Inheritance and Innovative Application of Lingnan Traditional Architectural Culture in Architectural Design

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Abstract. This thesis first discusses the necessity of the inheritance and innovation of Lingnan traditional architectural culture, then analyzes the connotation of Lingnan traditional architectural culture and studies the inheritance of Lingnan traditional architectural culture in modern architectural design, and finally focuses on the integration of Lingnan traditional architectural culture into architectural design Innovative application methods. Through these approaches, Lingnan traditional architectural culture can be better inherited and innovated in architectural design, and it is hoped that it will have some practical guiding significance for the application of architectural designers in architectural design.

Keywords: Lingnan Traditional Architectural Culture, Architectural Design, Inheritance Method, Innovative Method

1 Introduction
Chinese President Xi Jinping proposed that “without a high degree of cultural self-confidence, there will be no great rejuvenation of the Chinese nation.” The inheritance of China’s outstanding traditional culture cannot be separated from cultural self-confidence. The application of Lingnan traditional architectural culture can effectively promote Lingnan traditional culture, which is a necessary step to realize the great rejuvenation of the Chinese nation. Therefore, the inheritance of Lingnan’s traditional architectural culture and the research on its innovative development has become an important subject in modern architectural design.

However, in recent years, China’s exchanges with other countries have gradually deepened, and various foreign cultures have continued to impact local traditional culture. At present, China’s architecture is dominated by modern and European-style architecture; few new buildings with Lingnan style are available. The development of Lingnan traditional architectural culture is worrying.

Lingnan traditional architectural culture is one of the outstanding national cultures of the Chinese nation. Its unique charm and great cultural value cannot be ignored. We need to dig deeper into its ideological concepts, humanistic spirit, and inherit and innovate in accordance with the requirements of the times, so that the traditional Chinese culture can show its permanent charm and style of the times.

2 The connotation of Lingnan traditional architectural culture
Lingnan traditional architectural culture refers to the overall cultural value of humanities and arts, philosophical thinking, design thinking, cultural spirit and aesthetic tastes contained in traditional architectural technologies such as spatial layout, building structure, element combination, style modeling and detailed processing. Lingnan traditional architectural culture has formed an inclusive architectural culture centered on the Han culture in the Central Plains.

Lingnan architecture shows the whole process of contact, collision, integration and innovation between Chinese and Western architecture culture with its rich and intuitive appearance and full of artistic charm. It has emerged from the ranks of modern Chinese architectural development with its characteristics of compatibility, diversity, openness, pragmatism and innovation [1].

Lingnan’s new buildings are characterized by open planes, transparent spaces, light shapes, bright and elegant colors, and the combination of architecture and gardens [2]. The layout of traditional Lingnan architecture reflects the Confucian etiquette. The decoration of traditional Lingnan architecture contains the characteristics of Chu culture and Wuyue culture. The technical treatment of Lingnan architectural details is exactly the same as that of Wu Yue culture. Xingmei Lingnan Architecture is good at borrowing foreign architectural symbols, technologies and techniques, and adopts a combination of Chinese-style planes and Western-style facades. Chaoshan Lingnan architecture shows the contradiction and complexity of rational choice and cultural transformation. Guangfu Lingnan architecture shows the fusion of Chinese and Western cultures, especially Kaiping Diaolou (Watchtower) and Guangfu Qilou (arcade-house) can best reflect the compatible, open, pragmatic and innovative cultural characteristics of Lingnan traditional architectural culture [3].

3 Inheritance of Lingnan traditional architectural culture

3.1 Application of shape

The most direct and basic method of applying Lingnan traditional architectural culture to modern architectural design is the application of form, that is, the imitation and reproduction of the formal beauty of the material element patterns, forms, textures, colors, etc. in Lingnan traditional architectural culture.

The Chen Family Temple, a treasure house of Lingnan architectural art, can be described as a collection of Lingnan traditional architectural decorative elements. Its halls, halls, courtyards, doors, windows, corridors, roof ridges, etc. are all carved with the “three sculptures and three modelings “(Brick sculpture, stone sculpture, wood sculpture, gray modeling, ceramic modeling, clay modeling) of various Lingnan architecture. It fully applies the form of Lingnan’s traditional architectural culture to the interior and exterior of the building and the decorative details, so that the entire Chen’s Academy reflects strong Lingnan characteristics.

The most traditional Lingnan building named Lianxiang Lou in Guangzhou uses the traditional Lingnan architectural cultural forms such as lotus-shaped reliefs, Guangzhou style Manzhou window, traditional Lingnan woodcarvings, and beautiful lotus lights to create a unique Lingnan architectural charm.

