Creative Transformation and Innovative Development of Lingnan Traditional Architectural Culture-Taking the Architecture Reconstruction Design of Liwan District in Guangzhou as an Example

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Abstract. This paper first discusses the historical background of Lingnan traditional architectural culture, then summarizes the general situation of Lingnan traditional architectural culture from the characteristics of Lingnan traditional architecture and the cultural connotation of Lingnan traditional architecture. Subsequently, taking the architecture reconstruction of Liwan District in Guangzhou as an example, it expounded from the three aspects of micro level, meso level and macro level, and tried to propose a practical model that has practical guiding significance for the creative transformation and innovative development of Lingnan traditional architectural culture.

Keywords: Liwan District in Guangzhou, Lingnan Traditional Architectural Culture, Innovative Development

1 Introduction
As a regional culture, Lingnan culture reflects the wisdom and pursuit of Lingnan people in life. Among the Lingnan culture, Lingnan’s traditional architectural culture is the one that can best show the regional characteristics of Lingnan. Lingnan traditional architectural culture has witnessed the fusion of the architectural culture of the north and the south. It is a kind of native and diversified culture with unique charm and great cultural value.

With the cultural self-confidence of the 19th National Congress of the Communist Party of China and the call for the great rejuvenation of the Chinese nation, the inheritance and innovative development of Lingnan’s traditional architectural culture have received attention, and the protection and development of Lingnan’s traditional architectural culture have taken a certain step.

However, there is a problem of “one side of a thousand cities” in China’s urban construction. In the reconstruction and new building design of historical and cultural districts in Lingnan, there is a loss of Lingnan historical culture, Lingnan traditional architectural culture, Lingnan cultural style and Lingnan regional characteristics, the new and old buildings are not in harmony, the exploration and innovation efforts are not enough [1], and there are problems of insufficient attention and lack of
innovation in the creative transformation and innovation development of Lingnan traditional architecture culture.

As a national historical and cultural city, Liwan District is the old city with the most Lingnan cultural charm in Guangzhou. Liwan District accounts for about 600 of the more than 3,000 traditional buildings in Guangzhou. Guangzhou’s existing 26 historical and cultural districts, Liwan District occupy 14 , ranking first among the 11 districts in the city [2]. The historic Liwan District has different Lingnan buildings with different ages, such as the Xiguan big house, bamboo tube house and Guangfu Qilou (arcade-house). In recent years, Liwan District has vigorously cultivated the core area of a world-famous city, and in the micro-reconstruction of historical and cultural districts, it has dug into the essence of Lingnan architectural culture and explored many valuable experiences. Therefore, this paper takes the architectural reconstruction design of Liwan District in Guangzhou as a case, and combines the successful experience of traditional architectural cultural innovation at home and abroad to try to propose a practical model that has practical guiding significance for the creative transformation and innovative development of Lingnan traditional architectural culture.

2 Overview of Lingnan Traditional Architectural Culture

2.1. Features of Lingnan Traditional Architecture

Traditional Lingnan architecture integrates the architectural styles of different places, forming a unique Lingnan architectural style between the grandeur of the Central Plains and the elegant lightness of the Jiangnan. Most of the wooden structures adopt gable and hip roof and flush gable roof, and they are mainly composed of column and tie construction or column and tie construction combing with post and lintel construction, pay attention to the decoration of roofs, beams, and partition fans, and use a large number of wood sculpture, stone sculpture, brick sculpture, gray modeling, glazed accessories and inlay porcelain, mica sheet, shell ash and other materials with Lingnan characteristics. Most buildings are enclosed on the outside and ventilated on the inside. Buildings pay attention to ventilation, heat dissipation, sun protection, moisture resistance, corrosion protection, and fire prevention. The building plan is open, airy, small and light in shape. The building is arranged according to different terrains and has various shapes. The building and the garden are naturally integrated into one.

2.2. Cultural connotation of Lingnan traditional architecture

Lingnan architecture reflects the historical trajectory of Lingnan civilization development, accumulating Lingnan’s humanistic thoughts and folk customs. Lingnan traditional architectural culture reflects the desire of residents to pursue a good life in a specific natural environment and the awe-inspiring mentality that has been developed in a long-term living environment. It has both a regional and overseas culture, and a side that maintains local cultural characteristics [3].

