

A Study on Expression and Cognition of the Architecture Facade in Yokohama Chinatown

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1. Introduction

In the rapid process of urban regeneration all over the world, and under the background of people's continuous pursuit of regional identity, the main purpose of this research is to study the characteristics of Chinese traditional architectural language appeared in overseas commercial building, and explore the changes in the expression of traditional Chinese architecture overseas. This research hope to provides a meaningful reference value for exploring the identity of architecture and how to express tradition in the future, and it also provides basis and ideas for how modern urban architecture can be integrated into tradition.

'Chinatown', as an area where Chinese people live in cities outside the Chinese region, reflecting the Chinese's recognition and inheritance of Chinese traditional culture. As the largest Chinatown in East Asia, Yokohama Chinatown has selected as the research object. Because the block has a unique street landscape and rich architectural expressions, and it is a commercial block built by Chinese living in Japan over a period of more than 150 years. The landscape of the main street in Chinatown and the commercial buildings along the street were selected for analysis. There are totally 67 buildings on both sides of the Chinatown main street, like figure 1 shows, and choose 55 of these buildings to analyze which retain traditional expression elements through the basic analysis of the traditional expression of the building facade.



Figure 1 Research object in Chinatown Avenue

2. Research methods

By studying the papers of other researchers on the expression and characteristic analysis of traditional style buildings, a detailed study is carried out using the architectural semiotics theory that regards the research object

as a symbol. Then the main content of semiotic is divided into three parts: syntax, semantics and pragmatics. The syntax mains the first level of structure level, which is the composition of Chinese traditional elements like roof, window, column. The semantics is the second level with expression, and pragmatics is the third level of cognition, which means people's cognition and feeling of architecture design and expression.

And based on the research of related advanced papers, it summarizes the specific application methods of architectural semiotics and the performance and analysis methods of architectural traditions. Summarized the content of previous researchers and determined the research framework of this study. In addition, due to the complexity of Chinatown architecture and the characteristics of mixed design expression, the postmodernist architecture with similar expression methods was investigated, and the use of western classical elements in postmodern architecture was summarized as a reference for the architectural expression of Chinatown.

Table 1 Research analysis framework

Architecture semiotics	Application	Analysis content	
Syntactics	Structure level	Elements Structure	The composition of Chinese traditional elements □ roof, window, column...
Semantic	Expression level	Expression Meaning	Retro reference, abstract, simplify, compromise
			Fragment, Expand, History Reference, Collage, Contour Extraction, Geometric, Color Use, Symmetry
Pragmatics	Cognition level	Comprehension Evaluation	People's cognition and feeling of architecture design and expression

3. Research process

Before the research of Yokohama chinatown, a basic investigation of Chinese traditional architecture is conducted, and the basic constituent elements and constituent relationships of general traditional architecture are summarized, as well as the main expression characteristics

and meanings. Traditional Chinese architecture is mainly composed of three parts: roof, body and platform, and each part is divided into specific important components. Roof part mainly has tiles, purlin, roof ridge, animal sculpture and chi-wei. The body part mainly has Dougong, architrave, Queti, doors and windows, column, plaque. The platform part has steps and railings. In addition, there are also some decorations like color painting and traditional patterns. The traditional architectural design characteristics inherent in China are used as the basis for the comparison of the traditional performance research of Yokohama Chinatown.

The main process in analyzed the traditional Chinese architectural language in Yokohama Chinatown is as below. First, analyze the roads, nodes and landmarks of the street landscape in Yokohama Chinatown. Then, according to the analysis framework of architectural semiotic summarized in the previous article, the traditional expression of Chinatown architecture is analyzed from three levels. In the first step, the research object buildings were screened and classified. And then 55 buildings with traditional Chinese performance were selected for analysis, and the buildings were divided into five groups through a questionnaire survey of specialists to representing five types: retro-style buildings, simplified-style buildings, abstract-style buildings, intuition-style buildings, and hybrid-style buildings. After that, the first level of the use and composition characteristics of Chinese traditional architecture elements, the second level of the expression and meaning of architecture, the third level of cognitive preferences of each group of buildings were analyzed, and finally the characteristics of each type were obtained.

Table 2 Five styles of buildings

A: Retro-style	A type that almost exactly reproduces the traditional Chinese style.
B: Simplification-style	A simplified form of traditional Chinese architectural style.
C: Abstract-style	A type that abstractly transforms or reconstructs traditional Chinese style or elements.
D: Literal-style	A type that directly expresses traditional Chinese style with decorations or signboards.
E: Hybrid-style	A type that mixes traditional Chinese and Western or Japanese architectural styles.

