

The Application of Chinese Traditional Color in Modern Landscape Design

Ziwen Zheng¹

Faculty of decorative arts, Silpakorn University

1114538200@qq.com

Isarachai Buranaut²

Faculty of decorative arts, Silpakorn University

buranaut_i@su.ac.th

Received : 2024-10-04

Revised : 2024-12-23

Accepted : 2024-12-23

¹ Master of Fine Arts Design-Design

² Lecturer, Doctor of Design

Abstract

The five traditional Chinese colours are widely used in ancient Chinese architecture, cultural relics and clothing, carrying the deep national culture and spirit. It is a unique cultural symbol. Based on the application of the five colours in traditional Chinese architecture and the needs of modern landscape design, this study analyses its cultural significance, visual expression and related pattern symbols, and explores its potential for innovative application in modern landscape design. Applying research methods such as K-Means clustering, literature study and case study, the innovative application methods of the five colours and the five-colour patterns in modern landscape design are proposed:1. Colour focusing: using the visual impact of the five colours, highlighting the red and yellow colours as the visual focal points in the design, conveying the cultural characteristics of the colours.2. Diversified design: re-combining the five colours with the corresponding traditional patterns to create a diversified design effect. 3. Combination of inheritance and innovation: recombine the five colours with the typical modelling elements of the ancient architecture and combine them with the modern landscape architecture to achieve the fusion of tradition and modernity. Promote the sustainable development of the five colours in the modern landscape and provide a reference for the expression of traditional colour symbols in a new region for the modern landscape design in China.

Keywords: Chinese traditional five-color system, Modern landscape design, unique cultural symbol, Diversified design, K-Means-clustering

Introduction

The Chinese traditional five-color system in architecture mainly refers to the decorative colors of ancient buildings, such as palaces, temples, temples, etc., such as the Palace Museum complex, which reflects the cultural characteristics, spirit and value of the nation or region, as well as symbols, and is an important basis for cultural inheritance and innovation. (Jin & Yuhai, 2010) Although Chinese landscape design has a long history of development, but looking at the whole world, from the perspective of color application, China's landscape design is a small part of the lack of innovation, lack of regional investigation of the country, no national landscape characteristics. (Xinyao & Xiaojun, 2023) The traditional architectural colors of China reflect the eastern aesthetic cognition of the world and objects. As the most representative way of creation in ancient times, traditional architectural color embodies the symbol of traditional culture and has a lot of enlightenment to modern design. (Zhi-yong, 2016) At the same time, with the rapid innovation and development of modern landscape design, cities have become the ideal habitat for people's material and spiritual life. Therefore, contemporary urban landscape design should correspondingly carry more historical humanistic spirit (Fei, 2015). This study takes the area of four new avenues in Wuhan City as the design experimental site. As a city with a history of 3,500 years, Wuhan has a rich cultural heritage of traditional architectural colors. Besides, there are a large number of residential areas around Sixin Avenue in Wuhan City, which provides ideal experimental conditions for the research of traditional Chinese colors in modern landscape design.

The research purpose of this paper is to explore the application of traditional five-color system cultural elements in Chinese modern landscape architecture design, so that the traditional five-color culture can continue and develop sustainably in modern society, which has positive significance for the development of Chinese traditional five-color culture, and follows the application method of traditional five-color system culture. Analyze how to apply traditional five-color elements and element symbols in modern landscape design, and explore more possibilities of the inspiration and contribution of traditional five-color system to modern landscape architecture design.

1. Status and history of traditional Chinese five-colour culture

1.1 Problems of the current situation of traditional architectural colour

Through the analysis and review of relevant literature on the status quo of traditional architectural colours, such as "The Importance of Colour in the Architectural Design of Traditional Chinese Houses" "The Application and Inheritance of Traditional Chinese Architectural Colours in Modern Times" "The Research and Exploration of Colours in Contemporary Chinese Architectural Environments" and other literature, it is pointed out that the application and inheritance of traditional architectural colours have been affected in the process of urbanization. The popularity of modern architectural styles has made the value and significance of traditional architectural colours neglected, and many traditional architectural colour elements have been destroyed or disappeared (Juan, 2023). Under the background of rapid development of modern society, the application and inheritance of traditional Chinese architectural colours in modern

times are facing a lot of problems, and how to achieve an organic combination with modern architectural design on the basis of maintaining the traditional colour characteristics, as well as how to better inherit and develop the traditional architectural colour culture, etc., all need in-depth thinking and exploration (Han, 2021).

1.2 Traditional five-color cultural sources

In the history of the development of Chinese color aesthetics, the concept of "proper color" and "intermediate color" was established as early as the Zhou Dynasty. It was recorded in the Book of Shangshu of the Western Zhou dynasty that "the color is green, yellow, red, white and black." "The so-called correct colors are blue, red, yellow, white and black; The so-called intermediate colors are green, red, blue, purple, and bay (yellow and black colors), and the intermediate colors are mixed from the normal colors." The emergence of the five-color system lays the basic law of traditional architectural colors and reflects the profound traditional culture. (Hongying & Haiyuan, 2012) In modern society, the traditional architectural color system

often used by designers to reflect the traditional artistic conception in modern architectural design. In recent years, the use of red has attracted worldwide attention and become a color symbol representing China, known as "China Red" (Hongying & Haiyuan, 2012). (Figure 1) shows the wall of the Forbidden City in Chinese red.

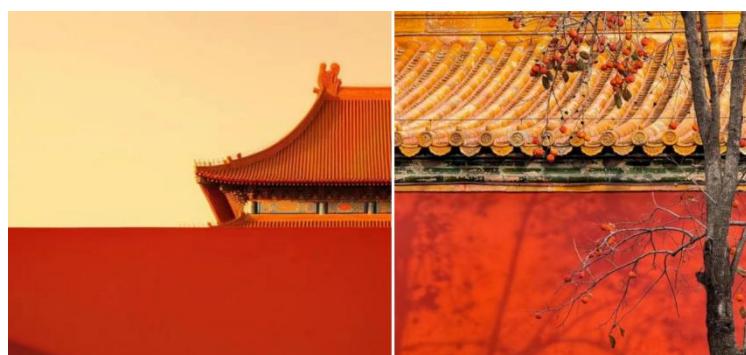


Figure 1 Wall of the forbidden city in Chinese red.