The traditional architectural culture of Lingnan refers to the overall cultural value of the humanistic spirit, philosophical thinking, design concepts, cultural arts and aesthetic tastes contained in the aspects of architectural space layout, building technology, building structure, style modeling and detailed processing. Lingnan architectural culture not only preserves the ancient system, but also integrates Chinese and Western cultures. It is compatible and open; it has regional commonality, but also has different styles, and is diverse and inclusive. It adapts to local conditions, takes local materials, is economical and pragmatic; combines practicality with art, structural and aesthetic, and inherits and innovates.

3 The creative transformation and innovative development of Lingnan traditional architectural culture in architectural design, Liwan district, Guangzhou

3.1. Creative transformation and innovative development at the micro level
3.1.1. Architecture materials
Traditional Lingnan buildings adapt to local conditions to use local materials to construct. Wood, blue brick, stone, blue slate, gray hemp, gray tiles, shell ash, shells, pattern bricks, oyster shell walls, etc, are commonly used as building materials, which is economical and practical. In modern architectural design, we must be good at using traditional Lingnan materials, matching and combining different materials such as traditional materials and modern materials, and combining traditional materials with modern construction technology and modern structural technology, and then use different modern expression methods to carry out creative transformation, so that the traditional architectural culture of Lingnan can not only be inherited, but also be creatively developed.

For example, some buildings in Yongqingfang of Liwan District retain traditional materials red brick walls, replace old wooden windows with steel-clad edge windows, and remove unreserved walls into glass curtain walls. The transparent and clear glass and the quaint and thick red brick form a sense of separation between reality and reality, which not only retains the traditional architectural culture of Lingnan, but also makes people feel novel and fashionable.

In order to reflect the inheritance of Lingnan’s traditional architectural culture, many Lingnan architectural transformations often adopt the method of sticking blue bricks. However, sticking blue bricks will cause problems such as too new shapes, changing colors, easy peeling of bricks, and easy pollution of walls. In order to avoid these problems, the Liwan District Cantonese Opera Art Museum collected old blue bricks and polished and processed them according to a uniform size and then used different masonry methods for masonry. The smooth blue bricks and the rough wooden building decoration complement each other, which not only inherits the traditional architectural culture of Lingnan well, but also brings a new form of Lingnan architectural form.

3.1.2. Architecture decoration
Lingnan architecture mainly strengthens decoration on key parts such as roof ridges, under eaves, wall heads and beams. Lingnan traditional architectural decoration elements are colorful, mainly “three sculptures (stone sculpture, wood sculpture, brick sculpture), three modelings (gray modeling, ceramic modeling, clay modeling), inlaid porcelain, color painting, mural, metal (cast iron, copper casting), glass (etched painting), glazed glass, copper iron, glass decoration, gold lacquered wood carving, etc. Lingnan traditional architecture has a wide range of decorative themes, including various historical legends, praying and blessing, flowers and birds, insects and fish, birds and beasts, landscapes, pavilions, Lingnan plants and Lingnan scenery.

As Lingnan architectural designers, we must be good at using modern art design language and expression methods to extract traditional graphics, patterns, and elements from traditional Lingnan architectural cultural elements. Formal innovation through modern composition methods such as simplification and abstraction, geometricization, symbolization, cutting and dislocation, decomposition and transformation, dispersal and reconstruction, exaggeration and deformation. Use modern artistic expressions to rearrange and combine these innovative forms, and then use the symbolic metaphor to give them unique cultural connotations. Then use these innovative Lingnan form elements in architectural decoration to make Lingnan traditional architecture Cultural elements innovate in inheritance and develop in innovation.

The practice of the Cantonese Opera Art Museum in this regard is worthy of our reference. It reorganizes different geometric patterns such as Pattern of Chinese character “Hui”, water pattern, Buddhist “卍” symbol, ancient money, and Fang Sheng into four-way continuous and two-way continuous reorganization to form new symbolized patterns so that they can use as a decoration around the frame of the building or as a base to embellish the appearance of the building, or to reproduce the realistic scene in the Museum. It makes appropriate selection and improvement of the described people or animals and plants, then retains the most important features in the form of imagery, and presents them on the facade of the building as architectural decoration [4], which makes Lingnan traditional architectural culture present a new expression.

