

## ORIGINAL ARTICLE

## Exploring color symbolism in ancient Chinese architecture and furniture design

Xin Zhang<sup>1\*</sup>, Muhammad Faizal Abdul Rani<sup>1</sup>, and Yizhe Zhang<sup>2</sup><sup>1</sup>Department of Architecture, Faculty of Built Environment and Surveying, Universiti Teknologi Malaysia, Johor Bahru, Johor, Malaysia<sup>2</sup>Department of Art, School of Art, Pujiang College of Nanjing University of Technology, Nanjing, Jiangsu, China

## Abstract

Color has always played a central role in expressing cultural, philosophical, and social values in ancient Chinese architecture and furniture. This study examines the symbolic use of color in ancient Chinese architecture and furniture through philosophical, cultural, and social connotations. It draws on the *Wuxing* (Five Elements) and *Yin–Yang* theories of color to explore how colors – such as red, yellow, black, and gold – are closely linked to imperial authority, prosperity, and harmony with nature. Using a qualitative methodology, the research combines a historical literature review and case studies – particularly focusing on furniture from the Forbidden City and the Ming (1368 – 1644)–Qing (1644 – 1912) dynasties – to analyze the evolution and material expression of color symbolism. The findings reveal that design decisions in ancient China were deeply rooted in philosophical doctrines, material availability, and sociopolitical functions. These traditions continue to influence modern sustainable, heritage-based design. However, their survival is increasingly challenged by urbanization, globalization, and material scarcity. This study highlights the importance of incorporating traditional Chinese color philosophies into contemporary design education to promote sustainable architecture and cross-cultural innovation. It demonstrates that ancient esthetics still play a key role in shaping responsible and meaningful modern design.

**Keywords:** Chinese architecture; Color symbolism; Dynasty; Furniture; Globalism; Urbanism

**\*Corresponding author:**Xin Zhang  
(zhangxin@graduate.utm.my)

**Citation:** Zhang, X., Rani, M.F.A., & Zhang, Y. (2026). Exploring color symbolism in ancient Chinese architecture and furniture design. *Journal of Chinese Architecture and Urbanism*, 8(1):8457.  
<https://doi.org/10.36922/jcau.8457>

**Received:** January 8, 2025**1st revised:** March 13, 2025**2nd revised:** April 7, 2025**3rd revised:** April 14, 2025**Accepted:** May 26, 2025**Published online:** July 24, 2025

**Copyright:** © 2025 Author(s). This is an open-access article distributed under the terms of the Creative Commons Attribution-Non-Commercial 4.0 International (CC BY-NC 4.0), which permits all non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

**Publisher's Note:** AccScience Publishing remains neutral with regard to jurisdictional claims in published maps and institutional affiliations. and institutional affiliations.

## 1. Introduction

## 1.1. Background

Although the esthetic and symbolic roles of color are well recognized in Chinese visual culture, research integrating these symbolic systems across both architecture and furniture remains limited. In ancient China, color selection was guided by philosophical systems such as *Wuxing* (五行; Five Elements) and *Yin–Yang* (阴阳), which shaped social order and moral values. For example, the official colors of the Forbidden City – yellow and red – symbolize imperial authority and vitality, while red-lacquered furniture represents prosperity and high social status (Dresser, 2023). These traditions remain deeply rooted in Chinese culture and continue to influence modern

Chinese design, blending classical symbolism with contemporary function. This study offers new insights into the relationships between design, philosophy, and history, fostering a deeper appreciation for design principles – particularly the symbolic and functional use of color in Chinese art and architecture – while highlighting connections between traditional Chinese art and contemporary artistic practices. This research explores how traditional Chinese color symbolism operates in historical contexts and how it continues to inspire modern design. Accordingly, the study highlights the cultural, ecological, and design significance of color symbolism as a lasting principle for sustaining and advancing global design practices.

## 1.2. Aims

This study aims to analyze the symbolic roles of color in historical Chinese palaces, houses, and furniture and to examine the relationship between Chinese art, values, traditions, society, and design. Specific objectives include:

- (i) To discuss how Chinese philosophical systems, such as *Wuxing* and *Yin–Yang*, are reflected in color use
- (ii) To explore the associations between different colors and materials with social status, business, and production roles
- (iii) To explore the influence of ancient color theories on modern design practices in China.