Source: Palace Museum, 2023. The Met. (<https://www.dpm.org.cn/lights/royal.html>).

Chinese chromatics put green (blue), red (red), yellow, white, and black into a framework to form an interpretation system. (De, 2009). (Figure 2) shows the Chinese traditional five-color system five positive and (Figure 3) Five inter-color diagram.



Figure 2 Five positive colors

Source: "five colors of China" self-statement by De, P., 2009. *Friends of Fine Arts*, (01), 22-23. (https://kns.cnki.net/kcms2/article/abstract?v=aKxFl3wG76gJZQadaFh6j0WSCCadlWhlU9Hc1SNVATTYN6iXXiIYfsAgy2D8OryTuj98wCrGvHKgD5sXrLKYUewLryS1eyT-VmCOH90ki0wJozjQK8OHOOoJAjMppPDFCEw5uY0HeM3AOaxnX5cSYLLR1IAYKOWf6_sq3_2BI91f5Z5ls-fEGGwtSiMOcBjx&uniplatform=NZKPT&language=CHS).



Figure 3 Five intermediate colors

Source: Author drawing

Therefore, the orthochromatic (green, red, yellow, white, black) and interchromatic (green, red, blue, purple, yellow) of the traditional five-color system have clear historical records and inheritance. Through the clever use of these colors, traditional artistic conception and cultural inheritance can be reflected in landscape design. The traditional five-color system is incorporated into the landscape architecture design framework, which helps to form a unique visual effect and spatial emotional expression.

1.3 Traditional five-color symbolic meaning and pattern symbols

The symbolic meaning of the traditional Chinese five-color system mainly refers to the five elements, five colors, five directions, five seasons and five kinds of animals in the five-color view, which establishes the unique color system of the Chinese nation on the basis of five behaviors. Eastern wood, when spring, color is green, refers to green dragon; The south is fire, when summer, red, refers to Carpodacus; The west is gold, the time is autumn, the color is white, refers to the white tiger; The north is water, when winter, the color is black, referring to basalt; The central soil is between the four seasons, and the color is yellow, referring to the yellow dragon. (Xiaojun & Xiaodan, 2016) In traditional architecture, patterns are

mainly expressed in building tiles. After the combination of the five colors and the shape of the divine beast, they form the green Dragon, the white tiger, the Caracus, the basanwu, the Yellow Dragon, and the five divine beasts. (Wangni, 2022) (Figure 4) shows the patterns of the five beasts in traditional architectural tiles.



Figure 4 Five animal patterns

Source: *Research on the application of aesthetic implication of Han Dynasty tile pattern in modern design* by Wangni, L., 2022. (<https://link.cnki.net/doi/10.27287/d.cnki.gsxsu.2022.000961>).

We can see the important role of the traditional five colors in cultural inheritance and symbolic meaning. They are not only a part of architectural decoration, but also a carrier of cultural symbols and historical memory. In modern landscape architecture design, the application of traditional architectural colors and patterns can not only bring rich cultural connotations and unique visual effects, but also create landscape Spaces with traditional cultural characteristics, creating harmonious visual effects and profound cultural atmosphere.

2. Research methods

Based on the application of "traditional architectural color" in modern landscape design, this study discusses how to realize the dual-track mode of coexistence of tradition and modernity. This paper reviews and analyzes 13 literatures on the inheritance of "traditional architectural color" and "modern landscape architecture design" by literature research method, and classifies the relevant issues of "current situation", "problems" and "development", analyzes the application of five-color system in different historical periods and regional cultural backgrounds, finds the unique value of its spatial emotion and visual expression, and analyzes the connotation of five-color system. Extract the cultural significance and symbolic value of the five-color traditional color elements. Using "IMAGE COLOR SUMMARIZER" tool, color clustering analysis (K-Means) is used to conduct quantitative research on the color data of typical 11 traditional buildings and extract the impression color features and proportion configuration based on traditional five colors. At the same time, comparative research method is used to observe and compare 5 typical ancient buildings to extract the common modeling elements of ancient buildings, and case study method is used to analyze

the correlation between color and modern garden architecture design on color meaning and application. On this basis, the feasibility and applicability of traditional colors in modern landscape design are sorted out, and 3D model tools "SketchUp" and "D5 renderer" are applied to simulate design experiments.

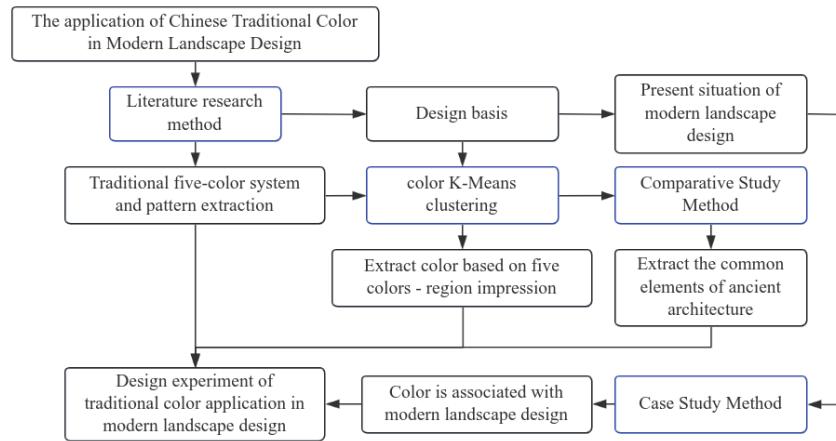


Figure 5 Research framework

Source: Author drawing

3. Color and pattern extraction

3.1 Color connotation extraction

Color connotation extraction: Based on the above historical documents, the symbolic meaning of traditional five-color characters is extracted and classified. (Table 1) and in landscape design, if the red design is required, the Suzaku pattern should be used, and the black application should be matched with the water feature application.