3.1.3. Architecture structure
Lingnan traditional buildings are mainly brick-wood structures, column and tie construction or column
and tie construction combing with post and lintel construction, and some buildings are brick-concrete structures or frame structures. With the development of structural technology, we can use a variety of methods to innovate the structural space of the building in the process of transforming traditional Lingnan architecture so that the traditional architecture of Lingnan can be better developed. We can combine new structures with traditional building structures. For example, the Qionghuatang (Chaozhou Hall) building of the Cantonese Opera Museum combines modern reinforced concrete structures with the traditional structure of Chaozhou. We can also use steel frame pressurized steel plates during the transformation of traditional buildings Structure to improve construction speed. We can combine new structures with traditional building structures. For example, the Qionghuatang (Chaozhou Hall) building of the Cantonese Opera Museum combines modern reinforced concrete structures with the traditional structure of Chaozhou. We can also use steel frame pressurized steel plates during the transformation of traditional buildings Structure to improve construction speed.

Yongqingfang retained the external wall after removing the old dangerous floors and beams, and poured concrete in the side-by-side brick walls. The steel columns and steel beam structures were added to the interior of the building. The steel wall is used to connect the outer wall with the steel column and steel beam, which can realize the innovative combination of the old and new building structures. When reconstructing the Meisha Education Building on Yongqing Avenue, the damaged space inside the building was demolished and replaced with a modern glass curtain wall and steel structure. The previous low and dark old condition became a bright and transparent reception space, and a vertical external staircase was placed between the new and old buildings to convert it, so that the spaces penetrated each other [5].

3.2 Creative transformation and innovative development in meso level
3.2.1. Building facade modeling
In Lingnan area, especially in the Pearl River Delta area, the building facades are usually gray hemp stone plinth, gray brick wall, gray tile roof, special wooden door in xiguan, Manzhou windows, hardwood doors, hanging doors etc., elements reflect the strong cultural characteristics of Lingnan.

In modern architectural design, we should adopt a variety of methods to further the creative transformation of Lingnan architectural culture. We can reorganize the different Lingnan basic morphological elements, and combine Chinese traditional classic elements or Western elements with Lingnan native elements to produce new Lingnan morphological elements and apply them to the building’s facade shape. We can also innovate the diversity, transparent, compatible and open of Lingnan’s architectural culture by irregularly changing the shape of the building’s façade, the contrast between the virtual and solid lines, the innovation of Lingnan decorative elements, the Contrast between lightness, transparency and roughness of materials, and the lightness and slenderness of detailed components.

After the renovation, the window of the Guangfu Qilou (arcade-house) in Liwan District is innovated on the basis of the traditional Manzhou window. The window frame is mainly made of wood, and the wooden partition window has a rich and varied line shape. Breathable geometric pattern leaking windows or embedded red, yellow, blue and other frosted glass in the wooden partition window, different combinations of wooden partition window and frosted glass have evolved nearly a hundred pattern styles. The shape of the window cover of the Guangfu Qilou is various, including straight, curved, semi-circular and other shapes. The upper and lower parts of the window are decorated with shells, roll grass, geometric shapes, plant patterns, etc. European-style pilasters are added on both sides of the window to form a uniform structured façade [6]. The anti-theft net of the window and the balcony railing of the Guangfu Qilou building are spliced from different geometric patterns such as olive, circle, rhombus, rectangle, triangle or Chinese patterns such as ancient coins, flowers, Chinese knots etc. so that the building’s façade presents a strong architectural flavor of New Lingnan.

The Cantonese Opera Art Museum building gives exquisite decorative patterns to the horizontal windows. Not only is it airy and transparent, the light and the building’s façade pattern are fused to
make the rigid patterns come alive, and the mottled shadows and patterns make the building’s façade a different aesthetic. Many of the building facades in Yongqingfang are good at using different masonry methods of bricks to make the building facades show local changes in line, surface, or volume. The pierced brick walls and the actual solid walls false and real contrast with each other of the building. The walls hollowed out with tiles and the solid blue brick walls contrast with each other, so that the building’s façade presents a new flavor of Lingnan.

