

# A Brief Analysis on the Application and Enlightenment of Huizhou Architectural Courtyard wall in Modern Architectural Design

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## Abstract:

With the high-quality development of society, people pay more and more attention to the improvement of cultural quality of life, and want to pursue a familiar and distinctive living environment. Huizhou architecture is a unique ancient style architecture in the south, symbolizing and applying Huizhou architecture to modern architecture is widely welcomed in modern urban life. Using Huizhou architectural symbols to design modern buildings can help people more intuitively understand the culture of Huizhou architecture, so that Huizhou architecture and modern architecture can better integrate.

## Keywords:

Huizhou Architectural Courtyard Wall, Ma Tau Wall, Building Façade Design, Revelation

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## 1. Introduction

When it comes to Huizhou architecture, people immediately think of “white walls, black tiles, Ma Tau Wall, and cloister hanging lattice windows”. The “white walls, black tiles” is the most prominent generalization of Huizhou architecture, which is extremely recognizable and has been subtly transformed into a cultural symbol. This paper analyzes the problems of similar architectural design, lack of regional culture, and renovation of building facades in modern urban renewal combined with the characteristics of Huipai architecture.

## 2. The Historical Causes of the Courtyard Walls of Huizhou Architecture

Traditional Huizhou architecture, also known as Huizhou architecture, refers to the ancient buildings within the jurisdiction of Huizhou (one prefecture and six counties), and most of the buildings preserved are those of the Ming and Qing Dynasties. [1] “white walls, black tiles” is a generalization of the appearance of Huizhou architecture,

that is, a generalization of the characteristics of Huizhou courtyard walls. The courtyard wall of Huizhou architecture referred to in this paper is composed of the upper Ma Tau Wall and the lower white wall.

### ***2.1. The Historical Causes of White Wall***

In order to cater to the scenery of southern Anhui and avoid overly complicated colors, the ancient Huizhou people gradually formed the white wall with typical Huizhou aesthetic consciousness that we see today.

Huizhou villages are scattered among the mountains and rivers. Although the environment is beautiful, the continuous mountain rains is not conducive to the preservation of buildings. So the intelligent Huizhou ancestors smeared lime on the outer wall of the building, so that the building will not be eroded after a hundred years. After a hundred years' baptism, these Huizhou buildings produced ink-like lines on the outer walls, which added artistic charm to the originally blank walls. The uncanny workmanship of nature quietly left its mark here, which is of great historical beauty.

### ***2.2. The Historical Causes of the Ma Tau Wall***

The Hui-style Ma Tau Wall originated in the middle of the Ming Dynasty. In the Ming Dynasty, Huizhou Prefecture had a special type of settlement and topography, which was prone to fires. He Xin, the prefect, made a mandatory decree to build Ma Tau Wall to prevent fire. Since then, Ma Tau Wall has spread around and become a regional feature of architecture, which continues to this day.

The evolution of the shape of the Ma Tau Wall in Huizhou reflects the contradiction between the wealth and social status of ancient merchants. During the Ming and Qing Dynasties, under the strict hierarchical system, Huizhou merchants had no right to use high-grade roof forms because of their lower social class, and the use of bucket and colored paintings and the number of houses were strictly limited. Ma Tau Wall, located high above the building, is extremely eye-catching. Therefore, the Ma Tau Wall in this period was matched with the corresponding courtesy, carefully carved and endowed with ingenuity, so as to show the financial resources and taste of the owner.

## **3. Analysis of Design Elements of Huizhou Architectural Courtyard Wall**

### ***3.1. The Function of the Huizhou Architectural Courtyard Wall***

The courtyard wall of the Huizhou architecture mainly has anti-theft and fire prevention functions.