3.2 Emotional sustenance

Lingnan traditional architectural culture is an art of emotional expression, and emotions run through the artistic creation as a lifeline. In architectural design, designers can pin their personal emotions on Lingnan traditional architectural culture and use Lingnan traditional architectural culture as a bridge of emotional expression.

The couplets on both sides of the Liugengtang Gate in Shawan Town, Panyu District, and Guangzhou expressed that the construction of Liugengtang has taken hundreds of generations and hundreds of years of hard work to make future generations live a better life. It entrusted the ancestors’ hope that all the people of the tribe would go together and live in harmony forever.

3.3 Expression of connotation
Lingnan traditional architecture has rich cultural connotation, profound artistic conception and rich symbolic meaning. The “connotation” contained in it is the key to people’s obsession with its external shape. Designers should be good at applying Lingnan traditional architectural culture to express connotation, so that people can fully understand the profound connotation contained in architectural design, taste its uniqueness, and appreciate its distinctive style.

The Lingnan building is higher and higher after entering from the gate, which means that the owner’s career is rising step by step. Lingnan architecture likes water flowing into the house, which means that money is gathering more and more. There is a Qingyun Lane on both sides of Xiguan house, which means that the host can easily get to a very high Official position at once. The Ceramic sculpture on the top of the door ridge decoration of Guangzhou Jinlun Clubhouse, the long beard of Aoyu stretches into the clear sky, which shapes the image of flying in the sky. The pottery sculpture on the top of the door ridge decoration of Guangzhou Jinlun Club implies that it is hoped that future generations will be able to get the first place in the exam, get the first prize, and be a noble officer.

3.4. Inheritance of culture
Lingnan traditional culture is vast and profound. If modern architectural design can be properly integrated into Lingnan traditional architectural culture, it will not only pass on Lingnan traditional culture well, but also enhance the taste of architectural design. As we all know, Lingnan painter sect, Cantonese Opera and Guangfu Music are known as the famous “Three Shows in Guangfu”, which is the essence of Lingnan traditional culture. In modern architectural design, we can use the interpretation of poetry and song in the works, draw on the Lingnan painter sect’s expressive methods to create the Lingnan landscape artistic conception, and use the rich expressions of Lingnan calligraphy to interpret the diverse and varied building facades.

Chen’s Academy used a large number of paintings and poetry works in the architectural decoration. The left and right sides of the building are a hundred birds painting and a Wulin painting contain with Phoenix, crane, pheasant, mandarin duck, and warbler. The buildings well inherited the traditional culture by engraving with many poetries of many famous poets.

4 Innovative application of Lingnan traditional architectural culture in architectural design
4.1. Innovative approaches to architectural form
The innovation of Lingnan traditional architectural culture in architectural design is most intuitively reflected in the application of form. We must be good at using modern design techniques to transform Lingnan traditional architectural culture. First of all, we can use simplified and abstract methods to extract the material image of Lingnan traditional architectural culture, reorganize the traditional architectural cultural elements of Lingnan by using the methods of fragmentation and reconstruction, and use cutting and dislocation techniques to reshape the material form of Lingnan traditional architectural culture. Then, we can use various free combinations such as connection, interlacing, rotating, twisting, expanding, contracting, splitting, tilting, exaggerating and mutating to innovate the physical form of Lingnan traditional architectural culture. Finally, we use modern technology and composition methods to skillfully combine the reshaped Lingnan traditional architectural cultural form with the points, lines, areas and bodies of the building, so that the building not only presents a new look, but also reflects the traditional Lingnan architectural culture Charm.

For example, the design of the “Guanshan Family” Yueyun museum in Xiqiao Mountain, Foshan, extracts the two classic elements of the Wok ear house roof and the herringbone roof in the traditional Lingnan architectural culture to reconstruct and reproduce by ups and downs with modern composition methods, presenting an artistic conception like mountains and rivers, making it a masterpiece of Lingnan traditional architectural culture’s innovative application in architectural design.

4.2. Innovative approaches to building space
4.2.1. Innovation of Lingnan traditional architecture space composition
We must thoroughly study the spatial characteristics of traditional Lingnan architecture, dig out the elements that can be used for modern architectural space innovation, and create new architectural spaces that are both introverted and open. On the basis of inheriting the traditional Lingnan architectural space sequence and architectural composition, we can incorporate the patios, open rooms and open loggias commonly used in Lingnan traditional architecture into the architectural space design. We can appropriately set the common Lingnan traditional architecture elements such as front porch, back porch, side porch, cloister, side porch, mountain climbing porch or Qingyun Lane between the building and the building. Not only can it achieve shading, ventilation and other effects, but it can also make the building space sequence virtual and solid, and connect the scattered buildings into an organic whole.

