

Researches and Protection of Bang-tang Ancient Village Architecture Decoration in Leizhou

Xie Dong

Lingnan Normal University, Zhanjiang 524048, Guangdong, China

*Corresponding Author

ABSTRACT. With the field study of Bang-Tang Ancient Village in Leizhou on spatial layout, settlement cultural exchanges, and ancient architectural decoration, this paper discusses ancient residential courtyard layout, architectural design, materials and features, and analyses orderly hierarchical and organically connected architectural decoration art of ancient village in Leizhou peninsula. Based on researches on existing problems in folk house architecture, some prospects and principles to protect and renovate the village are put forward, together with some basic theory and measurements to protect and promote ancient residential architecture art of layout, surroundings, construction space, traditional streets, and ancient architecture decoration.

KEYWORDS: Bang-Tang Village, architecture decoration, folk house, ancient villages.

1. Introduction

Ancient villages, traditional villages, are an architectural heritage for humans, which represents cultural ideology and traction in a certain time and region. Moreover, it is also a milestone of city (town) development. Thus the signification of cultural value is ignorable in the process of development. Chinese ancient villages are the fruits of thousands of years' agriculture civilisation witnessing changes in social history. They inherited residents' aesthetics, tradition, and custom, which are a nonrenewable priceless treasure. Traditional villages become a part of cultural heritage and their prosperity or recession is associated with changes in native culture.

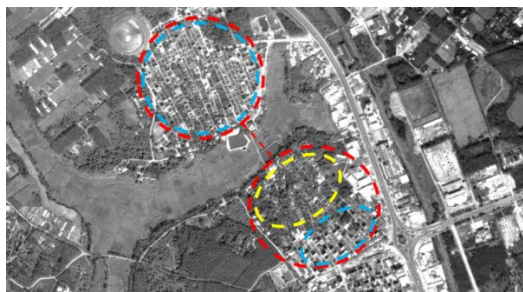


Figure. 1 Location of Bangtang Village

1.2 History Overview

Bang-Tang Village can be traced back to the Tang Dynasty. Due to An Lushan Rebellion, descendants of the Li family were forced to disperse over the country, among whom one cluster was settled in Ningdu Jiangxi and moved to Ditian Fujian, then to Donghai Island Zhanjiang. The fourth-generation Li Dezhong moved from Donghai Island to Bang-Tang in Leizhou, Guangdong. He is the originator of this village. The village was established over 500 years ago, in Qing Dynasty.

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2. Settlement Spatial Pattern Features Affected by Religions

2.1 Fengshui of Settlement Spatial Pattern

Tradition settlement site selection was heavily dependant on Chinese traditional philosophy, respecting the nature and advocation harmony between humans and the nature. According to Fengshui, a pleasant site is facing a mountain and water, on a plain, and the mountain is surrounded by the left and right hills. That is left dragon, left Qinglong, right white tiger, front Zhuque, and back Xuanwu. It is logical and reasonable because locating near the water, water resource for daily life and agriculture is easily accessible. Furthermore, the wounding water system forms an

enjoyable natural landscape. There are three advantages to build houses resting on the hill. First, locating on the north and facing the south, there is a plenty of sunshine that addresses residents' activity, living, and health requirements. The second, the slope can help to discharge domestic wastewater. The third, the lower land can be used as farmlands for agricultural development.

Bang-Tang Village layout is aligned with ideal idyllic surroundings written in a book, Biography of Zhong Chang Tong, that there are good fields and wide houses, with mountains and streams on the back, ditches and pools surrounded, fields and gardens built before and behind orchard trees. Li family chose this precious place according to Fengshui and the ideal lifestyle. The northern part village is the original one. With the increasing population, the northern village was extended to the southern part. It is planned to refer to Zhouyi's Beiqian and Nanxun. Houses were built on higher land of slopes so that it is good to drain off water. The middle parts were kept as paddy field because land is fertile and water is sufficient. Two villages are surrounded by trees abiding to Fengshui theory, resting on the mountain and used as farmlands for agricultural development^[2].