Furthermore, this study aims to inspire future research on incorporating traditional Chinese color symbolism into modern architectural and interior design. It demonstrates how ancient principles can support modern practices in sustainable heritage conservation. Furthermore, it promotes the adaptation of cross-cultural design while preserving historical esthetics to drive global design innovation.

## 1.3. Research questions

Based on the objectives of this study, the following research questions are proposed:

- (i) How did the ancient Chinese people use colors in architecture and furniture to reflect their beliefs and social structure?
- (ii) What meanings were historically associated with specific colors and patterns in traditional Chinese design?
- (iii) How have ancient Chinese color theories influenced modern design practices?

## 1.4. Research gap and structure of research

Although the symbolic use of color in ancient Chinese design is widely recognized, it is primarily examined within the field of architecture and furniture. Architectural

studies often focus on imperial structures, analyzing both the material use of color and its social symbolism within domestic settings. In contrast, furniture studies mainly focus on materiality and symbolic social function, also within domestic settings. However, these studies fail to incorporate the shared philosophical theories, such as the *Wuxing* and *Yin–Yang* theories. In addition, the cross-influence and continued use of color symbolism across these and other realms remain unexplored.

To address these gaps, this study is divided into several key sections for systematic and effective analysis. The introduction section provides an overview of the study's background, research problem, objectives, and significance. The literature review section explores the theoretical background, historical applications, and cultural meanings of color in Chinese architecture and furniture. The methodology section outlines the data collection process and analytical methods. The results and discussion section presents the findings and interprets their significance. Finally, the conclusion section highlights key findings and suggests directions for future research.

## 2. Literature review

### 2.1. Introduction to color symbolism in Chinese culture

The cycles of *Wuxing* and the contrasting forces of *Yin–Yang* play a central role in shaping the use of colors in Chinese traditions, reflecting a system that is both sophisticated and deeply developed. These principles associate colors with elements of nature and the cosmos, in harmony with cultural values and social hierarchies. Yellow and red architecture symbolize imperial authority and vitality, as seen in the Forbidden City, while colors such as green and gold in temples reflect harmonious sainthood. Similarly, in furniture design, red lacquer symbolizes prosperity, while black enamel with gold inlays symbolizes elegance, reflecting social class and order. Beyond beautification, colors serve as powerful symbols of culture and status, with people historically identifying themselves through colors (Figure 1). Today, these traditions continue to influence modern design trends by integrating ancient and modern styles through the interplay of color, culture, and design. As shown in Figure 1, there are 24 titles representing the 24 solar terms in China – a traditional time-division system used to guide agricultural activities and the rhythm of daily life in ancient farming culture.

According to the law of the Earth's rotation around the Sun, the 360° of the Sun's longitude are divided into 24 solar terms, as illustrated in Figure 1. These solar terms reflect seasonal and climatic changes and continue to guide agricultural practices and daily life.



Figure 1. Color samples of 24 titles representing 24 solar terms in China  
Source: Diagram adopted from Deng *et al.* (2022)

The term “the beginning of spring” marks the start of spring. For example, the red, green, and blue values of 255, 247, and 153, respectively, represent the color strength. In the Munsell color system, the notation “8.7Y 9.6/6” indicates a yellow hue (Y) of 8.7, with a lightness of 9.6 and chroma of 6, referring to the brightness and clarity of color.

*Wuxing* and *Yin–Yang* are two philosophical foundations in ancient China that serve as the basis for color symbolism. *Wuxing* associates colors with elements, each reflecting different characteristics: green symbolizes growth, red stands for vitality, yellow means stability, white represents mystery, and black corresponds to water (Hu *et al.*, 2017).

These associations demonstrate how colors were used in architecture and furniture design to connect with nature and enhance spatial proportions. While *Wuxing* focuses on five harmonious color elements, the *Yin–Yang* principle operates in complementary color pairs – such as black and white – representing balance in the universe. These philosophies are deeply integrated into the esthetic, functional, and symbolic use of color in ancient Chinese design, reflecting how spaces and objects embodied broader culture and beliefs.