3.2.2 Building space layout

Many traditional Lingnan buildings, such as a bamboo tube houses have large lengths and small widths, are not suitable for the daily use of modern people. They can open up small spaces during the transformation and form a large space in the middle to make the interior space of the building flexible and variable. There are various types of building spaces with rich levels, such as split floors, jump floors, mezzanines, and drop floors make public, semi-public, private spaces coexist. We can cleverly set up open architectural elements such as open halls, open loggias, open windows, open doors, open staircases, surrounding corridors, steps, patios, courtyards, pillars and other elements to innovate the traditional architectural form of Lingnan, and let the indoor and outdoor spaces of the building penetrate into each other so as to better meet the requirements of ventilation, lighting and heat protection in Lingnan district. As a result, the open, transparent, free and open nature of Lingnan’s traditional architectural culture is carried forward in a new form.

The Vanke Yun in Yongqing area is the oldest Qing Dynasty blue brick consecutively arranged bamboo tube house in the area. During the renovation, the architect kept four brick walls and opened up the internal space to form a large space. The new steel structure system and new roof system were built. A patio and a “glass box” meeting room were set inside the building, forming a new and old public event space that is separated and integrated [7].

3.2.3 Building craftsmanship and technology

In the process of innovation and development of Lingnan traditional culture, the inheritance and innovation of building technology are an important direction. We can combine Lingnan traditional craftsmanship with modern technology, use Lingnan traditional craftsmanship technology to express western elements, use western skills to express Lingnan native elements, and combine Lingnan traditional craftsmanship technology with painting, dance, music, kung fu and other arts to create the new Lingnan architectural cultural form.

The wooden arched door of Guangfutai and Guangfu wood sculpture in the Cantonese Opera Art Museum is presented in emboss form. The geometric pattern of the unevenness of the Western elements carved using Lingnan traditional crafts is in sharp contrast with the homogeneity of traditional tile roofs, the combination of Chinese and Western elements in Lingnan traditional craft carving has a unique flavor. The Western-style building dome painting “Mirror Flower Water Moon” in the museum uses western painting techniques to express the native elements of Lingnan, combines acrylic materials to restore oil painting, combines perspective space and architectural planes, and reflects the museum’s reflection in water Condensed in the dome paintings, it shows the dramatic spatial effect of museum “like illusion” [4].

3.3 Macro creative transformation and innovative development

3.3.1 Combination of architecture and garden

Lingnan traditional architectural culture is based on the environment, pays attention to Fengshui, highlights water, and integrates architecture and garden. In the design, we must pay attention to the modern interpretation of traditional architecture and garden space, and learn from the Lingnan traditional garden’s gardening techniques, landscaping techniques and Fengshui environment construction concepts to innovate Lingnan architecture and garden space.

The Western House in the Cantonese Opera Art Museum stands between mountains and rocks, as if growing naturally from the mountains. This is not only a breakthrough of traditional garden elements, but also a supplement to the garden atmosphere. The western-style dome and flower lattice are full of
exotic style, innovating the tradition of the western culture of Lingnan garden to the east, reflecting the inclusive characteristics of Lingnan culture [8].

The smallest courtyard in the north courtyard of the Cantonese Opera Art Museum Jiqing Pavilion combines the architectural courtyard space with contemporary art fluidly. The combination of parallelogram stone pavilions, stone corridors and relief walls with Spanish tiles on the ground creates an indoor space effect in the outdoor courtyard. The embossed wall adopts contemporary four-dimensional dislocation spatial expression techniques, creating a multiple spatial experience like multiple screens, as if a group of virtual courtyards emerge, making people walk through the gardens moving in different dreams and dreams.