2.2 Comb Defensive Settlement Spatial Layout

Construction and development of traditional settlement spatial layout are strongly affected by nature conditions, religion and culture, lifestyle, and social system. In general, it can be categorised as comb style, dense layout, cluster layout, freely scattered layout, or string layout, as it is mentioned in Guangdong Folk House written by Professor Lu Qi. Bang-Tang Village is in accordance with this tradition. It was established in comb layout(as figure 2). South and North villages belong to the comb layout in terms of traffic roadway and housing design. Each village has 7 roadways, on both sides of which exist residential courtyards. There are no two house doors facing each other. At the two ends of the street, it is an alleyway. Streets are paved with red bricks which perfectly match with magnificent mountain walls on either side. From this aspect, streets were built according to the architecture entity. Residents in one entity belong to one clan or all are blood-related. The space divided by streets according to entity was used to set up cannon towers, watchtowers and gates for defensive purpose. It was combined with an inner courtyard as a defensive unit, which is the second defensive system. The first one is a defensive system surrounding the whole village formed by trees, water system and roadways. This is a self-sufficient social system in Chinese traditional feudal society of the farming era.



Figure. 2 Layout of Bangtang Village

2.3 Untraced Kalman filter algorithm Settlement Spatial Layout in Pursuit of Good Luck in the Imperial Examination

“Emphasis on agriculture instead of business” is the core value of Chinese traditional Confucianism. Gradually the lifestyle of farming and study was formed which is the product of Chinese traditional agriculture society^[3]. Bang-Tang Village was influenced by this thinking, which was represented in architecture. For instance.

Wenchang Temple, Wenbi Tower, and Four Treasures of the Study are correspondents to each other. Regarding spatial layout, those can form a typically echo scenery. Psychologically, it caters for people’s pursuit of good luck in study and examinations, which are life targets for Li family, ancestors in Bang-Tang Village.

3. Settlement Culture and Activity Hub

3.1 Ancient Well and Ancient Tree

Old well and trees are indispensable factors in traditional villages as a symbol of settlement culture. Those are a sign of natural scenery and a cultural attraction. It functions as cultural communication and cultural inheritance. Definitely, Bang-Tang Village is lined up with the same culture. There are many ancient banyan trees, ancient camphor trees, ancient phoenix, and ancient Lychee and three wells. Trees stand beside the well, which form a natural square for villagers to cool off in the shade of trees. Wells played a significant role as a communication hub because everyday villagers would come to fetch water, wash cloths and chat, so that it became a platform to exchange information, no matter family trivial things, national news, or even gossip.

Temple and ancestral temple are the spiritual support of traditional villagers, which performed as a spiritual sign, inherited culture, and etiquette. “Ancestral temples for gathering, temples for praying for safety and peace” is a lifestyle for

Bang-Tang villagers. Ancestral temples were formed based on clan, where patriarchal rituals were performed. Those also symbolise settlement spatial layout, functioning as not only ancestor worship, but also management, from individual behaviour, customs and folks, funeral and marriage rituals, education and entertainment to settlement construction, village safety, Fengshui maintenance, public health, and public area cleaning, etc.

Temples are carriers of citizens' religion. People came here to pray for rain, happiness, pray to get rid of illness, disasters and devils, and solve difficulties in life. Bang-Tang has a large number of temples. Currently, in Bang-Tang Village exist Bang-Tang Temple, Tianhou Palace (two in North Village and South Village respectively), Guanwang Temple, Dao De Yuan Yuan (Taoism Temple), Wen Chang Temple, Hua Guang Temple and so on, which mainly are situated in the public area of southern North Village. Tianhou Palace is located close to Juyou Xuan in South Village.



Figure. 3 Temples and ancestral halls

4. Architecture Decoration Features of Traditional Settlement Folk House

4.1 Courtyard Features

Normally, Chinese traditional courtyard layout will be following Chinese family ethics, like the Pecking order theory, individuals living in separated rooms. The courtyard is formed by houses on four sides or three sides with a wall on one side. In the middle of the yard, there is a patio, all courtyards have slight differences in design, which are different from the northern quadrangle courtyard style^[4]. This type of courtyard is flexible in design, depth of corridor, the number of rooms, size of the patio can be various. The architecture design should be bilateral symmetric and

living rooms in front of bedrooms at back. In Leizhou peninsula, traditional courtyards are in Triheyuan, Siheyuan or U shape, and lined up in the way of parallel or series. The way to form in a settlement enriches architecture spatial design. In Bang-Tang South Village, in some settlements, two Triheyuan are built next to each other as a whole building. In this type, there are two patios. However, because the gate is open on the side, there is no foyer compared to the San Zuo Luo. There are three main rooms in the lower hall, and the middle hall is open, with two patios are connected in series. The rooms on both sides are used as residences. The wing rooms are open to the atrium. The open rooms are flexibly arranged according to needs. The first wing room is kept as an entrance, which is open to the side corridor. The side facing wall of the lower hall is usually set up as a screen wall. The upper hall has 3 or 5 rooms, and the middle one is for the shrine, a place for ancestral sacrificial ceremonies. There are bedrooms on both sides.

