Architectural design of an open cultural space for a cultural heritage art museum

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Abstract. Starting from the interaction between art museums and the public and the way to get along with them, art museums can be closer to the life of the public, and provide the public with spiritual enjoyment, while also playing a certain role in promoting the dissemination and inheritance of local and even national culture. The audience, as the receiver of the exhibition information of the art museum, is also the medium of cultural dissemination of the art museum. This interactive relationship is exactly what we want to explore in the process of art museum design.

1 Introduction

Existing studies on the type of architecture of art museums are mostly discussed in terms of the development history of art museums, architectural space, and so on. For example, Duan Bangyu's "Research on Flexible Space Design of Art Museums" discusses from the perspective of changes in the exhibition space of art museums, while Gan Chao's "Research on "Space Matching" of Contemporary Art Museum Exhibition Halls" discusses from the basis of how art museums can better adapt to the needs of the society under the ever-changing spatial design strategies [1].

In the literature oriented to the introduction of architectural monolithic examples, most of them are introduced and studied with specific buildings as objects. Among them, Sun Rui's "Taniguchi Yoshio: Pure Space - Analysis of Toyota City Museum of Art, Japan" takes Toyota City Museum of Art as an example and analyzes its site, design techniques, materials and spatial processes, etc., while Henan Agricultural University students' "Analysis of "Small in Big" Space Methods in Red Brick Museum" is an analysis of "Small in Big" Space Methods in Red Brick Museum. "Spatial Approach Analysis in Red Brick Art Museum" analyzes specific architectural examples from the perspective of spatial approach [1].

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Traditional Lingnan buildings employ a variety of thermal design measures in both indoor and outdoor spaces [2,3].

The main objective is to provide optimal thermal comfort to the occupants through effective strategies including shading, ventilation and insulation.

In recent decades, passive energy-saving techniques such as external shading systems, natural ventilation, lightweight concrete wall insulation and roof greening have been widely applied in building design [4,5,6,7].

The integration of technology and art in traditional Lingnan architecture has also influenced modern Lingnan architectural design to a certain extent.

Therefore, the contemporary architectural design of this study should not only reflect the local culture, but also consider the unique regional climate characteristics [8].

2 Case Studies and preanalysis

In December 2020, the 120th anniversary of the birth of Mr. Lin Fengmian was celebrated in Meizhou, a famous historical and cultural city in China. Mr. Lin Fengmian had high attainments in art. He was adept at absorbing the essence of traditional Chinese culture and modern Western art, and skillfully fused the two into his creations. His works not only have a unique style in terms of aesthetics, but also show his profound thinking and understanding of human nature, life, nature and other issues. Therefore, in order to promote the artistic spirit of Lin Fengmian and to promote the cultural brand of Meizhou, it is proposed to build a medium-sized modern art museum named after Mr. Lin Fengmian.

2.1 Location analysis

For three consecutive years, Guangdong Province has led the nation in total investment in cultural services. With the characteristics of exuberant and diversified mass cultural
demand and uneven regional development, Guangdong Province continues to improve the construction of public cultural service system, and the effective supply capacity of public culture has been significantly improved. Meizhou City is the intersection of Lingnan culture and Hakka culture, the important birthplace of Hakka from the Ming and Qing dynasties to the present, and enjoys the reputation of "Hakka Capital of the World". Meizhou City has the honorary titles of National Famous Historical and Cultural City, Capital of East Asian Culture and China's Excellent Tourism City. The project site is located in Meijiang District, Meizhou City, Guangdong Province. (Figure 1)

2.2 Surrounding Environment Analysis

The project base is located in the southeast of Jianying Park in Meizhou City's Meijiang District, with the Green Axis Plaza and Timely Light Commercial Street connected to the east. Jianying Park is located at the starting point and core of the central axis of Meizhou Jiangnan New City, which is the largest park in the Meizhou urban area so far, while the Green Axis Square perfectly depicts the beautiful central axis of the Meizhou city center. The project connects Jianying Park, Time Meizhou and the Green Axis Square with a landscape axis, which can create a green and permeable space with openness. On the north side of the base are Meizhou Science and Technology Museum, Meizhou City Exhibition Hall and Youth Science and Technology Museum, while the Art Museum as a cultural exhibition building echoes with it, forming a distinct cultural axis.

2.3 Neighborhood Traffic Analysis

The project base is adjacent to the street on three sides, with Ruyi Road to the north, Zhonghuan Road to the south and Jianying Avenue, the main road for the project site, to the west. The project base is close to several transportation nodes such as Meizhou Railway Station, Meizhou Airport and Shunfeng Passenger Terminal, making the transportation very convenient.

2.4 Crowd analysis

With the global concern for ecological environment and regional characteristics and culture, coupled with the fact that people have more and more leisure time, the world has entered the era of green and low-carbon economy, the era of tourism and leisure, and the era of winning and losing based on culture. Culture has become an important reflection of the competitiveness of cities, and the green industry with tourism industry as its core has taken a dominant position in the world. In this context, people put more and more attention on cultural and artistic enjoyment. (Figure 2)

The main service groups of the art museum are families, parents and children, student groups and so on. (Fig. 3) By linking up the Hakka cultural heritage, art exchanges, and the life story of Mr. Lin Fengmian, it forms a multi-functional public cultural exhibition hall integrating visitor services, cultural and art exhibitions, and cultural and art heritage.