3.3.2. Building and street renovation

In the reconstruction of traditional Lingnan buildings and neighborhoods, most of them are currently focused on preserving and restoring the architectural features, urban context and street texture, strengthening the building structure, repairing the building as it is, adding and improving supporting facilities. Lingnan traditional architectural culture is rooted in traditional buildings such as Guangfu Qilou building, bamboo tube houses and Xiguan big houses. If the Micro-renovation” is used to protect and revitalize the historical relics of the block, it will renew its brilliance, which will better promote the traditional architectural culture of Lingnan.

Therefore, we can use the example of micro-reconstruction of the historical and cultural block on Enning Road in Liwan District to innovate the traditional building and the pattern of block reconstruction through various methods, so that the architectural culture development of Lingnan will be innovative. For example, while retaining the traditional style of buildings and neighbourhoods, we can blend modern elements so that tradition and modernity are perfectly integrated; Building volume, height, material, color and spatial scale are in harmony with the historical features of the block, and then innovated through modern expression methods such as unity and contrast, rhythm and scansion, the relationship between fale and reality and changes in light and shadow;

Partially replace the functions of the building according to local conditions, retain the traditional architectural appearance and place modern spaces in it, and perform modern interpretations of traditional doors and windows, clear water brick walls and double-slope roofs and then through the methods of contrast between fale and reality, high and low, inheritance and evolution to innovate the relationship between the building and the block. Improve the living environment of the neighborhood, continue the residential function of the neighborhood, rationally set up community service places, improve the public welfare of the neighborhood and promote the cultural ecology of the neighborhood [9], in a true sense, innovate and revitalize buildings and historical neighborhoods. In this way, the buildings and historical districts are innovated in a true sense.

3.3.3. Combination of construction and other industries

In the process of combining architecture with other industries, development should be guided by Lingnan culture, emphasis on Lingnan culture rather than excessive commerciality, and highlighting the charm of Lingnan culture. Protect traditional Lingnan crafts and folk culture, integrate cultural and creative industries, restaurants, homestays, souvenir shops and other industries, combine commercial formats with Lingnan architectural culture and combine traditional time-honored brands with modern industrial architecture. At the same time, it is necessary to set up different industrial formats according to the buildings with different reservations, and to appropriately introduce different industries with regional characteristics in the building in accordance with the characteristics of each place to avoid all buildings as well as all cities have the same appearance.

The northern part of Enning Road adopts a combination of “cultural, commercial and tourist” methods. The district is equipped with cultural experience, specialty catering, boutique hotels, and commercial retail and tourist service centers. Traditional architectural transformation combines a variety of distinctive businesses, including residence, commerce, public services and cultural activities etc.

3.3.4. Integration of architecture and culture, art

Various cultures and arts have a profound impact on Lingnan architectural culture. Different cultures
have created a huge variety of Lingnan architecture, forming different architectural cultural landscapes. We can combine architecture with cultural activities and cultural arts such as painting, literature, calligraphy, Cantonese opera, Wing Chun Quan, martial arts, lion awakening, religion, bronze arts and crafts of Xiguan [10]. The Cantonese Opera Art Museum perfectly integrates Lingnan folk embroidery and architecture, including Lingnan embroidery, Chaoshan paper-cutting, Guangzhou Colored porcelain and lacquer painting. In the creation, the craftsman takes Confucianism as the source of creation and embodies the excellent traditional cultural thought of China. We can also artistically integrate the symbolic form of homonyms, the symbolic form of metaphors, the symbolic shape of auspicious utensils and the auspicious symbolic form of drama characters into architecture.

Many buildings in Liwan District have transformed utensils, geometric patterns, animals and plants into various auspicious symbols, which carry auspicious connotations and meanings and are used in architectural decoration. For example, Guangfu wood sculptures use bats to mean “Blessings everywhere”, Longevity peaches mean “longevity”, using banana leaves in Lingnan to mean “great cause” and so on.

4 Conclusion
Lingnan traditional architectural culture has great cultural value. We should use creative thinking in the transformation of traditional buildings, new architectural designs and the transformation of historical and cultural districts. We should use a variety of methods to carry out creative transformation and innovative development from different aspects. The unique regional characteristics of Lingnan have been demonstrated in the city environment, construction design and block renovation, which has enabled Lingnan’s traditional architectural culture to be better, innovated and developed, and has made Lingnan’s traditional architectural culture endless and flourishing.

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