## 2.2. Color symbolism in ancient Chinese architecture

In ancient Chinese architecture, color was used to reinforce spatial design based on social hierarchy and cultural beliefs. To convey authority, virtue, and spiritual significance, colors were not applied casually or without purpose (Papanek, 2020). For instance, the yellow roof tiles of the Forbidden City symbolized the emperor's cosmic role, while red walls and columns signified vitality, protection, and ceremonial importance (Kilmer & Kilmer, 2024). The meaning of color extended beyond surface appearance – locally sourced, durable pigments such as cinnabar and ochre were chosen not only for their visual qualities but also for their longevity and climate suitability. Symbolic colors worked in harmony with architectural form to convey cultural meaning within space. Similarly, red and black lacquer was used in aristocratic and imperial furnishings to symbolize wealth and official status (Huang, 2020). Together, architecture and furniture formed a unified cultural expression, with color defining the structure's identity and reinforcing the philosophical principles that shaped daily life.

## 2.3. Modern interpretations and applications

The use of color in ancient Chinese architecture and furniture continues to influence modern building and furniture design. The colors – such as red and gold – are applied in the architecture of public buildings and cultural facilities to foster a sense of tradition and cultural identity (Sellers, 2021). Modern furniture designers draw inspiration from ancient arts like Japanese lacquer, utilizing red and black to create furniture that combines modern form and function while paying esthetic homage to antiquity. Moreover, ancient concepts of colors have been integrated into global design trends, including minimalism and environmentally conscious practices. This integration of ancient and modern design demonstrates that Chinese design principles are not fixed traditions, but adaptable practices that contribute to cultural preservation, sustainable development, and innovative global design.

## 2.4. Challenges in preserving color symbolism

Preserving the delicate color symbolism in Chinese design remains a challenge in the modern era. With rapid

urbanization and modernization, traditional architectural styles and their associated colors are increasingly being lost, replaced by standardized modern structures (Frampton, 2020). Globalization poses a challenge as Western design styles and materials increasingly overshadow culturally specific Chinese design traditions. In addition, ecological factors have contributed to the decline of traditional practices – natural dyes once used in traditional Chinese design are now difficult to source, environmentally harmful, or expensive. Moreover, the symbolic meaning of specific colors is at risk of being forgotten, and the cultural values they represent may gradually disappear (Fan & Feng, 2019). To overcome these challenges, deliberate efforts are needed – particularly through education, the promotion of sustainability in built environment projects, and the inclusion of traditional color symbolism into modern architectural color practices.

## 2.5. Comparative studies with other cultures

Comparing ancient Chinese color symbolism with that of other cultures reveals both similarities and differences. In Japanese design, colors also reflect the natural environment and the four seasons, similar to the principles of ancient Chinese traditions such as *Wuxing* and *Yin–Yang* (Alnasuan, 2016). However, Japanese esthetics tends to favor simplicity, whereas Chinese design makes use of more vibrant colors. In addition, Western culture – shaped by the Renaissance and the Industrial Revolution – expresses itself through color in different ways. For example, red is considered a symbol of luck in Chinese design; however, it represents passion or warning in Western culture. These contrasts reveal the diverse meanings of colors across cultures, highlighting the importance of understanding color symbolism to promote cross-cultural awareness and inspire global design ideas.

## 2.6. Relevance to contemporary design theory

The symbolic use of color in ancient Chinese design offers a great framework for modern design that embraces sustainability and cultural identity. Rather than simply reviving historical themes, modern designers reinterpret traditional color associations to address the challenges of a fast-paced, globalized world. For instance, red and gold are reintroduced in public architecture and product design to reinforce heritage and evoke emotional resonance. This practice highlights the importance of tradition in creating place-based meaning and fostering esthetic sustainability. Although the philosophies are not mentioned, their influence is evident in material selection, spatial balance, and symbolic clarity. Their principles are translated into design strategies that address both environmental and contextual essentials. With the renewed focus on ecological



responsibility and the embrace of culturally embedded values, as reflected in modern design practices, the use of such ancient design elements remains not only relevant but also authentic. Therefore, ancient Chinese color theory plays a crucial role in shaping responsive and sensible design in today's world.

## 2.7. Critical evaluation of prior studies

Various studies have examined color symbolism in Chinese architecture and furniture – particularly in *Wuxing* and *Yin–Yang* philosophies. However, most of these studies focus exclusively on architectural symbolism, often treating it in isolation from interior or furniture design, thereby ignoring their shared cultural and philosophical foundations. These studies overlook how color designations were applied across all spatial scales, from grand imperial structures to ordinary furnishings, and fail to consider the broader design rationale of traditional Chinese environments. Moreover, while several studies have examined stylistic or technical aspects, few have explored the relationship between color symbolism and its response to shifting sociopolitical contexts, regional adaptation, or material constraints. In addition, there is limited evaluation of how these traditional color theories may contribute to modern sustainable and culturally rooted design practices. This study addresses these gaps through a comparative and integrated analysis that connects color symbolism across domains, examines regional variations, and critically applies traditional philosophies to modern design challenges.