4.2 Graphic Layout Features

Folk houses in the village mainly consist of brick-wood and earth-brick-wood structures, which restrict the load-bearing capacity so that there are multiple rooms, and the size of the patio, depth, the number of rooms vary. In general, the graphic structure has a few types such as three bays and two horizontal houses (two rooms), three rooms, two corridors, and one screen wall, three buildings (or three halls in series), three or five rooms, two corridors and two horizontal houses, and the combination of "Trihe courtyard" with a shield, and the combination of "Sihe courtyard" with a shield. (Figure 4).

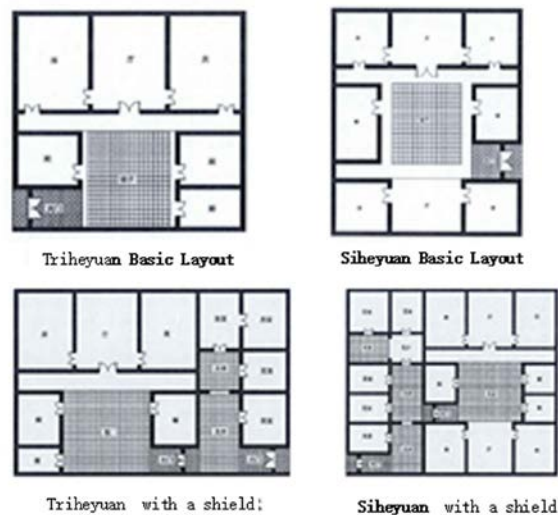


Figure. 4 Courtyard layout

4.3 Ancient Residential Architecture Ventilation Features

Ventilation is to adjust the indoor temperature, humidity, to improve air quality, and to ensure the sanitary requirements of the indoor air. The ventilation system as it is shown in figure 5 is composed of natural ventilation and artificial ventilation. In traditional architecture, natural ventilation is widely applied, because, at that time, there is no sufficient technology to build up artificial ventilation (air-conditioning system). Bang-Tang Village is located in a humid and sultry southern region, so architecture space needs ventilation function. In summer it can take away the excessive heat to avoid overheating; in winter it can control ventilation to keep indoor warm to a certain degree. The natural ventilation system is the following: architectural orientation, architectural layout, position and form of doors and windows, the relationship between courtyard and patio, etc.

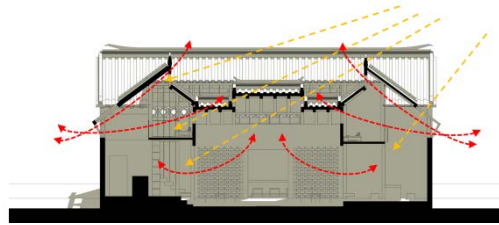


Figure. 5 ventilation system

4.4 Structure Features

4.4.1 Wall Structure

Bang-Tang Village is situated in Leizhou Peninsula, which was an uncivilised place during the Qing Dynasty. Public security was relatively unstable. The climate was hot and typhoons happened frequently. These environmental and public security factors directly affected the structure of the building. Therefore, the building walls should function for heat insulation, wind protection, and defence. The walls of traditional residential buildings show rich individuality and commonality in terms of craftsmanship and materials. The walls of the main building are made up of red bricks filled with mixed materials such as loess and stones, while the other walls were independently built with red bricks or a mixture of limestone powder, clay, and sand.