Table 1 Attribute season, meaning and corresponding pattern of five colors.

| Color | color chart | Property | Season | Moral | Pattern |
|--------|-------------|----------|----------|------------|-----------------------|
| White | | Gold | Winter | Auspicious | White Tiger pattern |
| Cyan | | Wood | Spring | Hope | Dragon pattern |
| Black | | Water | Interval | Mystery | Basaltic pattern |
| Red | | Fire | Summer | Auspicious | Rosefinch pattern |
| Yellow | | Soil | Autumn | Earth | Yellow Dragon pattern |

Source: Author drawing

3.2 Pattern extraction

unique cultural symbol extraction (Table 2): Extract the five-color god beast from the color corresponding pattern of the architectural literature tile, apply the extracted pattern in modern landscape design, and combine it with the corresponding color in landscape design. For example, in the red design area, the Suzaku pattern is used to provide the five-color element symbol for the design.

Table 2 Five-color God Rui beast pattern element symbol extraction

| Color Name | Color map | Pattern Name | Original Pattern | Pattern extraction |
|------------|---|-----------------------|---|---|
| White |  | White Tiger pattern |  |  |
| Cyan |  | Dragon pattern |  |  |
| Black |  | Basaltic pattern |  |  |
| Red |  | Rosefinch pattern |  |  |
| Yellow |  | Yellow Dragon pattern |  |  |

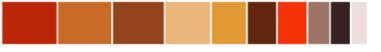
Source: Author drawing

3.3 Wuhan five-color extraction

Since the design and research takes Wuhan as the experimental area, 10 representative ancient buildings in Wuhan from the Qin dynasty to the Republic of China (Table 3) are selected as the object of regional impression color research, and horizontal comparative analysis is carried out with reference to the forbidden city complex in Beijing. The impression color of ancient buildings in Wuhan was extracted by K-Means clustering algorithm. This paper uses the tool " IMAGE COLOR SUMMARIZER " to conduct color statistics and clustering analysis on target image database data based on RGB and HSV models (Fan & Jie, 2022).

Firstly, the ancient buildings are divided into 10 groups according to individual, and 5 photos of the most characteristic and representative building facades from different angles of each ancient building are selected as the research gallery. Then, the first color clustering is carried out respectively (Table 3) to obtain 10 groups of colors in the image, which are arranged from left to right according to the size ratio of colors.

Table 3 Ancient architecture impression color extraction

| Name of ancient building | Building and environment map | | | | | K-Means clustering theme color extraction | | | | | | | | | |
|--------------------------|---|---|---|---|---|--|--|--|--|--|--|--|--|--|--|
| The Forbidden City |  |  |  |  |  |  | | | | | | | | | |
| Guixian Zen Temple |  |  |  |  |  |  | | | | | | | | | |
| Yellow Crane Tower |  |  |  |  |  |  | | | | | | | | | |
| Qingchuan Pavilion |  |  |  |  |  |  | | | | | | | | | |
| Lute Platform |  |  |  |  |  |  | | | | | | | | | |
| Baotong Temple |  |  |  |  |  |  | | | | | | | | | |
| Chu Tiantai |  |  |  |  |  |  | | | | | | | | | |
| Jingde Temple |  |  |  |  |  |  | | | | | | | | | |
| Temple of Divine Spring |  |  |  |  |  |  | | | | | | | | | |
| Changchun Temple |  |  |  |  |  |  | | | | | | | | | |
| Ziyang Pavilion |  |  |  |  |  |  | | | | | | | | | |

Source: Author drawing

After the first color clustering, 100 kinds of colors were obtained, and the color sample database of traditional architecture in Wuhan was preliminarily established. Considering the complexity and richness of traditional architectural colors, this study integrated 100 colors obtained from the first clustering and conducted the second clustering to obtain 20 groups of impression colors arranged from left to right according to their proportion. After extracting the five-color system (yellow, red, blue, black, white), three times clustering was carried out, and finally the Wuhan impression color ratio based on the five-color system was obtained (Figure 6)

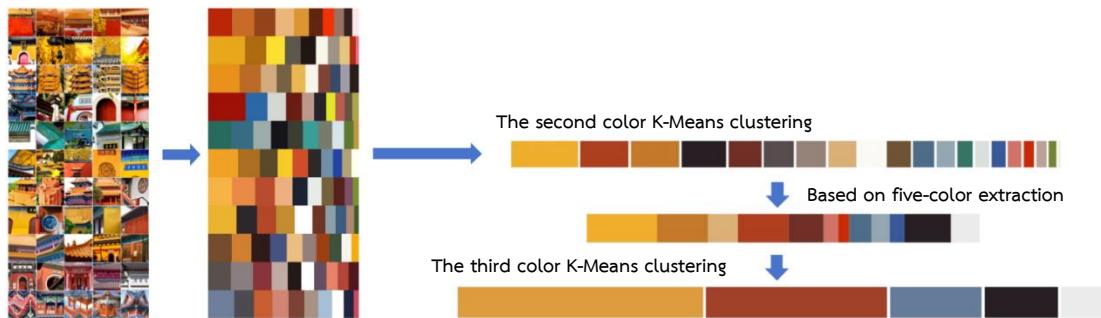


Figure 6 The second and third color K-Means clustering process

Source: Author drawing

Summarizing color using "image color summarizer" summarizes the following image summarization color data (table 4) To determine the optimal allocation of Wuhan regional impression color based on the five-color system: yellow 38.5%, red 28.5%, Cyan 14.5%, black 11.5%, white 7%. Color matching ratio will be applied in experimental modern landscape design.

