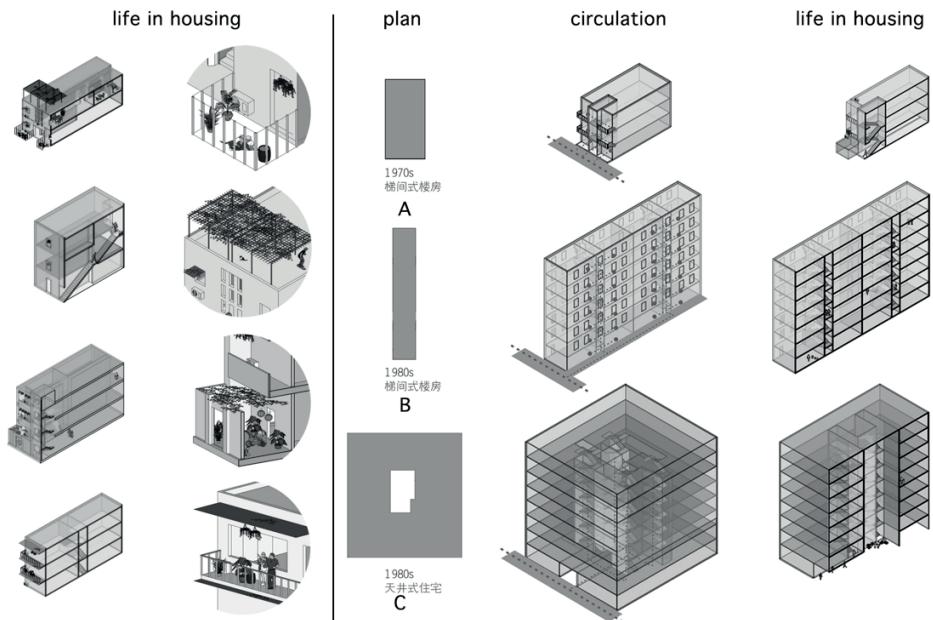


Fig. 3.2.

Figure 3. Architectural types (fig. 3.1. Architectural types before 1949; fig. 3.2. Architectural types after 1949).

4.2. Shipping: The Impact of Traffic Mode on Urban Form after Song Dynasty

In the Song Dynasty, the existing river network in the city was used to build revetments, dredging into drainage canals running through the city, which were like veins, called “Six-vein canals” (六脉渠). The city also dredged West canal (西濠), East canal (东濠), Yudai canal (玉带濠), which led to the Pearl River, and built an inner harbor wharf to facilitate shipping. The document records, “The width of the Six-vein canal can accommodate the navigation of ships”.

Two important temples in the region are connected by the Six Veins Canal to the developed water network in the Pearl River Delta. Therefore, it can be inferred that the main traffic arriving at the area at that time was vessel, which brought the possibility of commercial development along the Six-veins canal.

At that time, there were probably two ways of arriving from outside the city: 1. From the Pearl River through East canal to the shore outside Hefeng Gate (和丰门) and reach the block by land. 2. From the Pearl River through West canal and Yudai canal, it enters West City in Fucai Gate (阜财门), and then reaches the block through the three western veins of the Six-Vein Canal. Accordingly, the connection between the commercial agglomeration and combination water system brought by the temples and the whole Pearl River Delta is the main driving force for the development of the block.

4.3. Six-vein Canal and the Urban Form of the Block

Located in the northwest corner of West City, it is an important area linking West canal both inside and outside the city. There are links with Fengmen and Weiyuan Gate outside the city. At the same time, there are two channels flowing through the Six-vein Canal. In Song Dynasty, the channel of Six-vein Canal was wide, and the buildings began to be built by water. From today's texture patterns of the two layers of Guangxiao Road and Haizhu North Road, we can roughly infer the layout of buildings by water at that time (Figure 3-3). Afterwards, when the adjacent water was occupied, the construction of houses began to extend to both sides. Gradually, roadways and road networks began to take shape.