Since the reform and opening up of Meizhou City, the development of culture and tourism has become increasingly prosperous and people's spiritual and cultural life has been enriched in the context of new developments such as the Green Age, the Leisure Age and the Cultural Age. (Figure 4)
3. Design conception

3.1 Design Concept

The architectural style of Lin Fengmian Art Museum integrates modernity and tradition in many aspects. The gray and white solid wall of the façade is combined with glass curtain wall and wooden grille, and the color tone is simple but not uninteresting. Wooden metal and aluminum panels are added in the east and west directions where the light is strong to block excessive light, and at the same time, the wooden metal and aluminum panels add an interesting light and shadow effect.

A successful art museum should not only display, disseminate and popularize art and culture, but also take the initiative to break down the "high wall" between the public and art. Lin Fengmian Art Museum, as the carrier of Meizhou city culture, is simple but dynamic, rigorous but lively. As a new cultural landmark building in Meizhou City, Lin Fengmian Art Museum needs to show the characteristics of Meizhou, give full play to its cultural value, and carry forward the art spirit of Mr. Lin Fengmian while inheriting the traditional culture of Meizhou.

3.2 Design Ideas

The main idea of this design is not only to carry forward the artistic spirit of Lin Fengmian, but also to inherit the traditional culture of Hakka in Meizhou. Therefore, the distinctive feature of "symmetrical enclosure" of traditional Hakka architecture can be integrated into the basic form of this design, and then through the free transformation of the basic form to form a whole. Mr. Lin Fengmian advocated the educational idea of "eclecticism and academic freedom", this design should incorporate Mr. Lin Fengmian's educational idea, and then from the aspects of form, color, mechanism, etc., to create the museum as a comprehensive and superimposed organic cultural whole with openness. (Figure 5)

3.3 Functional Partition

An excellent art museum needs both abundant exhibition space and complete supporting facilities. (Figure 6)

The development of contemporary art has prompted the art museum exhibition hall space to become larger and larger and the use of space to become more and more flexible, so this makes the art museum building need to be more adaptable and flexible in terms of space. The design sets up eight exhibition hall spaces with regular forms, which can meet the needs of displaying different types of works. The exhibition halls are set up on the first, third and fourth floors of the building, in which two exhibition halls are set up on the first floor of the building, including a temporary exhibition hall for temporary display, which provides a better display space for art works that need to be changed frequently. The exhibition halls on the third and fourth floors can be viewed individually or jointly, providing visitors with more options. At the same time, the design provides independent exhibition channels for each exhibition hall, avoiding the interference of the public during the exhibition in the exhibition halls.

3.4 Flow Analysis

Under the vision of its own "contemporaneity", the art museum not only seeks a dialogical and interactive relationship with contemporary art, but also establishes a new type of interactive relationship with the audience, a more experiential, open, and mutually participatory way of communication.
Under the condition of a new type of communication relationship, the internal and external flow of the art museum should be reasonably organized in the design. Each exhibition hall can be both independent of each other and unified with each other. There should be a natural transition between each gallery and between each gallery and public space. At the same time, convenient transportation, safety and reliability should be the primary condition, and the flow of visitors should be clear and smooth. This not only allows visitors to reasonably view the exhibition, but also in the event of an emergency can quickly evacuate and evacuate the crowd.

4 Design results

Lin Fengmian Art Museum is located in Jiangnan Street, Meijiang District, Meizhou City, Guangdong Province. The project site is 2.81 hectares, with a total construction area of 17,013 square meters, of which 12,662 square meters are capacitated and 4,351 square meters are non-capacitated. The number of building floors is five, including four above ground and one underground. The building area is 4,046 square meters, the building density is 14.4%, the green area ratio is 0.36, and the floor area ratio is 0.45. The project has a total of 130 parking spaces, of which there are 130 motor vehicle parking spaces above ground and 88 motor vehicle parking spaces underground. (Figure 7)

The north façade of the building is the main façade, which is mainly in the form of waves for the window openings, symbolizing the free painting style of Mr. Lin Fengmian. Corrugated boards are also installed on the north side of the roof to provide rain protection and heat insulation, as well as to decorate the façade. (Figure 8)

The west elevation of the building provides a secondary entrance for the building's exterior personnel, and the effect of opening up the second floor of the building can be seen on this elevation. (Figure 9)

The south elevation of the building is the entrance for logistics and VIPs. Since the windows of the logistics rooms are relatively regular and dense, large wooden metal aluminum panels are set up on the south elevation to cover them, thus weakening the incongruity between the window openings on the south elevation and the overall window openings. (Figure 10)

The east elevation of the building is the sub-entrance for the exterior personnel, and the wavy windows are also set up in the east elevation to highlight Mr. Lin Fengmian's free style of painting, and due to the direct sunlight on the east side, the wooden metal aluminum panels are added partially on the east elevation for shading, which reduces the direct sunlight and creates light and shadow effects at the same time. (Fig. 11)

The building is dominated by gray and white tones, with local integration of brown and earthy yellow metal aluminum panels, echoing the colorfulness of Mr. Lin Fengmian's paintings with the colorfulness of the architectural modeling. In the overall layout of the building as well as the local modeling, the use of concave and convex, reality and symmetry creates a comprehensive and superimposed organic cultural whole with openness. (Figure 12)
5 Conclusions

In the process of urbanization in the new era of China, art museums, as important cultural symbols of a city, should give full play to their role in urban construction and explore the knowledge power they contain. In the process of designing art museums, we should be empowered by art, so as to promote the communal development of art museums and cities. For Lin Fengmian Art Museum, it is necessary to promote Lin Fengmian's artistic spirit and inherit the traditional Hakka culture of Meizhou, and at the same time give full play to the cultural value of Lin Fengmian Art Museum. Let people come in to know Lin Fengmian and understand the traditional culture and national characteristics of Hakka in Meizhou; let the history and culture go out, so that the Hakka culture and Lin Fengmian's artistic spirit can be disseminated and inherited.

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