Table 4 Based on five colors - Wuhan impression color

| cluster | pixels | name | HEX | RGB | HSV | LCH | Lab | tags |
|---------|--------|---------------------------|---------|-------------|-----------|-----------|----------|---------------------------------|
| | 38.50% | 224,157.55 candleliaht | #DD9C3D | 221 156 61 | 36 72 87 | 69 59 75 | 69 16 57 | fire fuel safron yellow |
| | 28.50% | 157.68,45 rock spray | #A1412A | 161 65 42 | 11 74 63 | 40 51 41 | 40 39 33 | rock sand spray red |
| | 14.50% | 96,124.154 steel blue | #647B9A | 100 123 154 | 215 35 60 | 51 19 270 | 51 0-19 | lynch panorama Cyan blue |
| | 11.50% | 36 33,36 raisin black | #271F24 | 39 31 36 | 325 22 15 | 13 5 341 | 13 5-2 | silhouette smart black |
| | 7.00% | 235,235,235 grey | #EBEBEB | 235 235 235 | 156 0 92 | 93 0 180 | 93 0 0 | concrete gallery grey, white |

Source: Author drawing

3.4 Extraction of similar elements from ancient buildings

In order to better express the artistic conception of color in modern landscape design experiments, it is necessary to apply ancient architectural elements, select representative ancient buildings (Table 5), and use analogy research method to extract their common elements in modeling characteristics. It is concluded that the typical common modeling element of ancient buildings is the overlapping eaves design, and the overlapping eaves design element is applied in modern landscape design.

Table 5 Extraction of common features of ancient architecture

| Name of ancient building | Building Picture | Generality Extraction of Architectural Modeling |
|--------------------------|---|--|
| Forbidden City |  |  |
| Gui Yuan Zen Temple |  |  |
| Yellow Crane Tower |  |  |
| Qingchuan Pavilion |  |  |
| Guqin Platform |  |  |

Source: Author drawing

4. Five-color culture is associated with modern landscape architecture design

Exploring the development of landscape design from the theoretical Angle of color psychology can make landscape design have multi-angle development and integration. (Xinyao & Xiaojun, 2023) Based on the five-color system, color also has a correlation and influence on China's modern architectural landscape (Figure 7).

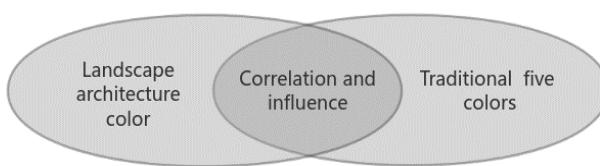


Figure7 The color of landscape architecture is associated with the five color

Source: Author drawing

The selection of landscape colors mainly consists of warm and cool tones. Color variations can also trigger psychological changes in people. For instance, red can make one feel warm and powerful, etc. (Xuan & Lin, 2024) and evoke emotional resonance. Take the design of the China Pavilion at the Shanghai World Expo (Figure 8) as an example. At that time, the positioning of the China Pavilion was "Chinese characteristics and the spirit of the times". The designer, He Jingtang, endowed the pavilion with the Chinese red color that could arouse the national emotional resonance of the viewers. Red has always been a symbol of celebration and auspiciousness in China (Hongying & Haiyuan, 2012). This application not only corresponds to and reinforces the cultural meaning of "red" among the five colors but also conforms to the characteristic of red in color psychology that conveys enthusiasm and warmth. Another example is the Guotai Art Center in Chongqing (Figure 9), which further showcases the innovative application of the five-

color system in modern design. The architectural form evokes the association with the traditional architectural component "ang", while its color design draws inspiration from the red and black color combination of the palaces in the Han Dynasty. The interlaced and superimposed red and black wooden components form a visual effect like a bonfire, not only conveying the profound cultural connotations of the combination of "red" and "xuan (black)" among the five colors.



Figure 8 China pavilion at the Shanghai World Expo

Source: Xiao hong shu, 2023. The Met.



Figure 9 Guotai Art Center in Chongqing

Source: Xiao hong shu, 2024. The Met.

Therefore, the application of five colors in modern landscape architecture design. It not only creates the artistic atmosphere of the coexistence of tradition and modernity. It can also guide the viewer's emotions at the psychological and emotional level, enhance cultural resonance and identity, and show the color emotion and cultural value of traditional colors.

5. Design application and analysis

5.1 Inspiration of traditional five colors to modern landscape design

To sum up the literature and case studies, the core features of the traditional five-color system are: color, pattern and symbolic elements, cultural meaning, and symbolism, to build its core value system. It is assumed that there are three ways to concretize the five-color core value system in modern landscape design: color focus, diversified design, inheritance and innovation expression, and empirical research method is adopted to make effect drawings to analyze the rationality of the design method (Figure 10).

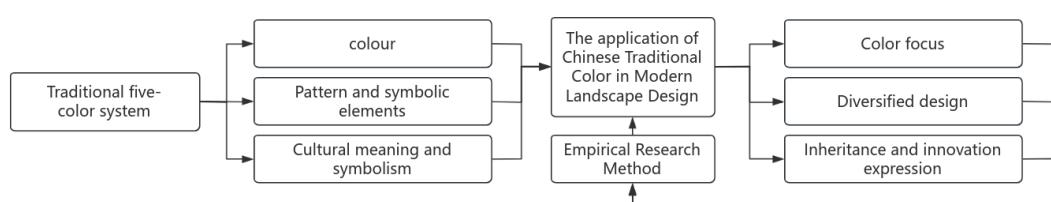


Figure 10 Enlightenment of five colors to modern landscape architecture design

Source: Author drawing

5.2 Analysis of experimental design site

The experimental design site is located beside Sixin Avenue in Wuhan City (Figure 11), with several residential communities in the surrounding area. Since it is situated in a residential area, it enjoys high public accessibility and a large flow of people, making it suitable for the design of modern landscape architecture that emphasizes openness and strong community interaction. The site is flat, has convenient transportation, and its terrain and location are unique, possessing the potential to become a demonstration area for modern landscape architecture in Wuhan. The design incorporates the elements of the five-color system to enhance the attractiveness and cultural value of the site, thus promoting the harmonious coexistence of the landscape, the living environment, and the cultural environment.