4.4.2 Roof Structure

A sultry and rainy climate with frequent typhoons ends environmental factors influence folk house building technology and structure^[5]. There is no exception in Bang-Tang Village, especially in terms of the roof structure. Its roof is mainly in

hard-topped style, which excels in fire-proof and wind-proof. The hard-topped roof covers the gable, which means the gable of the house is higher than the herringbone slope of the roof. Due to heavy rainfall in the Leizhou Peninsula, there is an extra requirement for leak-proof so that sophisticated technology to build ridges of roof joint is demanded. Besides being waterproof, the ridges should be made strong and decorative. Patterns are various. The main decoration form is plaster moulding but in different parts, the patterns are different. For example, on ridges, there are some patterns of flowers, birds, insects and fishes, fruits and vines, Xie pattern, and so on. On eaves, patterns are delicate and exquisite. Compared to the lightweight structure and beautiful decoration of roofs, the function of the gable of the building is mainly to protect the roof so it's very thick and bulky. However, it also functions as ventilation and decoration. On top of the gable, there are some ventilation holes and crevices, which can reduce wind resistance and decorate the building. There are some major types of gables as following (figure 6): water type, wood type, earth type, gold type, and fire type, which are five elements in Chinese culture. For rich families, their buildings will not be confined to one single type. Normally they will mix up some types to maximise the gorgeousness and momentum.

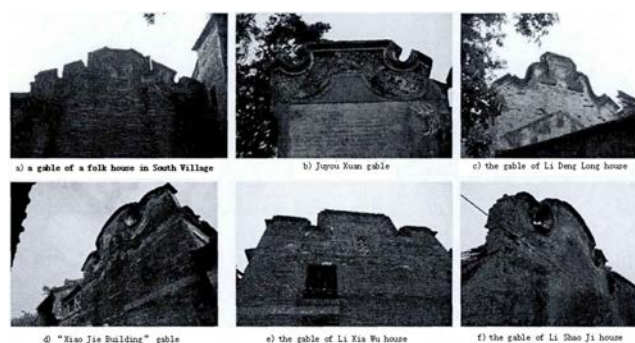


Figure. 6 Gables

4.5 Decoration Features

. Folk houses decoration is a presentation of ancestors' wisdom and also an essential part or carrier of Chinese history, culture, technology improvement, and art^[6]. Western Guangdong is located at the farthest south of China. Due to the special location, in the long run of history, this place is far away from the central government. With the influence of multiculturalism and history in this region, decoration in residential buildings has formed a unique style. Bang-Tang Village is a traditional farming village, so the buildings must have been affected by agriculture. Besides, architecture decoration and materials also reflect local folk customs, religions and beliefs, social development. It is the epitome of the history of Bang-

Tang and represents that locals are looking forward to a happy, peaceful life and safety.

4.5.1 Facade Decoration

The first one is wall decoration. In Bang-Tang Village main body of buildings were made of red bricks (figure 7). In some parts, architects used rectangular fire rocks to reinforce the whole structure and decorate. The roof and the outer wall are connected by the eaves. The eaves are slightly higher and decorated with plaster mouldings, which enrich the decoration of the outer facade of monotonous buildings and improve the outline of gable characteristic form. From the aspect of decoration, it not only enhances the aesthetic of buildings but also that of the entire village to some extends. The laying method of wall bricks is the technique of “grinding bricks and but joints”. The walls are neat, flat, and smooth. The brick joints are small, straight, and seamless, which decorate the dull wall. The two-way continuous composition method presents repeated beauty.



Figure. 7 wall structur

The second is window decoration. There are two types of windows for ancient residential architectures: ornamental perforated window and decorative openwork window. The main functions are ventilation, thermal dissipation, and decoration. There are some typical requirements in window design. In general, there is no openwork window on the outlier of buildings. Instead, only ornamental perforated windows are set up on the top of the buildings for natural lighting and ventilation. The reason why there is no window built on the exterior walls is for thief prevention and defensive purpose. Openwork windows normally appear inside buildings to make use of the natural lighting form the patios. The preferred material is pottery. Because, with heavy rainfall, high level of humidity, and hot weather in Leizhou

Peninsula, the wooden structure is easily spoiled by insects. The design of windows varies. For ornamental perforated window on the top, there are different shapes like diamond, rectangle, square, fan, and circle, etc. and there are also some combinations of various forms. The pottery components of ornamental perforated windows are bisque-fired, green glaze, or yellow glaze, etc. (Figure 3). They are generally in auspicious patterns with beautiful composition and rich content. Its expression methods include intuitive, homophonic, metaphor, and combination. There are many kinds of patterns, such as Chinese character combinations, like Wan or Fushou, flower wells, bats, ancient coins, geometric patterns, etc. From the rich variety of components, it is easy to imagine how prosperous and active the building material markets are.