#### ***3.1.1. Anti-theft Function***

The exterior wall of Huizhou architecture is visually characterized by high walls and small windows. The original purpose of this design is to prevent theft. There are many mountainous areas in Huizhou, which are not conducive to farming. In ancient Huizhou, many people went out to do business, the elderly, weak women and children were stranded in their houses. In addition, they became rich because of Huizhou merchants' operation. Considering the need of security, they cast high walls to resist robbers, which is similar to the courtyard wall form of Fujian Tulou.

### ***3.1.2. Fire Prevention Function***

Another function of Huizhou architecture Ma Tau Wall is to prevent fire. During the reign of Hongzhi in the Ming Dynasty, He Xin, the governor of Huizhou, proposed that every five families should form a group to jointly invest and build bricks into a “wall of fire” to prevent the spread of the fire, which was enforced throughout Huizhou in the form of a decree. In one month, thousands of “fire walls” were built in urban and rural Huizhou, effectively curbing the problem of continuous fires. The “fire wall” created by He Xin is also known as the “Fire seal” because it can effectively seal the fire and prevent the spread of the fire.

In addition, the Ma Tau Wall of Huizhou architecture also derived its aesthetic function as decoration and its symbolic function as an implicit expression of Huizhou merchants’ status.

### ***3.2. The Shape of the Huizhou Architectural Courtyard Wall***

The different shapes of the courtyard walls of Huizhou architecture are mainly reflected by the style of Ma Tau Wall. There are two styles of Ma Tau Wall. The first one is divided into one stack, three stacks and five stacks according to the number of stairs on both sides of the Ma Tau Wall. The five stacked Ma Tau Wall symbolize the five mountains, which are called “Five Mountains facing the sky”. “Five Mountains facing the sky” corresponds to “four waters returning to the hall”, which symbolizes the beautiful vision of gathering wealth and seeking wealth. [2] The second type is divided according to the different seat heads of the Ma Tau Wall, including “magpie tail type”, “seal bucket type”, “sitting kiss type”, etc., “Magpie tail type” refers to carving a brick like magpie tail as the seat head; “seal bucket type” refers to the brick shaped like a square bucket with the word “field” fired in the kiln, but there are two methods of “sitting bucket” and “picking bucket” in the treatment of Indian bucket holder; “Sitting kiss type” is made of kiln baked “kissing beast” components installed on the head of the seat. There are common mammals such as feeding chicken, turtle fishing, tengu, and also “golden seal” or “hawat type”, which shows the owner’s pursuit of the ideal of “reading as an official”. [3] The unique shape of the Ma Tau Wall shows a balanced visual beauty. The continuous arrangement of the Ma Tau Wall makes the buildings in Huizhou where residents live row upon row, ups and downs, forming a unique architectural landscape

### ***3.3. The Material of the Huizhou Architectural Courtyard Wall***

Huizhou is rich in natural stone, wood and paint. The courtyard walls of Huizhou style buildings are made of green bricks, black tiles, wood, lime, and other local materials. The wall base is built with blocks of stone, the Ma Tau Wall is built with green bricks, and the whitewashed wall is painted with lime and mortar, followed by lime. The greatest purpose of whitewashed wall is moisture-proof. The white ash of the powder wall can absorb moisture, and the white ash of the powder wall falls off, that is, it separates from the wall after absorbing moisture. The upper part of the wall is paved with green tiles and dripping water, which can not only shield the wind and rain, lead out the rainwater gathered on the upper part of the wall, but also weaken the adverse impact of the environment on the bottom powder wall, so as to meet the aesthetic needs of local people. [4]

#### 4. The Cultural Implication of the Huizhou Architectural Courtyard Wall

Ancient Huizhou people advocated Confucianism, and the clan view and family view with Confucianism as the core were also reflected in architecture. Under the influence of Confucianism, the ancient Huizhou people have a desire for reading and being an official, and have a tradition of “farming, reading and inheriting families”, [5] at the same time, they are influenced by the traditional Chinese view of nature and follow the way of natural harmony.