Figure 11 Project area on the right side of Four new Avenues, Wuhan

Source: Author drawing

5.3 Design and application

5.3.1 The application of color focus mode

In modern landscape architecture design, these five colors can be used as the visual focus to guide the line of sight and highlight key landscape elements. For example, red can increase attention drawing and create a welcoming atmosphere, while yellow expresses warmth and vitality, conveying specific cultural connotations and emotional experiences. (Table 6) The expression of five colors in space.

Table 6 The performance of traditional five colors in space

| The performance of traditional five colors in space | | | | |
|---|-----------|------------------|--------------------|-------------------|
| Color Name | Color map | Symbolic | Spatial emotion | Visual effects |
| White | | pure and sacred | relax and calm. | simple extension |
| Cyan | | natural life | relax serenity | fresh and clean |
| Black | | mysterious power | serious and solemn | concentration |
| Red | | auspicious | cheerful | strong attraction |
| Yellow | | noble land | friendly welcome | open and bright |

Source: Author drawing

(Figure 12) shows the color proportion of the five-color impression in Wuhan. In landscape design, colors are applied according to this proportion to maximally utilize the five colors to express the characteristics of Wuhan's landscape color design.



Figure 12 Project plan design

Source: Author drawing

The landscape layout is designed as an open square. According to the core design colours extracted from the five colours, red, yellow, blue, white, and black are applied in the layout plan, and the red, yellow, and blue colours are applied according to the proportion (Figure 13), and the landscape architectural structure is taken as the centre of the design layout to form the final layout plan (Figure 14). The red lines indicate the overall flow of the space (Figure 15) and the blue areas indicate the main plaza area (Figure 16). Both the flow lines and the main event plaza are designed around the central landscape building structure, The core structure of the landscape building, which has the largest area, is designed in yellow, echoing the colour scale of Wuhan Impression, which has the largest proportion of yellow. Using the characteristics of yellow to form the main colour and visual focus. At the same time, it is also in line with the expression of openness and directionality in the open landscape (Table 6). I also used "SketchUp" to make 3D models, simulate conceptual design schemes (Zhizi, 2016), and applied "D5 renderer" to simulate rendering expression for part of the renderings.

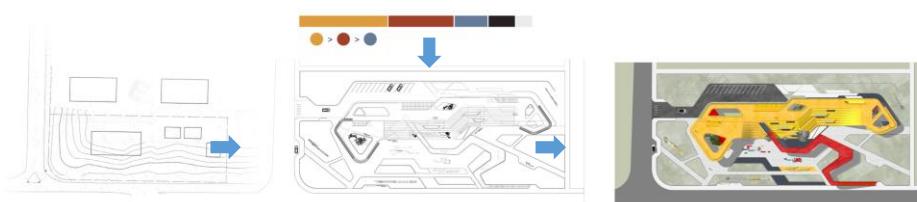


Figure 13 Project plan design

Source: Author drawing

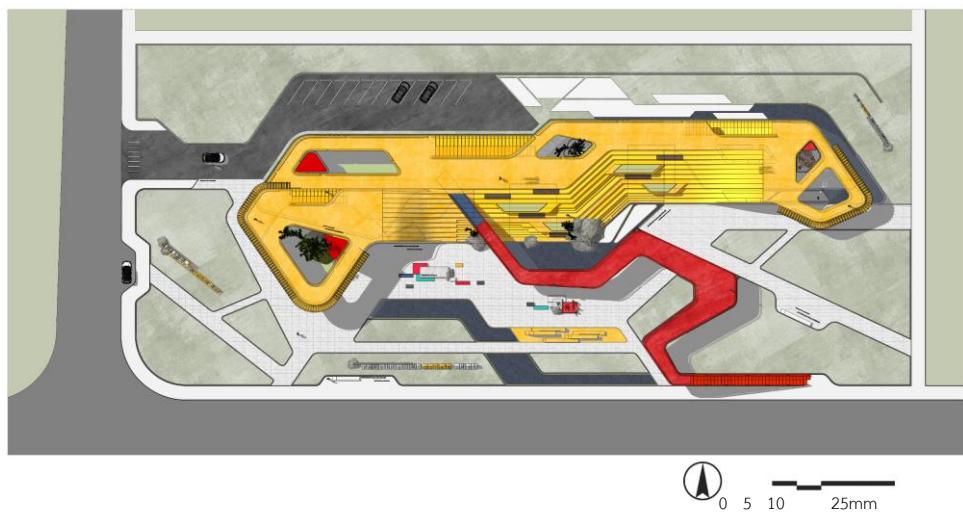


Figure 14 Project plan design

Source: Author drawing

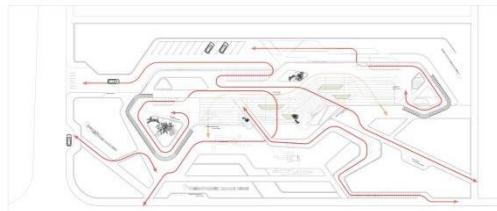


Figure 15 Project plan design

Source: Author drawing

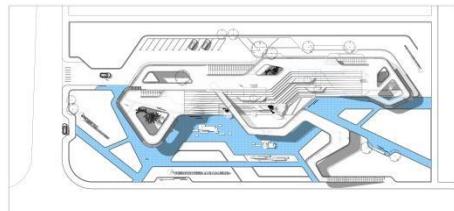


Figure 16 Project plan design

Source: Author drawing



Figure 17 Project plan design

Source: Author drawing



Figure 18 Project plan design

Source: Author drawing

(Figure 17) The realistic rendering of red in the supporting structures conforms to the color application characteristics of the five colors in ancient buildings. Visually, it is in line with the color of the impression of Wuhan, and the proportion of red is slightly lower than that of yellow. (Figure 18) is the rendering in the pure color mode. By comparing it with the realistic rendering, whether affected by the surrounding environment (the colors of plants, light) or in the pure color mode, red will form a contrasting visual focus with yellow and create a sense of spatial hierarchy. (Figure 19) shows the contrasting visual focus generated by the combination of yellow, red, and blue. This three-color combination is a typical five-color color scheme in ancient Chinese architecture.