4.4. Border Generation: Segmentation of Temples

The area of Liurong Temple and Guangxiao Temple has changed in past dynasties, especially after the Ming Dynasty, among which Liurong Temple is the most prominent. In 1373 (six years in Hongwu (洪武) period of Ming Dynasty), half of the temple area was requisitioned as Yongfeng barn (永丰仓). Since then, the gate has been changed to the east, and the area of the temple has been shrinking. Six ancient banyan trees⁵ are no longer situated in the wall of the temple because of the reduction of the area of the temple. The eastern half of the Liurong Temple was designated as the provincial Commander-in-chief's Office⁶ (提督府). The original Jinghui Temple is quite large in scale and covers a wide area. The Mountain Gate faces south. Archives record that the length and width of the temple are greater than one kilometer. The street pattern around Liurong Temple was basically formed at this time.

After the Qing Dynasty, Yongfeng barn was renamed Yuxin barn, and part of the original barn in the west of Liurong Temple was changed to the Eight Banners Army garrison (八旗营), and roads were built in the barracks, forming the pattern of “three lanes” today. The southern part of the Liurong Temple was transformed into the right General Court and the

Commander-in-chief's Office was changed into the General's Office (将军府). In the fifth year of Qianlong (乾隆) (1740), monks bought the land beside the temple with heavy money and built Zen Hall, dining room, guest house, warehouse, kitchen and garden, which is called "Renaissance".

4.5. Formation of collage texture

After the founding of the People's Republic of China, there was a lack of traditional industry and Commerce in the region. In order to improve the economic water level, a large number of factories have appeared in the block. In order to solve the housing problem, high-density collective housing and workers' dormitories of factories have been built, including Yuejin Machinery Factory and the Seventh Machinery Factory. Large-scale buildings have destroyed the stable urban fabric of the block. After the 1990s, along with the development of commodity economy and real estate, the main roads began to construct shopping malls and office buildings, which gradually formed the texture of today's high-level collage. Small-scale buildings in the late Qing Dynasty coexisted with new high-rise buildings built in the past decade.

5. Conclusion

Through the above analysis and historical study of the current urban form, the following key factors in the historical process have the greatest impact on the current urban form:

- Evolution of Guangzhou City Wall: The boundary between the West and the North of the block is shaped by the old city wall, and it changes constantly in the course of history. Today, the city wall no longer exists, but the elevated circular highway still follows the trend of the city wall, constituting today's land boundary.
- Water network shaping road network: The main road in the block was built along the six-vein canal, and the old water network has evolved into today's road network system.
- Changes in the boundary between the two temples: From the above historical evolution, we can find that the two temples have undergone repeated process of "expansion-occupation" from the state of almost adjacent to each other, and now they have formed a state of dense high-rise building isolation and poor accessibility lane links between the two temples. The formation and change of borders are the important reasons for the fragmentation and collage of the local urban form.
- Soviet-style Compound: The transplantation of the Soviet planning model of Soviet-style Compound (factories + residential areas) in this area has brought about a large number of closed communities. The resulting borders still exist today. In the era of commodity economy, the development of real estate has also brought about a large number of closed management communities.

These factors affect the past of the block, and provide inspiration for how to regenerate the block in the future.

Notes

Lingnan area (岭南地区) : refers to the culture of Guangdong and the nearby provinces in Southern China.

Su Shi (苏轼) (1037-1101): Literator, painter and calligrapher of the Northern Song Dynasty, one of the most famous poets in China.

Jinghui (净慧): alternative name of Liurong Temple

bamboo house (竹筒屋) : Bamboo house, as its name implies, is called bamboo tube house because of its narrow and small facade, long and deep, and shaped like bamboo tube. Bamboo house is also called “shop house”. The bamboo house in Guangzhou came into being in the 19th century. At that time, Guangzhou's industry and Commerce entered a period of rapid development. The population of the city increased rapidly, the inner city began to be tense, and the land price increased. Under this situation, the bamboo house, a commercial and residential building form, emerged as the times require and became one of the traditional residential forms in modern Guangzhou. Ordinary citizens are their inhabitants. Beginning from the beginning of the 20th century, with the development of industry and Commerce in Guangzhou, bamboo houses or shop houses have also developed rapidly.

In Chinese language, “Liurong” means “six banyan trees”. The six banyan trees in the temple are the origin of the name of the temple.

Provincial commander-in-chief (提督) : The Chinese pronunciation is “Tidu”, A military officer in the ancient army, usually the highest military officer in a province in the Ming and Qing Dynasties.

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