4. Architectural cognitive analysis

From the perspective of the third part of cognition, the result is like table 3 shows, in these five types, two types can

clearly see the relationship between the feature in design and cognition. The retro style type is the most obvious embodiment of this relationship. Magnificent, stereoscopic, complicated and abundant design can directly reflect everyone's recognition of tradition. From this, we can see the clearest symbolic recognition of traditional Chinese architecture to viewers. In addition, in Intuitive style buildings, simple and linear design features can lead to an inferior perception of the tendency of cognitive performance.

The remaining three types do not show a clear connection in the relationship between design and cognition. In the simplified style buildings, although everyone's feelings about the design are relatively consistent, the answers given by participants at the cognitive level are relatively neutral, which shows that the simplified architecture does not give viewers a special feeling. In the third group of abstract style buildings, everyone's evaluation of design and cognition is similar to that in simplified buildings, and there is no clear relationship between the design and cognition. Finally, in hybrid style buildings, due to the obvious differences between the three buildings, the design and cognitive tendencies cannot be seen from the average results counted. The first building is a mixture of Chinese traditional and Western styles. The magnificent and stereoscopic design features evaluated by people are related to the beautiful and luxurious. It is similar to the retro-style building, but due to the addition of Western style, people's perception of it is not biased towards it is traditional. The other two buildings are mixed with modern and Japanese styles. The linear and simple design styles give people a more inferior cognitive experience.

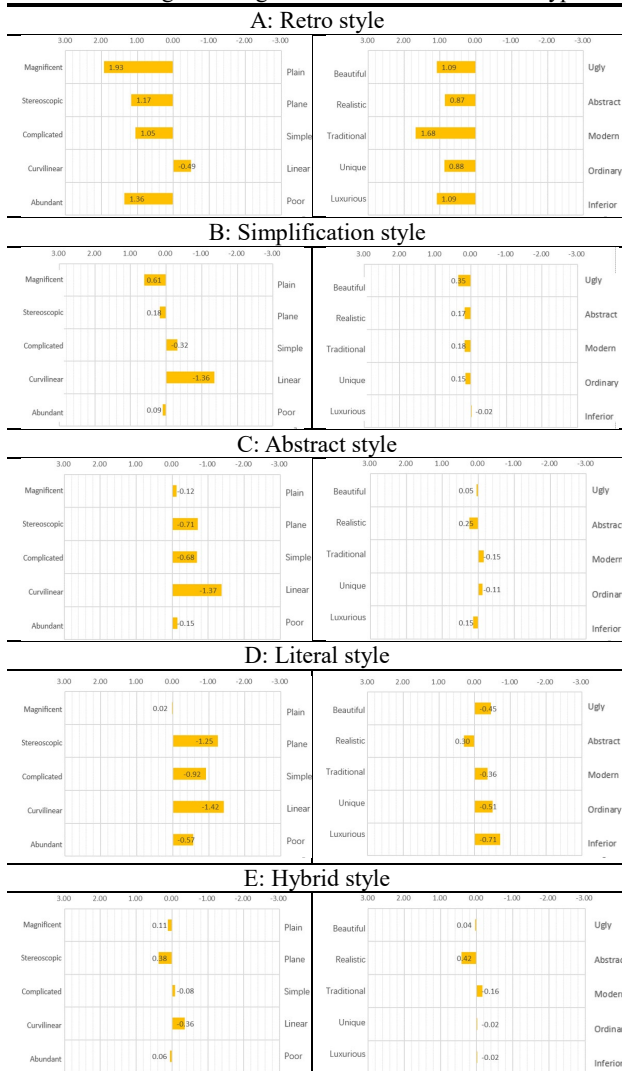
5. Conclusion

Through the above process and research, the main conclusions of this article are as follows:

(1) Firstly is the analyze the whole street landscape performance in street level. Since Chinatown is a prosperous and developed mixed commercial and residential area, during its development, a traditional and varies street landscape has been formed. Chinatown maintains the street characteristics of a traditional Chinese city, with checkerboard-shaped roads which follows the east-west direction. A traditional archway

is designed at the entrance of the street, which emphasizes the boundary of the entrance and expresses the thought of Chinese Feng Shui theory. Traditional religious buildings and dragon-shaped lanterns with traditional images are built in the block, as well as road paving and signage with traditional patterns. Through these designs, the block as a whole has formed a strong traditional Chinese block image. It has the characteristics of clearly conveying the traditional atmosphere.

Table 3 Design and cognition characteristics of five types



Next, the entire block is designed with an intimate street space, which is controlled by the middle and low-rise building height and suitable street width. In terms of the expression of traditional architectural elements, tiles are frequently used as the main element of traditional roofs, because the roof is the most symbolic part of traditional Chinese architecture. Many buildings along the street use the lines of traditional roofs to enrich the overall street contours, and create attractive

commercial spaces through abundant signboard designs and harmonious color expression.