The third is courtyard, patio and the screen wall^[7]. In ancient traditional architecture, courtyards were regarded as the basic units and the tradition continues to the modern times. Although they have been evolved into various forms, they still have roots in origins. In this way, courtyards are still the core. The most obvious is the relationship between courtyards and patios. Their difference is determined by the size of the area, and they have a unified boundary. Larger room is called courtyard whereas the smaller one is patio. This experience is more based on people's interaction with the space or experience to use the space. Spacious courtyard is better in lighting and ventilation, and also provides a larger space for family activities whilst the patio in a smaller size is to save land and within a confined space, effects of damp after rain can be reduced. Screen walls are a part of the courtyard, and they are also an exclusive design in traditional architecture. It functions to protect the courtyard from bad luck from the prospective of Fengshui. Other than that, they form an outstanding view in the courtyard. Therefore, in the design, architects paid much attention on decoration and structure, display and refined sculpture.

Bang-Tang Village folk house courtyards (patios) are based on a variety of layout^[8], locations, forms, which can be classified as the front courtyard, main courtyard, and side courtyard. Once the site is confirmed, the screen wall will be set between the front courtyard and the gatehouse. It functions as a transition. Building patios include a front courtyard, main courtyard, side courtyard, while in the front courtyard there are gatehouse and screen wall. The main courtyard is nearly in a square shape as a living function, which is the basic unit of living core and enclosed courtyard. Side courtyard exists between units or cores. The size of the side courtyard is rather small, narrow, and deep. Walls on both sides create a patio like area, and the space is confined and oppressed. To alleviate the feeling, in the side courtyard, there is a design of a lattice wall to match and also connect the main courtyard, gatehouse, and side courtyard smartly.

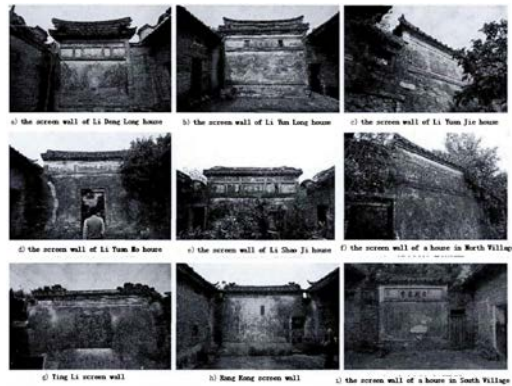


Figure. 8 Facing the wall

5. The Protection and Inheritance of the Ancient Residential Buildings in the Village

5.1 Current Status of Village

One is the change of traditional cultural landscape. The traditional cultural landscape is originated from the people who built the village. People and the village have mutual influence and depend on each other. Eventually, it has formed a humanistic landscape with regional and era characteristics including primitive social structure, environmental landscape, folk crafts, traditional festivals, architectural forms, aesthetic, customs, and even villagers' self-identity. But this landscape will change with the changes of the times. Bang-Tang Village has changed from a traditional agricultural village to an urban fringe village with an increasingly strong commercial atmosphere. The original social structure, environmental landscape, architectural form, aesthetic, customs, and even villagers' self-identity have all changed due to the new era background. There are two major reasons: the one is social and economic development urges people to change their lifestyle, which means the traditional residential model is not suitable for the modern lifestyle anymore; the other one changes in thinking and knowledge push young villagers to go out to embrace new thinking, better education and new things in this way that they gradually throw away traditions. Changes also occur in aesthetics, customs, and habits. Under such complex circumstances and background, how to protect traditional cultural landscape bearing historical value, how to save and repair disappearing cultural landscape and to keep harmonious coexistence of new cultural landscape with the original one are the major issues to be discussed in village construction.