Figure 19 Effect drawing

Source: Author drawing



Figure 20 Effect drawing

Source: Author drawing

(Figure 20) From the top view, it can be observed that the overall layout and combination of red, yellow, and blue in the design adhere to the color proportion of Wuhan's impression. At the same time, the colors follow the application habits of the corresponding five-color system in ancient architecture. For example, yellow is used for the roof, red for the columns, blue as a complementary color, and black for the waterscape. The combination is integrated with modern aesthetics, enhancing the richness and coordination of colors and forming a unique visual focus. In this way, the design of the overall landscape architecture has found a clever balance between visual aesthetics and the five-color system, creating a resonance between traditional colors and modern landscape architecture.

5.3.2 Diversified design

Diversified design is the decomposition and integration of multiple design symbols for recombination design. By extracting corresponding patterns of five-color system from literature, patterns are applied in landscape architecture. As shown in the figure (Figure 21), rosefinch patterns corresponding to red are extracted and applied to red columnar structures (Figure 22), which can not only beautify the columns and increase cultural and artistic value, but also convey the corresponding characteristics of traditional five-color symbols.



Figure 21 rosefinch pattern extraction picture

Source: Author drawing



Figure 22 Pattern applied in columns

Source: Author drawing

(Figure 23) Show the application of rosefinch pattern in the design of landscape furniture seats, and display the corresponding elements of red design, which not only gives the design work unique visual interest and artistic appeal, but also infuses profound cultural connotation for landscape furniture. To further demonstrate the artistic value of traditional color application in landscape design.

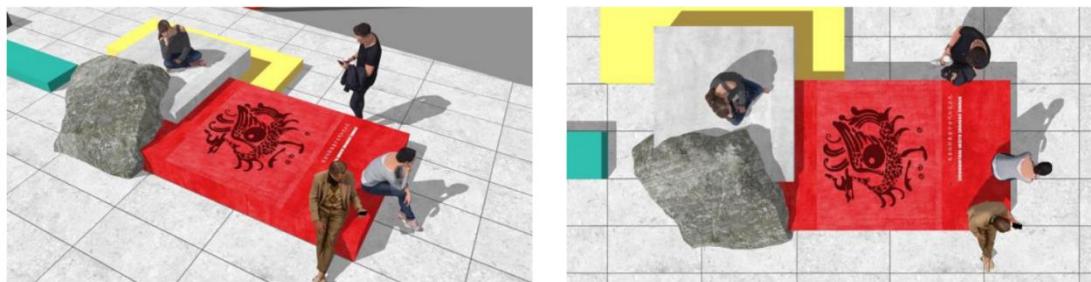


Figure 23 The application of Suzaku pattern in landscape furniture

Source: Author drawing

(Figure 24) presents the eaves design element extracted from traditional architecture. By retaining the unique eaves curve and structural characteristics of ancient architecture and applying them in modern landscape design, the artistic conception of color and form is enhanced, and the classical features of the five-color system are accentuated. In combination with the irregular geometric shapes in modern landscape architecture design, a design language that possesses both traditional cultural essence and complies with contemporary aesthetics is formed, resulting in a design expression that combines multiple elements such as color, pattern symbols, and forms.

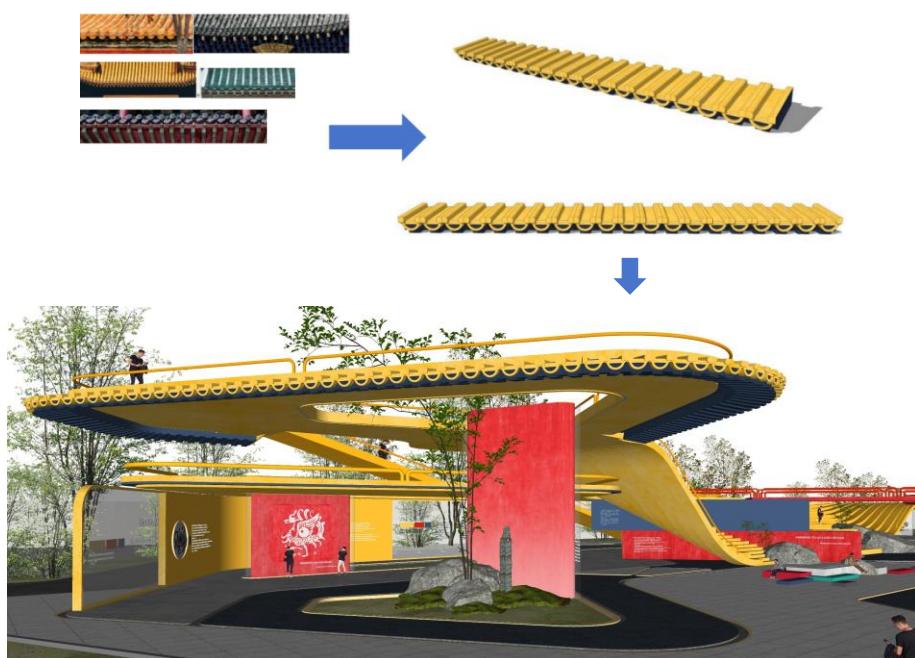


Figure 24 Application of common elements in architecture

Source: Author drawing

5.3.3 Inheritance and innovation expression

In modern landscape design, the cultural connotations and pattern symbols of the five-color system can achieve cultural inheritance and innovation through diversified expression methods.