## 2.8. Limitation

Several limitations remain in this study. The primary data sources – historical records, secondary literature, and visual analysis – do not fully capture unrecorded regional practices or the daily use of color symbolism beyond elite contexts. For imperial and aristocratic examples, the scope is limited to selected case studies, such as the Forbidden City and Ming (1368 – 1644)–Qing (1644 – 1912) dynasty furniture. In addition, the research adopts an interpretative and qualitative approach, which may introduce bias in symbolic interpretation. Future studies are encouraged to incorporate archaeological data, oral histories, or ethnographic fieldwork to enhance understanding of color symbolism across a broader range of cultural and geographic contexts.

## 3. Methodology

This study employed a qualitative interpretive research method, drawing on cultural analysis, historical interpretation, and visual semiotics to examine how color symbolism in ancient Chinese architecture and furniture

is related to philosophical concepts and social structures. It also investigated how these symbolic color meanings could be integrated into modern design. By connecting historical symbolism with modern applications, the study provides new insights into philosophical interpretations, representations of social hierarchy, and their influence on modern design practices.

### 3.1. Research approach

The study involved textual and visual analysis within an interpretive design practice to explore the symbolic meaning of color using cross-referenced historical records, philosophical texts, museum collections, and scholarly literature (Figure 2). The methodology comprised three stages:

- (i) Contextual analysis of the philosophical systems *Wuxing* and *Yin–Yang*,
- (ii) Case studies of architectural and furniture examples,
- (iii) Thematic synthesis linking traditional symbolism to modern design applications.

### 3.2. Data collection methods

#### 3.2.1. Historical literature review

This research utilized historical literature to examine the symbolic use of colors in ancient Chinese architectural and furniture design. Primary sources included classical texts from Confucianism, Daoism, and Buddhism, which provided foundational insights into the *Wuxing* and *Yin–Yang* philosophies that influenced color selection and application (Aftab & Rusli, 2017). Imperial records from the Ming and Qing dynasties documented the use of pigments, materials, and design principles in imperial and aristocratic settings. In addition, cultural manuals emphasized the relationship between colors, social rank, and ceremonial practices. These historical sources illustrate how color was used to symbolize authority, culture, and order, providing a distinctive insight into the integration of color within traditional Chinese esthetics.

#### 3.2.2. Case selection criteria

Three main criteria were used for the selection of case studies in this research:

- (i) Exhibit deliberate use of color aligned with traditional Chinese philosophies, specifically *Wuxing* or *Yin–Yang* principles
- (ii) Well-documented in historical texts, architectural records, museum archives, or other available sources such as visual materials
- (iii) The selection aimed to enable comparative analysis across different spatial and functional contexts, including both architectural structures and furniture.