The white wall is an important factor in the courtyard wall of Huizhou architecture. The gray-white powder wall is a very representative color of Huizhou architecture, which is the embodiment of the old social hierarchy. [6] The gray wall not only divides the space, but also is patchy, enriching the level and sense of order of the space. Overall, the white wall corresponds to black tiles, flagstone roads, the flowing water, and the green mountains, creating an ecological picture of harmony between the building and the natural environment. The Ma Tau Wall presents a ladder-like and chase-after-order combination, which is the physical extension of the deep-rooted Confucianism in Huizhou. At the same time, the different shapes of the seat head also indicate the owner’s identity and good expectations for future generations. The difference in the number of stairs indicates the difference in the financial resources and status of the owners of other houses.

Huizhou architecture is integrated with Confucian etiquette and influenced by Huizhou merchants’ culture at the same time. The tall courtyard wall and the complicated Ma Tau Wall can better show Huizhou merchants’ mentality that they want to borrow things to reflect their own values. Therefore, we should appreciate it with the attitude of appreciating it with grace and customs.

#### 5. The Extension of the Huizhou Architectural Courtyard Wall in Modern Architectural Design

How to reasonably interpret the traditional regional context of architecture in the context of modernization is a problem that Chinese practical architects have been unremittingly exploring. [7] The most common expression of Ma Tau Wall in modern architecture is to simplify the complicated structure, summarize it in the form of wireframe, and attach it to the top edge of the building. Xieyuda Tea Museum, which extracted the stepped outline line of the Ma Tau Wall, and places it upside down, combined with modern decorative materials, attached it to the north wall of the facade and above the door head. This inversion technique is a diversified presentation of architectural elements. (Figure 1)



*Figure 1. Xieyuda Tea Museum.*

The facade of Huizhou Sculpture Museum in Huangshan City continues to use the combination of high walls and dotted windows of Huizhou architecture, which is

similar to that of Xieyuda Tea Museum. The Ma Tau Wall is simplified and expressed by outline lines. At the same time, combined with the needs of modern people, appropriate adjustments have been made to the opening of the window of the wall. After retaining the combination of high wall and point windows, the indoor lighting is increased by the way of carving and long glass windows. The opening of windows of different sizes on the wall surface make the original dull white wall suddenly energized.



*Figure 2. Huizhou Sculpture Museum in Huangshan City.*

Jixi Museum adopts black, white and gray as the main colors to design the external facade of the building, and the ridge part adopts the technique of “folding the top to imitate the mountain”, which bends the ridge to simulate the trend of the mountain. The Ma Tau Wall is simplified into a rectangular block, which is placed in front of the main building gable as a courtyard landscape, and combined with the “distant mountain” created by the herringbone roof to form a new spatial landscape. The inclination angle of the roof is consistent with that of the local houses, naturally forming a sinuous roof outline, which weakens the spatial depression brought by the large-scale roof. Paving green tiles on the roof is a transformation of Huizhou’s “crisscross mountains and valleys”. [8] Jixi Museum, interspersed with simplified geometric aesthetics, elegant and simple colors, with green plants and waterscape, enhances the intimate and natural feeling of the space.



*Figure 3. Jixi Museum.*

## ***5.1. Changes in the Design Elements of the Huizhou Architectural Courtyard Wall***

### ***5.1.1. Function***

Huizhou courtyard wall was originally used for fire prevention and theft prevention based on the needs of practical functions. Subsequently, it experienced the change process from “practical function to symbolic function”. In the period of lack of fire-fighting facilities, the fire-fighting function of Ma Tau Wall is the main function. With the improvement of fire-fighting level, the fire-fighting function of Ma Tau Wall gives way to the symbolic function and becomes a cultural symbol for people to identify Huizhou Folk Houses.