Figure 25 Integrate five color elements into the landscape wall design

Source: Author drawing



Figure 26 The Surface pattern application

Source: Author drawing

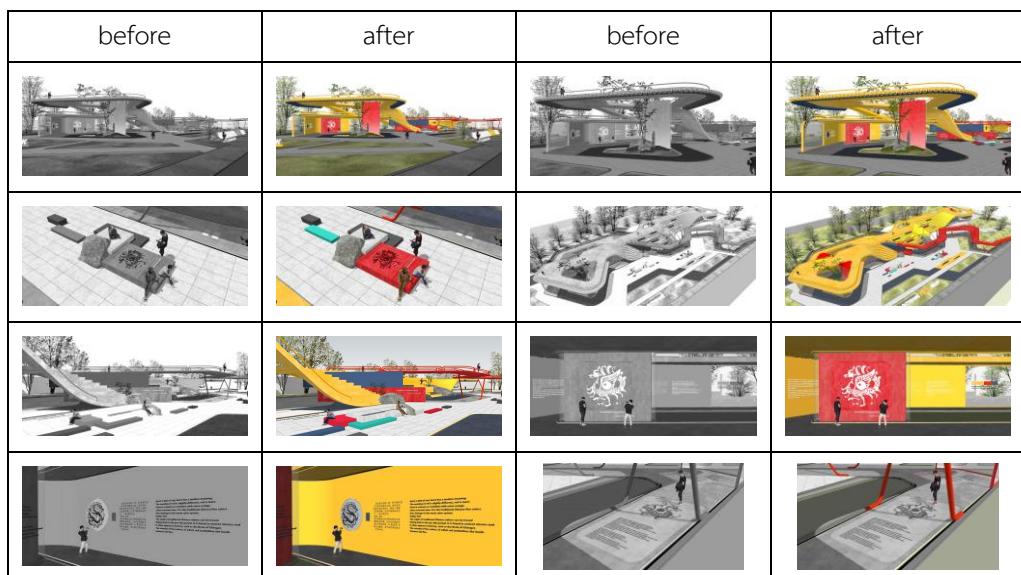
For example, by combining colors with texts, viewers can not only visually appreciate the beauty of traditional colors but also gain an in-depth understanding of their cultural connotations through textual descriptions, thereby enhancing the communication power and appeal of the five-color system. For instance, in landscape design, yellow can be combined with the yellow dragon pattern and applied to the design of a yellow landscape wall, accompanied by a brief textual explanation, making traditional cultural symbols vividly presented in the design (Figure 25). In addition, traditional patterns and colors can also be flexibly incorporated into detailed designs such as floor decorations (Figure 26). Through ingenious layout, it not only enhances the visual attractiveness of the design but also endows it with an educational function. This design method that integrates colors with symbols and languages not only inherits traditional culture in form but also realizes the modern translation of cultural dissemination through innovative expressions.

5.3.4 Feedback and analyses by relevant experts

Based on the application of design methods for traditional architectural colors in modern landscape design, in order to verify the applicability of the three design methods, namely "color focus", "diversified design" and "inheritance and innovative expression", 11 expert designers in relevant fields were randomly interviewed. The 'before' conceptual design rendering without the traditional architectural colours and the 'after' with the traditional architectural colours. Perceptual comparative observations were conducted on a total of 8 groups of images (Table 7). By observing the renderings, a perceptual analysis and evaluation were carried out on the relevant expected conclusions such as "visual focus", "cultural and emotional resonance" and "historical and cultural symbols". The scores ranged from 0 to 5, with two decimal places reserved. Scores ranging from 0 to 2 indicated low efficiency, while scores ranging from 3 to 5 indicated

high efficiency (Table 8). A comparative analysis was made by comparing the scores of the "before" stage and the "after" stage.

Table 7 8 sets of contrast images



Source: Author drawing

Table 8 Expert feedback analysis

| Audience | Visual focus | | Cultural connotation resonance | | Historical and cultural symbol | |
|---------------|--------------|-------|--------------------------------|-------|--------------------------------|-------|
| | before | after | before | after | before | after |
| 1 | 0 | 4 | 2 | 3 | 2 | 5 |
| 2 | 0 | 5 | 1 | 5 | 2 | 4 |
| 3 | 0 | 5 | 2 | 4 | 1 | 4 |
| 4 | 0 | 3 | 0 | 4 | 1 | 5 |
| 5 | 0 | 5 | 1 | 5 | 0 | 4 |
| 6 | 0 | 5 | 2 | 4 | 2 | 4 |
| 7 | 0 | 3 | 0 | 3 | 1 | 3 |
| 8 | 0 | 4 | 1 | 2 | 2 | 4 |
| 9 | 0 | 4 | 0 | 5 | 2 | 5 |
| 10 | 0 | 5 | 0 | 4 | 1 | 3 |
| 11 | 0 | 3 | 0 | 4 | 0 | 4 |
| Average score | 0 | 4.18 | 0.81 | 3.90 | 1.27 | 4.09 |

Source: Author drawing

(1) Visual Focus: Average score, before: 0; Average score after: 4.18; Increase: $4.18 - 0 = 4.18$. The score increased by 4.18, indicating that after giving the traditional building colours, the visual focus was obviously increased and achieved results, (2) Cultural Connotation Resonance: Average score before: 0.81; Average score after: 3.90; Increase: $3.90 - 0.81 = 3.09$. 3.09, indicating that after giving traditional architectural colours, the resonance of cultural connotations is significantly improved and effective. (3) Historical and cultural symbols: average score, before: 1.27; average score after: 4.09; growth: $4.09 - 1.27 = 2.83$. The score increased

by 2.83, indicating that the perception of historical and cultural symbols is obviously enhanced and effective after giving traditional architectural colours. Through the above comparative score assessment analysis, it shows that the application of the three design methods in modern landscape architectural design can produce the formation of visual focus and cultural-emotional resonance in the landscape space, and feel the historical and cultural symbols of traditional architectural colours, enhance the historical and cultural value of modern landscape design, and promote the inheritance of traditional architectural colours and cultures in the application of sustainable development in the modern landscape space.