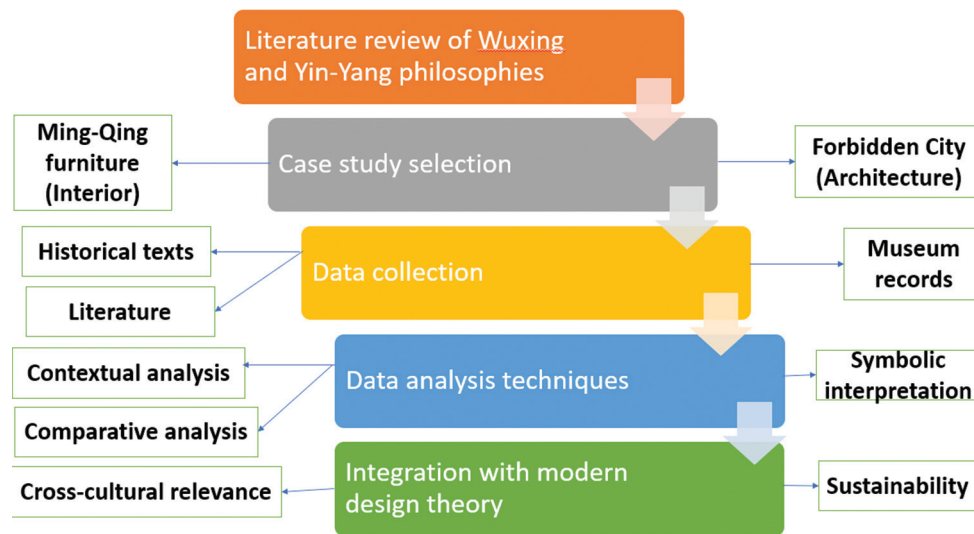


Figure 2. Flow diagram of the research approach  
Source: Diagram by the authors

The criteria of this research were based on the two levels of design symbolism as represented in the furniture and architectural elements of the Forbidden City and the Ming-Qing dynasty. Based on these criteria, two case studies were selected:

- (i) The Forbidden City: Located in Beijing, China, this imperial palace exemplifies the intentional use of color that symbolizes imperial authority and cosmic order. As shown in Figure 3, yellow – associated with the Earth element and centrality in *Wuxing* – was used exclusively for the roofing of the emperor’s palace, symbolizing divine power from the heavens (Liu *et al.*, 2021). Red – representing energy and protection – was commonly applied to the walls and columns to signify kindness and to protect the occupants. Gold, often used in decorative extension, symbolized purity and richness.
- (ii) Ming and Qing dynasty furniture: Furniture from the Ming and Qing dynasties reflects the symbolic use of color and ornamentation from a human-centered perspective. Synthetic red – derived from cinnabar – symbolized wealth and high social status and was commonly used in aristocratic households (Hung, 2015). Black lacquer with gold motifs symbolized power and was closely associated with prestige. Historical records from museum catalogs and scholarly research highlight the meticulous craftsmanship and intentional symbolism embedded in these pieces of furniture, despite their functional purposes within specific social groups. This case illustrates how, in early Chinese design, color transcended esthetic appeal to function as a medium of cultural expression and social differentiation.



Figure 3. The Forbidden City with yellow glazed tile roofs  
Source: Photo adopted from Liu (2015)

### 3.3. Data sources

The study utilized both primary and secondary data sources. Primary materials included imperial archives, historical architectural records, and ancient Chinese philosophical texts. Key sources comprised Confucian, Daoist, and Buddhist writings that discuss the theoretical aspects of *Wuxing* and *Yin-Yang*, both as design principles and as symbolic frameworks within spatial contexts. Museum documentation and artifact catalogs related to the Forbidden City and Ming-Qing dynasty furniture provided essential visual and descriptive data. In addition, restoration and conservation records were examined to gain insights into the materials used and the traditional methods of applying symbolic design elements.

Secondary materials included peer-reviewed journal articles, design theory books, and scholarly interpretations

of Chinese cultural esthetics. The study also incorporated literature on architectural philosophy, furniture symbolism, and contemporary sustainability practices. Comparative analyses of color symbolism in Western and Japanese design contexts were used to identify the similarities and differences. These secondary sources supported the analysis of primary data and helped establish connections between historical symbolism and its relevance to modern design from an interdisciplinary perspective.

### 3.4. Analysis techniques

Various analytical methods were employed to deepen the understanding of color usage and its symbolic use in ancient Chinese architecture and furniture. These methods facilitated a systematic examination of data obtained from historical literature, philosophical perspectives, visual materials, and secondary sources. By integrating these approaches, the study examined the cultural, philosophical, and esthetic aspects of color symbolism in ways that highlight both its historical significance and contemporary relevance.

#### 3.4.1. Contextual analysis

Contextual analysis was employed to examine the influence of geographic, climatic, and material conditions on the application of color in historical and modern design practices. It also contributed to identifying appropriate sustainable materials and formulating heritage preservation strategies. By relating modern design practices to traditional theories, the analysis demonstrates how ancient color symbolism remains relevant in addressing current challenges in architectural and interior design, particularly in terms of sustainability and cultural continuity.

#### 3.4.2. Comparative analysis

Comparative analysis was employed to examine color symbolism across architectural and furniture designs. This method traced the use of recurring colors, such as gold or black, highlighting how each served different symbolic functions depending on scale, purpose, and setting. The analysis demonstrates how ancient Chinese design was deeply rooted in symbolic meaning and illustrates how philosophical principles were adapted for imperial, religious, and domestic contexts to construct broader social and cultural narratives.