We can learn from the traditional Xiguan big house and bamboo house methods of combining the building with patios and courtyard gardens, and set up a patio or garden space near the entrance of the building to increase the lighting and beauty of the entrance of the building, set up appropriate patios or partial atriums in deep buildings to improve the lighting and ventilation of the interior space, set up a back garden at the end of the building to increase the space for rest and entertainment. As a result, the building and the garden space continually merge, and the building and the interior space penetrate into each other, thereby changing the monotony of the building space and forming a poetic modern garden-style building space.

4.2.2. Innovations in building profiles and interior spaces
In the design of the space of the building section, we can use the methods of split-level, jump-level, duplex, and step-out to innovate the vertical space inside the Lingnan building, so that the vertical space of the building presents multi-level changes. In the innovation of the internal space of the building, we can innovate the interior space of the building by adopting spatial organization forms such as tandem space organization form, wide-hall space organization form, launching space form, and mixed space form according to the actual situation. We can also learn from traditional gardening methods such as borrowing scenery, opposing scenery, adding scenery, clip scenery, frame scenery, leaking scenery, suppression scenery, obstacle scenery and other methods to create a changeable space inside the building. Through the changes in the size of the building space, the reality, the light and shade, the straight, the contrast of the retractable, and the light and shadow, people can feel the rich changes of the interior space of the building.

4.2.3. Introduce advanced space processing techniques
The innovation of architectural space requires us to boldly introduce various advanced spatial processing methods at home and abroad today, such as taking reference from Tadao Ando’s architectural geometric homogenization of architectural space, blurring the boundary between indoor and outdoor space, and constructing the exterior inside the building, and thus achieving the innovation of the architectural space. We can cleverly use the combination of light and space to create the light and shadow changes of the building through different geometric lines, so that the light in different spaces can be contrasted with light and dark, and the falsehood and reality can make the building space changeable and lingering. We can use the landscape drawing technique to interpret the architectural space. For example, the waterside mountain residence designed by Wang Shu, China ‘s first architect who won the Pritzker Prize, uses Chinese landscape painting techniques and uses the most traditional building materials such as bamboo, concrete and rammed earth to perfectly interpret the traditional Chinese landscape painting architecture. The black tile roof, yellow mud wall, meandering promenade, clean lines and revolving building space make the waterfront mountain residence in the traditional charm all exude modern beauty and new ideas.

4.3. Innovative use of traditional and modern building materials
4.3.1. Combination of new construction technology and traditional materials
We need to dig deep into the cultural value and use characteristics of traditional Lingnan building materials, and use new construction methods to bring new light to traditional materials. We can learn
from the practice of architect Wang Shu in designing the Ningbo Museum. Moso bamboo is abundant in Ningbo. In order to better reflect the local cultural characteristics, Wang Shu poured traditional material concrete into the template made of moso bamboo in the interior wall construction of the museum, so that the surface of the concrete after molding will show the texture effect of moso bamboo randomly cracking [4], so that the building wall naturally presents a strong local cultural characteristics. The wall of the seed church of Luofu Mountain in Huizhou, Lingnan district, borrowed from this practice for further success.

Foshan Lingnan Tiandi combines traditional small green tiles with Guangfu blue bricks, and adopts new masonry techniques to build various leaking walls, which is quite unique. Foshan Tiandi combined the tiles and bricks to build a diversion wall, and skillfully transplanted the roofing materials to the wall [5], which can reflect the charm of Lingnan’s traditional architectural culture, but also has the era’s innovation.

When applying the cultural elements of traditional Lingnan architecture, we can follow the above practices and carry out process innovation based on traditional Lingnan materials such as oyster shells, blue bricks, red bricks, bluestone slabs, red sandstone, volcanic rocks, and coral stones. For example, the use of through-air masonry can not only save materials, but also form an effective partition and take into account ventilation and lighting, while forming a rich building wall texture; the use of cantilever masonry can form a variety of different three-dimensional patterns, and can produce rich light and shadow changes, enhancing the visual expression of the building. Using twisted masonry can form three-dimensional curved surfaces with various shapes to enrich the texture of the wall. Combining through-air masonry, cantilever masonry and twisting masonry, forming a rich and diverse combination effect, making the building wall diverse. Use montages to combine traditional materials with modern materials. For example, the outer wall is embedded with strip-shaped coated mirror glass or mirror aluminum plate in the blue brick surface, reflecting the surrounding traditional streets and buildings, so that tradition and modernity, reality and illusion are intertwined appear, people are like entering the space-time tunnel, evoking the impression of Lingnan in the depths of people’s memory [5].