(2) In architectural expression, through the reference to the traditional architectural expression in the postmodernist movement, and the analysis of the unique expression characteristics of Chinatown architecture, five main expressions are summarized. There are retro-style buildings, simplified-style buildings, abstract-style buildings, literal-style buildings, and hybrid-style buildings. And then, the five groups of buildings are analyzed according to the three main levels of symbolic expression in the architectural semiotics theory. The first level is element composition, which is the basic object of architectural symbols. The second level is the method and meaning of architectural symbol expression. The third level is the information that architectural symbols convey to people, that is, people's cognitive feelings. According to this three-layer analysis framework, the main traditional performance characteristics of each type of building are derived.

The retro-style building is a type that almost reappears the traditional architecture. The design mainly uses the traditional roof elements 'Tiles', 'Roof ridge' and 'Purlin' as the reappearance of the roof image, as well as 'Dougong', 'architrave' and 'Queti' elements are used as the accent decoration of the building entrance, and these elements follow the composition rules of traditional buildings, so they are a way of restoring tradition. The technique of 'History Reference' can directly and clearly convey the traditional meaning. In addition, the use of colors and symmetrical layout are also characteristics of this group. Because retro-style buildings make more use of traditional elements, people's perception of the design features of this type of building mainly has magnificent and abundant evaluations, and most people have gained a clear understanding and feeling of Chinese tradition.

The second type of simplified architecture mainly uses the Architrave element and plaque. This type uses fragmentation to intercept and use complex traditional expressions. It also uses the representative color of red to simply express Chinese tradition. So in terms of design, people think it is more linear. And because this type simplifies some traditional elements and still retains the outline or image

of some traditional symbols, there is a more traditional cognition, but it is obviously not as biased as retro-style buildings.

The third abstract style architecture mainly uses abstract techniques to transform or express tradition, and the most used traditional element is traditional pattern, which represents the characteristics of abstract architecture mainly expressed through abstraction of patterns or traditional image signs. Therefore, geometricization is the main method of expression, which abstractly conveys the traditional Chinese meaning through the reconstruction of lines or the repeated design. The most obvious feeling in the design of this group of buildings is linear, followed by simple and plane. In terms of cognition and feeling, people did not show any obvious bias. It can be inferred that abstract expression may be a relatively common way, and people will not have special feelings about this expression.

The fourth group of literal style buildings mainly uses traditional plaques, so the main expression method of this group is to make people feel the tradition through intuitive explanatory information. The rich use of colors and expansion techniques have strengthened and highlighted the explanatory elements. In terms of design cognition, it has the same characteristics as abstract buildings. It is more common in commercial buildings to express traditional expressions through the patterns or lines of signs. Therefore, it can indicate that people's cognition has appeared inferior evaluation.

The last group of hybrid style types is a unique architectural type after the opening of the port in Japan, which mixes two different styles. In this type, traditional elements are mainly expressed as two decorative elements, plaques, and traditional patterns, which can better blend with different styles. Perform traditional expression and conversion by extracting contour lines of traditional elements. Therefore, people's perception of this type of architecture is also linear, but due to the combination of various styles and Chinese traditions, buildings that are mixed with modern Western styles have more ornate and rich design expressions. It can be inferred that since modern Western styles also have rich decorative styles, they will be more diverse in expression, and

people will have a higher evaluation of the beauty of this kind of architecture. Other buildings mixed with modern or Japanese styles are not easy to make people feel the traditional atmosphere, and people's cognitive evaluation of them is biased towards modernity.

(3) Through a questionnaire survey on the cognitive preference of people in China, Japan and South Korea, it is found that the people of the three countries have similar cognitions and preferences to Chinatown architecture in general. Because they belong to the same subcultural circle, people's cognition of Chinese traditions is relatively consistent. But there have been some differences, mainly because people in different countries have different perceptions of architectural design performance, and the difference in sensitivity to Chinese traditional feelings between Chinese people who are familiar with the traditional architecture of their country and Korean and Japanese people. Due to the proximity of the geographical location of the three countries and the relationship between cultural development and dissemination, there will be differences in people's cognition that are worth studying. This will continue to be carried out as the direction of future research.

Finally, because the research object of this study is only limited to one road in Yokohama Chinatown, the results of the analysis are based on the buildings on this street, and there may be some particularities. In future research, I will consider Chinatown cases in other parts of Japan and Chinatown streets and buildings in other East Asian countries, and conduct a more comprehensive analysis and comparison, as well as comparisons between special Chinatown streets and general commercial streets. To explore the performance characteristics of Chinese traditional architectural culture in different forms of streets or regions.

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