#### 3.4.3. Symbolic interpretation

Symbolic interpretation was employed to examine how color functioned in ancient Chinese design to symbolize cosmological and societal values. This method interprets specific color choices – such as red for vitality and yellow for imperial authority – through the *Wuxing* and *Yin–Yang* principles. It explores the intentional use of these colors

in architecture and furniture to symbolize belief systems, social hierarchies, and the alignment of human-made environments with natural or spiritual forces.

## 4. Results

This section presents the findings and analysis of color symbolism in ancient Chinese architecture and furniture. The study reveals that, influenced by Chinese philosophies such as *Wuxing* and *Yin–Yang*, the use of colors depicted cultural expectations, political authority, and esthetic values. It further explores how color was employed to shape the identity of architectural and furniture designs, and examines its influence on modern design practice.

### 4.1. Color symbolism in the Forbidden City and Ming–Qing dynasty

In the Forbidden City, color was deliberately employed to symbolize imperial power and reflect cosmological harmony. According to *Wuxing* philosophy, the yellow roof tiles of the emperor's palace represented the Earth element, reinforcing the belief in the emperor's divine status – yellow being an exclusive color reserved for the emperor. Red walls and columns symbolized vitality and protection, aligning with the emperor's role as the protector of the area. Gold signified sanctity and wealth, contributing to the visual grandeur and monumental quality of the structures. These colors symbolized political authority and a hierarchical vision of civilization relative to the natural environment and culture.

In the Ming and Qing dynasties furniture, colors were used to symbolize social status and elegance. Red lacquer extracted from cinnabar was associated with wealth and high social status, frequently used in a sophisticated setting. Black and gold were used in fine dining, formal gatherings, and social outings. The design and quality of the fabric adhered to the Ten Classics of Chinese esthetics, reflecting refined taste.

### 4.2. Color symbolism in architecture and furniture

The use of color in imperial architecture, particularly in the Forbidden City, reflects the significant role color played in reinforcing imperial authority. Yellow roof tiles symbolized the Earth element in *Wuxing* philosophy, representing stability, centrality, and divine force. As the imperial color, yellow was reserved exclusively for the emperor, emphasizing his status as the “Son of Heaven” (Xiong *et al.*, 2020). In contrast, the red walls symbolized vitality, sanctuary, and luck – which were all deemed essential for the emperor in protecting his people.

Ancient Chinese furniture served as a symbol of the owner's social status. Green, often used in temples

and shrines, symbolized prosperity and life, reflecting Daoists beliefs that one should live in harmony with the forces of nature (Figure 4). Red lacquer – derived from cinnabar – signified prosperity, joy, and high social status (Bumgardner & Nicholls, 2020). It was commonly used in the bedrooms of aristocratic families and on ceremonial items. Black lacquer with gold symbolized elegance and was commonly used on formal occasions, such as in imperial court settings (Figure 5). These colors not only enhanced the esthetic appeal of the furniture but also reflected the social status of the user and cultural values.

Furnishing materials such as rosewood and elm contributed to the distinctive color and texture of the furniture. These woods were often combined with vibrant lacquer coatings to enhance both durability and visual elegance (Figure 6). The combination of materials and colors reflects the *Wuxing* principle of balance between nature and humanity.

In ancient Chinese, colors were derived from natural minerals – such as cinnabar for red, ochre for yellow, azurite for blue, and malachite for green. Wood substrates such as huanghuali (*Dalbergia odorifera*), zitan (*Pterocarpus santalinus*), and elm (*Ulmus spp.*) were used in furniture due to their durability, texture, and capacity to absorb lacquer. Furniture items held specific symbolic significance in their design. For instance, round-shaped chairs represented unity and harmony, with finishing colors such as red or gold signifying auspiciousness (Madeddu & Zhang, 2017). These designs embodied cultural significance, serving as both functional and symbolic purposes in daily life.

#### 4.3. Comparative analysis: Architecture versus furniture

The two main philosophies guiding color use in ancient Chinese architecture and furniture – *Wuxing* and *Yin–Yang*

– share a foundational emphasis on harmony but differ significantly in their application (Robinson, 2017). In architectural contexts, yellow and red were used systematically to symbolize imperial authority, divinity, and vitality, as demonstrated in the Forbidden City. In contrast, furniture adopted these colors on a more intimate scale to reflect personal status, wealth, and elegance, as seen in red-lacquered and black-and-gold furniture. While architecture emphasizes large-scale, monumental expression, and symbolic representation, furniture reflects individual personality and practical function, demonstrating the flexibility of Chinese color symbolism across varying philosophical and cultural contexts and design scales (Roskam, 2015). Table 1 summarizes the comparative application of color in ancient Chinese architecture and furniture.