Conclusion

Traditional architectural colors as an important part of traditional Chinese culture, the five colors of traditional architecture show excellent inclusiveness and adaptability in modern landscape design, providing a rich source of inspiration and design clues. Introducing the color focus mode into landscape design can create a visually impactful landscape effect and trigger a profound cultural-emotional response. While enhancing the aesthetic value of the landscape, it also enriches the spatial hierarchy and artistic expression of the environment, giving the place a more profound cultural connotation and historical background, and transforming it into a public space that evokes a strong sense of cultural identity. The diversified design concept drives the diversified development of traditional colors in modern landscape design. Through the deconstruction and re-creation of elemental forms and symbols design techniques, the historical symbols and color symbols of the five-color system have become the key elements that drive the evolution of modern landscape design language. This organic integration of the design approach not only preserves the deep historical heritage carried by the five-color system, but also shows the creativity of modern landscape design. The application of traditional architectural five-color in modern landscape design provides modern landscape designers with rich expression methods and creative resources while also injecting deeper cultural values into modern landscape, which not only promotes the continuation and sustainable development of traditional architectural color in modern landscape, completes the dual-track coexistence of traditional and modern symbols, but also provides Chinese modern landscape design with new regional expression references of traditional color symbols. expression reference. It has positive significance for the development of Chinese traditional architectural color culture and the formation of national landscape characteristics.

References

Can, T. (2023). The beauty of traditional Chinese colors from the perspective of color psychology. *Shanghai Clothing*, (08), 106-108.

De, P. (2009). "Five colors of China" self-statement. *Friends of Fine Arts*, (01), 22-23.

https://kns.cnki.net/kcms2/article/abstract?v=aKxFl3wG76gJZQadaFh6j0WSCCdlWhlU9Hc1SNVATTYN6iXXilYfsAgy2D8OryTuj98wCrGvHKgD5sXrLKYUewLryS1eyT-VmCOH90ki0wJozjQK8OHOoAjMppPDfCEw5uY0HeM3AOaxnX5cSYLLR1IAYKOWf6_sq3_2B191f5Z5ls-fEGGwtSiMOcBJjx&uniplatform=NZKPT&language=CHS

Fan, C., & Jie, S. (2022). Study on the color characteristics of Shanghai Bund building complex based on HSV color model. *Art Technology*, (012), 035.

Fei, T. (2015). The present situation and development direction of modern urban landscape design are discussed. *Art Appreciation*, (04), 81.

Han, L. (2021). The importance of color in the design of Chinese traditional residential buildings. *Real Estate*, (014), 1-2.

Hongying, Y., & Haiyuan, M. (2012). The application of traditional architectural color aesthetics in modern architectural design. *Journal of Chifeng University: Natural Science Edition*, (5), 3.

Huiqing, W. (2021). *Research on the application of Chinese traditional five colors in ancient*. (n.p.).

Jin, Z., & Yuhai, S. (2010). Color specialty in Chinese traditional buildings. *Chinese Architectural Decoration*, (7), 2.

Juan, T. H. A. L. (2023). Study on Chinese architectural color culture. *Bibliographic Journal*, (8).

<https://lib.cqvip.com/Qikan/Article/Detail?id=1000003909066>

Palace Museum. (2023). *Wall of the forbidden city in Chinese red*. The Met.

<https://www.dpm.org.cn/lights/royal.html>

Wangni, L. (2022). *Research on the application of aesthetic implication of Han Dynasty tile pattern in modern design*. <https://link.cnki.net/doi/10.27287/d.cnki.gsxu.2022.000961>

Xiao hong shu. (2023). *China pavilion at the Shanghai World Expo*. The Met.

https://www.xiaohongshu.com/explore/6566309400000000330085c0?xsec_token=ABCJhNkeY3_jbeHqHb343a30Xin9hKaFyHn3MHfEAiMMw=&xsec_source=pc_search&source=web_search_result_notes

Xiao hong shu. (2024). *Guotai Art Center in Chongqing*. The Met.

https://www.xiaohongshu.com/explore/65cb69e50000000070046e4?xsec_token=ABXbYMxAPDAQttwQJDGiJsW_Qww-8kDpJwvUMLofMYTB4=&xsec_source=pc_search&source=web_search_result_notes

Xiaohua, W., & Jiating, L. (2016). A study on the color of ancient Chinese architecture -- The origin of color worship and the development of color symbolism. *Art Technology*, 29(09), 320.

Xiaojun, G., & Xiaodan, C. (2016). The cultural significance of traditional Chinese architectural colors. *Journal of Hebei Institute of Architecture and Engineering*, 34(04), 37-39.

Xinyao, L., & Xiaojun, L. (2023). Research on landscape design based on color psychology. *Design*, 36(03), 91-93. <https://doi.org/10.20055/j.cnki.1003-0069.000507>

Xuan, Z., & Lin, T. (2024). The application of color in landscape design. *Shanghai Packaging*, (03), 110-112. <https://doi.org/10.19446/j.cnki.1005-9423.2024.03.037>

Zhi-yong, C. (2016). Analysis of Chinese traditional architectural colors and inspiration. *Journal of Nanjing Institute of Technology (Social Science Edition)*, 16(01), 39-43. <https://doi.org/10.13960/j.issn.1671-3753.2016.01.008>

Zhizi, F. (2016). The use of SketchUp in landscape design. *Art Education Research*, (23), 92. https://next.cnki.net/middle/abstract?v=oGsGy-nFbJQG4yXihTTThDbK38_Wrx6NitoPEEHy4OAsFEwhNAI58PBtt4fMUrjJ2R2DFeKY9a2iCc02Zvniy4PFDspaYfZZ1yZzDiEZKAYV5QgTTyWhgSlpslpBbwOWJNIsKQNI9eJnIGDS0e-5VCz39NvP2wnXuLVHBoI6-4izOsa4uhpqFQkLP1DtnP_C8fb1zn90-sc=&uniplatform=NZKPT&language=CHS&scence=null