### ***5.1.2. Styling***

The Ma Tau Wall is a representative symbol of Huizhou architecture, and it is a typical feature different from other architectural styles. Compared with the traditional The Ma Tau Wall, the modern architectural design simplifies the shape of The Ma Tau Wall, simplifies the complicated tile ridges into elegant grey edges, making the Ma Tau Wall shape more obvious. These three architectural symbols, Ma Tau Wall, wall surface and window, form various combinations of points, lines and surfaces. It is the combination of these architectural symbols that gives the modern Huizhou architecture a strong life. The simple combination of dots, lines and surfaces is fully integrated with black, white and gray tones, creating a quiet and simple modern Huizhou architecture space for the modern public. [9]

### ***5.1.3. Materials***

With the advancement of science and technology, traditional building materials and their production methods have been replaced by modern building materials and their production methods. Such as metal materials, concrete, glass, etc. instead of traditional wood, stone, brick and other materials; Modern mechanization and instrumentalization replace the traditional manual construction. In today's Huizhou architectural creation, how to retain people's memory of Huizhou architectural culture, use modern new materials, and create a modern architecture that not only conforms to the development law and aesthetics of modern society, but also enables people to find the memory of traditional architectural culture in it is a subject worthy of in-depth study.

### ***5.2. The Changes in the Cultural Implication of Huizhou Architecture Architectural Walls***

The cultural connotation of the courtyard walls of Huizhou architecture includes the traditional Chinese view of nature, the Confucian etiquette thought, and the will of Huizhou merchants themselves. Today, as a continuation of traditional culture, it is condensed into symbols and integrated into modern design. In the process of symbol extraction, it is more the extension of shape and color, while ignoring the spiritual communication. The collision between traditional culture and the times should not only be superficial, but also integrate the spiritual level of traditional architecture into modern architecture. We should see the similarities between them and modern technology, the spirit of the times, and truly achieve the tradition is eternal.

## **6. The Significance and Enlightenment of the Research on the Huizhou Architecture Architectural Walls**

### ***6.1. Stimulate the Creative Inspiration of Modern Regional Architecture***

Nowadays, many modern buildings in Anhui Province imitate the ancient Huizhou architecture only by simply reproduction of some element symbols, or by imitating the building monomer in a rough way. This phenomenon shows that architects' excavation and grasp of the characteristics of Huizhou architecture remain at the stage of traditional symbols expressed in modern materials, and lack of comprehensive and profound thinking on the characteristics and cultural connotation of Huizhou architecture. The essence of the regional characteristics of Huizhou architecture is the ecological ethics and the concept of the unity of heaven and man embodied behind its architectural form. It reflects the symbiotic concept of human, architecture and nature under the social, natural and cultural conditions at that time. Contemporary architects

should explore the cultural connotation behind the architectural creation, make appropriate reference in form and do some innovative research, which is a good inheritance of Huizhou context. At the same time, it takes into account the adaptability, and considers the functions, materials, aesthetics, and human factors required by the crowd. On the basis of inheriting the architectural context of the past, combined with the needs of the current crowd, we create regional buildings that can meet the needs of the crowd and have local cultural characteristics.

## 6.2. Inspiration for Modern Architectural Design

With the development of society, the city is facing the planning and construction of new areas and the upgrading and updating of old areas. For the newly planned areas, it is worth discussing how to inherit and carry forward Huizhou architectural context, so that the new architectural creation has both traditional cultural charm and modernity and adaptability. These new building types can not only be commercial planning and stereotyped style imitation, but should be combined with the actual situation of the region to create buildings with regional characteristics and adaptability. For the renovation of old areas, the renovation and renewal of the facades of old buildings can also refer to the tradition of Huizhou architectural appearance materials, colors and other aspects, so that the external walls of buildings have more artistic meaning after experiencing wind and rain.

## 7. Conclusions

The cultural connotation of architecture should reflect a spiritual demand based on the building itself, and architects are the communicators of this spiritual connotation. At present, architectural design should not only use the simple form of traditional symbols to deduce, but should also be a reflection of spiritual and cultural heritage. The exploration of the application of Huizhou architecture in modern architectural design is a good enlightenment.

## Conflicts of Interest

The author declares that there is no conflict of interest regarding the publication of this article.

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