### 5. Discussion

This study examines the use of color in Chinese architecture and furniture designs within the context of traditional Chinese philosophical values and their modern cultural significance. It highlights the complex use of *Wuxing* and *Yin–Yang* philosophies in employing colors that symbolize the balance of nature, social status, power, spirituality, and divinity. The discussion illustrates how these symbolic systems were expressed across different scales and functions in architecture and furniture while maintaining cultural and philosophical continuity.

#### 5.1. Philosophical underpinnings: *Wuxing* and *Yin–Yang*

The *Wuxing* and *Yin–Yang* principles guided ancient Chinese color usage in artistic and architectural creations. According to *Wuxing*, specific colors correspond to elements: green represents wood and symbolizes growth;

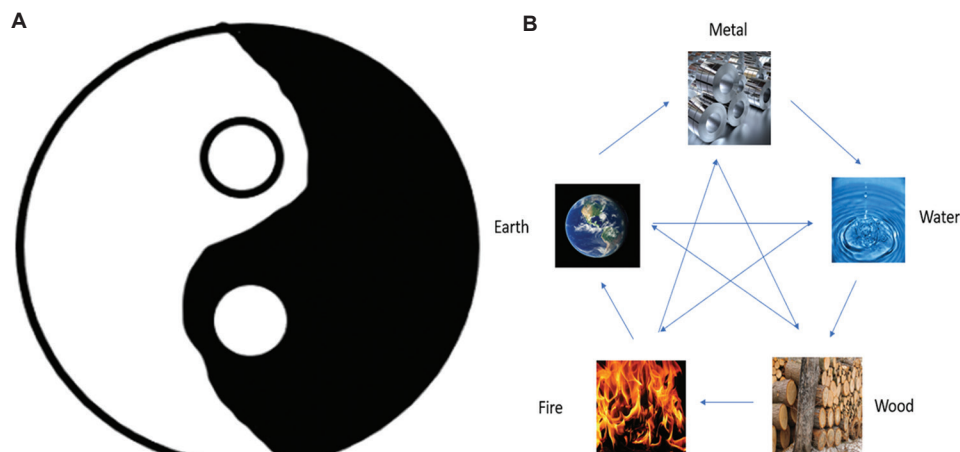


Figure 4. Philosophical foundations in ancient Chinese design: (A) *Yin–Yang* (阴阳); (B) *Wuxing* (五行; Five Elements)

Source: Illustrations by the authors



**Table 1. Comparative summary of color use in ancient Chinese architecture and furniture**

Aspect	Architecture	Furniture
Philosophical function	<i>Wuxing</i> and <i>Yin–Yang</i> principles for harmony and cosmic order	<i>Wuxing</i> and <i>Yin–Yang</i> principles for balance and personal symbolism
Scale of application	Large-scale	Small-scale
Symbolic functions	Imperial authority, vitality, and harmony with nature	Prosperity, sophistication, and social status
Primary colors	Yellow, red, green, and gold	Red, black, gold, and white
Materials	Natural minerals (e.g., roof tiles, pigments)	Wood (e.g., rosewood, elm), lacquer finishes
Social implications	Represents political power and cosmic balance	Reflects personal wealth, social status, and cultural values



**Figure 5.** Ming and Qing dynasty furniture  
Source: Photo adopted from Appiah-Kubi *et al.* (2021)



**Figure 6.** Round-back chair with sandalwood in the 17<sup>th</sup> – 18<sup>th</sup> century  
Source: Photo adopted from Liu *et al.* (2013)

red corresponds to fire; yellow signifies the Earth element; white to metal; and black to water, symbolizing profundity (Martinez, 2016). These associations ensured that color choices aligned with nature and the cosmological order. For example, green is commonly associated with religious contexts, symbolizing growth and renewal, while yellow is linked to imperial settings, signifying stability and authority.

Similarly, the *Yin–Yang* principle represents balance and duality, with colors such as black and white signifying passive and active forces. This principle was especially evident in furniture design, where the use of high-contrast tones highlighted philosophical depth. These philosophies ensured that color application was intentional, guided by cultural norms and a deep connection to nature. As a result, color became a meaningful tool for expressing balance as a central theme.