4.3.2. Combination of traditional and modern materials
We must be good at adopting new modern materials, so that Lingnan traditional materials are perfectly combined with modern materials. The advantages of different materials are complementary and combined with each other, and they are skillfully used in modern architectural design. For example, in the design of the new museum of the Suzhou Museum, the famous American Chinese architectural master Ieoh Ming Pei changed the practice of Suzhou’s traditional wooden beam structure. In the new museum’s structural design, new steel materials were used to build the steel structure, high-quality wood is trimmed and packaged in steel. In this way, the perfect combination of traditional materials and modern materials not only inherits the local traditional culture, but also improves the deformation resistance and corrosion resistance of the entire building, and makes the new hall a new look [6].

In the Guangzhou TIT studio group designed by architect Song Gang, rusty steel components are used instead of traditional wooden grilles. The steel components and Lingnan traditional red bricks contrast with each other, forming a strong contrast and beauty. Hong Kong Wetland Park has designed a new type of oyster shell landscape wall. This kind of oyster shell wall uses steel instead of the traditional blue brick frame, and the Lingnan traditional material oyster shell is placed in a wire woven cage. This approach makes the oyster shell wall fashionable and modern, more in line with the aesthetic sense of modern people [5].

4.3.3. Innovative applications of new building materials
In today’s society, science and technology are advancing rapidly, and new materials are changing with each passing day. We can extract inspiration from traditional materials and develop new building materials to achieve the innovative development of traditional building culture.

For example, we can learn from the practice of American architect Stephen Hall. Palm trees are a traditional plant common in the Lingnan area. Stephen Hall’s project design in Shenzhen Vanke Center was inspired by the veins on the leaves of the native plant palm tree, creating a visor similar to
a palm leaf. This sun visor can be horizontally rotated by computer control. When the outdoor light intensity is too high or too low, the indoor light sensor will rotate the blinds within 90° according to the light sensor data to achieve the shielding effect and meet the indoor light requirements [7].

4.4. Innovative fusion of Lingnan architectural culture and architectural living environment

Architecture is created in the environment, and the users of the architecture determine that the architecture is closely related to the human environment. Chinese academician and Architect Wu Liangyong divided contemporary living environment into four spatial dimensions: geographic space, urban form, urban design and architecture. Mr. Wu Liangyong pointed out: “We need to study the environment of human settlements and find out the paradigm of each region. We must take advantage of the characteristics of the region to guide the situation, including the need to explore the regional nature of the building and develop regional architecture” [8]. The development of regional architecture also requires the inheritance and innovative development of local architectural culture in architectural design. Only in this way can our architecture have regional characteristics, and our urban appearance can avoid the side of a thousand cities embarrassing. In architectural design, we should pay attention to the coordination and innovation of building mass, building form, building structure, building color, building trend, etc. with the local regional environment, urban texture, built environment, and architectural culture [9].

For the Lingnan area, the innovative fusion of Lingnan architectural culture and the residential environment is a place that our Lingnan school architects should attach great importance to in design. Therefore, in the architectural design, we should extract Lingnan characteristics from the aspects of natural conditions, regional environment, climate environment, vegetation environment, urban environment, human environment, historical allusions, folk customs, tangible cultural heritage, intangible cultural heritage and human needs. By de-roughing and refining, the tangible and intangible elements of Lingnan architectural culture are refined, and then abstraction and simplification, coordination and contrast, dislocation and reorganization, etc. are used to reshape and innovate Lingnan architectural cultural elements and penetrate into the architectural design and living environment, so as to create a colorful and distinctive architectural design mode, Lingnan architectural culture and residential environment are integrated in innovation, and the integration reflects the characteristics of the times and regions.

We can also break the traditional Lingnan architecture and living environment model and change the traditional form of the closed gate courtyard of the Xiguan big house to a variety of open and semi-enclosed buildings. According to the living habits of modern people, the living space of the traditional Lingnan architecture will be rezoned and layout, re-planning the building’s floor plan, the layout of the building’s living space, the building’s space design, and the organization of traffic flow lines, adding more space for external communication and entertainment venues [10].

We can also learn from the design of the farmhouse in the Meicun Maker Project in Ansha Town, Changsha. Folklore activities are embedded in the design of the farmhouse. Considering the living habits of residents such as planting vegetables, flowers, and poultry, creating a residential environment for the original production and lifestyle of the residents. Not only does it well inherit the local folk culture, but it also cleverly integrates folk culture and architectural design perfectly.

5 Conclusion

Lingnan traditional architectural culture is a bright pearl of Lingnan culture. We should carry on the inheritance and innovation from different angles, through different channels, using different methods and in many ways. Only in this way can Lingnan traditional architectural culture be subtly integrated into modern architectural design. Lingnan traditional architectural culture be developed, the charm of Lingnan traditional culture can shine, the essence of Lingnan traditional culture can be passed down from generation to generation, and the greatness of the Chinese nation Revival can be achieved gradually.
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