The second is the damage to ancient residential buildings. Bang-Tang Village reflects regional architecture's environmental features, the changes of cultures, economic conditions, technology, and people's lifestyle. Along with changes in lifestyle and economic development, while people are in pursuit of an advanced lifestyle, traditional architecture has been abandoned by times brutally and western houses catering to modern lifestyle take place. Comparatively, Bang-Tang Village, residential houses of the Qing Dynasty, is preserved in a good condition. The phenomenon of tearing down old buildings to build up new ones is not common in this region. But most residents have moved to new villages, only senior citizens left to inherit and promote the tradition. When old buildings are not used by people, they will be seriously damaged due to a lack of proper repair. It is obvious in terms of spoiled roof, collapse, wall damage, natural or man-made damages to traditional decoration such as brick and wooden sculptures, plaster mouldings, colourful paintings, poor building surroundings, or changes of the original appearance.

The third is a shortage of living facilities. Sufficient living facilities are important for a community or a village, but in Bang-Tang Village, basic facilities are not in satisfactory condition or even not available. For instance, 1. there is no independent tap water system. 2. Daily discharges are disposed to the farmlands in the middle, which severely contaminated spring water. 3. There is no fixed waste disposal point, which causes people to litter. 4. There is a lack of public lighting system, 5. There is a shortage of space for public communication. The shortage of those facilities directly decreases life quality. That is also the reason why residents move out to a new village. In the end, the protection and repair of ancient architecture are negatively affected.

5.2 Suggestions of Ancient Residential Architecture Protection in Old Villages

Firstly, scholars for scientific researches from universities can be introduced to categorise and summarise the essence of traditional village culture. Bang-Tang Village as the first village in Leizhou, its architecture and custom culture play an irreplaceable role. Thus, in terms of protection, the professional scientific research team should collaborate with locals. Bang-Tang Village as the pearl of Leizhou Peninsula's historical and cultural heritage, but till now there are no single systematic documents or background knowledge focusing on protecting this village. In a word, it is necessary to get support from professionals of universities (such as Lingnan Normal University, Guangdong Ocean University, etc.) to carry out basic researches focusing on traditional village cultural heritage and social functions for feasibility study report on the future protection and development of the village, so that protection work can be implemented in specific based on precise policy and historical documents can be formed. historical documents are precious cultural heritage, so to protect those is not only to maintain traditional village civilisation but also to pass on the memory of this homeland, which is an emotional linkage between the new generation and traditional culture. Because those documents cover Bang-

Tang history and lifestyle at that time comprehensively, they give people a sense of belonging to the village which also includes rich knowledge and is a cultural carrier.

Secondly, it is necessary to encourage social volunteers to take part in and motivate the village's inner force. Protection and inheritance Bang-Tang Village is impossible without the support of outer society, nor is without locals. Protection and inheritance require the collaboration of talents with different educational backgrounds and experiences. At first, research talents from universities can be used to educate local villagers about ancient architecture and convey a concept that development should be with the priority of ecosystem. Then relevant positive regulations and policy should be enforced. In the aspects of village construction, ancient architecture protection and industrial development, it is essential to configure local resources with the outside. Moreover, to get support from the society (returning youth, local intellectuals, rural start-up founders, new farmers, artists, entrepreneurs, poverty alleviation organisations, etc.) will help traditional village protection and develop mainstay force in the society. Under a relevant supportive policy and land provided by the village, those social forces can form a variety of industrial ecosystem in this village, for example, homestay, farmland, research base, cultural creativity workshop, organic restaurants and so on. These enterprises can provide employment opportunities for locals, which can activate the village's vitality.

The third is to improve basic facilities and protect traditional architecture decoration technician. Bang-Tang Village should upgrade facilities like sewage system, tap water system, waste disposal system and public lighting, etc. in order to provide a favourable living environment. On the other hand, it is vital to strengthen education for craftsman about architecture traditional technician and knowledge to protect traditional construction and architecture decoration technician.

6. Conclusion

Bang-Tang Village ancient residential buildings are a dispensable part of the Leizhou Peninsula and its architectural spatial and decoration art represents regional culture, interaction and development of culture and architecture, and unique architecture aesthetic. Through researches and analysis on existing problems of ancient residential buildings, protection and renovation targets and principles are put forwarded and theory basis and suggestive measurements are proposed in terms of protection and inheritance of village overall environment, architecture space, traditional streets, and traditional residential architecture decoration art.

7. Acknowledgments

Funding Project: Protection and Activation Researches of Leizhou Bang-tang Village Ancient Villages.

Published by Francis Academic Press, UK

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