## 5.2. Cultural and social implications

The analysis highlights how color functioned within structural models of society, cultural expression, and esthetic principles. In architecture, colors such as yellow and red were used to symbolize imperial authority and protection, positioning the emperor at the top of the cosmic hierarchy. Yellow roof tiles – used exclusively for the emperor – signified imperial authority, while red walls and columns represented vitality and auspiciousness. These color choices helped both the imperial court and common people understand political power and cultural values.

In furniture, color differentiation was based on organization and class hierarchy. Furniture colored with red lacquer – derived from cinnabar – symbolized wealth and high social status, while black lacquered furniture with gold engravings appeared more refined and was typically used in official settings. These symbolic connections indicate that even color enhanced the visual appeal of furniture; it also played a role in maintaining social class distinctions. By embedding these meanings into objects and spaces, ancient Chinese society effectively nurtured a “projected” vision – one that reflected the deeper layers of Chinese culture and societal structure.

## 5.3. Comparative analysis: Architecture and furniture

Although the philosophy and culture underlying architectural and furniture designs shared many similarities, the use of color operated on a broader scale and served distinct functions. In architecture, colors were

employed to express social and celestial meanings – for example, the exclusive use of yellow in imperial buildings symbolized the Earth element and divine authority (Bray, 2023). In contrast, furniture used similar colors in a more intimate and individualized manner. For instance, red-lacquered furniture symbolized personal wealth, whereas yellow roof tiles in architecture depicted collective authority and stability. This comparison highlights the flexibility of Chinese color symbolism, where the same colors were employed in different contexts to serve specific purposes. The fact that these symbolic practices were applied across both architecture and furniture scales underscores the cultural uniformity of ancient Chinese design philosophies.

#### 5.4. Regional variations and material considerations

In ancient Chinese architecture and furniture, color usage was influenced primarily by regional and material variations rather than solely by symbolic application. Local climate conditions, cultural preferences, and the availability of natural resources played significant roles in determining color choices. In northern regions of China – including Beijing and Shanxi – cold and dry climates favored the use of durable red and yellow pigments, such as cinnabar and ochre, as these pigments resisted fading over time (Ren *et al.*, 2021). These colors represent imperial authority and warmth. In the Forbidden City, yellow roof tiles symbolize the Earth element in the *Wuxing* system, associated with centrality and power. Red paint on the walls and columns represents vitality and protection, aligning with both cosmological symbolism and the practical need to withstand the harsh northern climate.

In contrast, the humid subtropical climate and abundant water resources of southern China, particularly in regions such as Jiangnan, encouraged the extensive use of blue, green, and white tones. According to the *Wuxing* philosophy, blue-green roof tiles represent the elements of water and wood, symbolizing renewal, and harmony with nature. For example, in the Lingyin Temple in Hangzhou, these colors were employed to reflect the building's integration with its lush, vegetative surroundings, and spiritual function. Such choices aligned with Daoist and Buddhist values, emphasizing balance and natural flow within the environment (Zhang, 2018).

In addition, regional variation in furniture design reflects the diversity of available materials across different regions of China. In southern China, fine hardwoods such as huanghuali and zitan were preferred for their suitability in complex carving and their ability to hold lighter finishes (Liu *et al.*, 2019). These woods, naturally beautiful and aromatic, were often left unvarnished or lightly lacquered to highlight the grain and were typically found in literati or

rather aristocratic households. In contrast, northern China, where durability and protection against dryness were priorities, favored the use of elm or northern rosewood. These were commonly coated with heavy black and red lacquers, serving both decorative and protective functions.

Furthermore, pigment selection also depended on the availability of local mineral resources. Azurite (blue), malachite (green), cinnabar (red), and ochre (yellow) were commonly sourced from the south, while cinnabar (red) and ochre (yellow) were more abundant in the north. These pigments were not only functional – suited to the climate and character of the region – but also carried philosophical coherence aligned with local needs and beliefs. The study explores how regional material differences intersected with ancient Chinese color symbolism, which was guided and dictated by unified philosophical principles but expressed materially through local environmental and cultural contexts.

#### 5.5. Challenges in preserving color symbolism

In addressing ancient Chinese color symbolism, challenges of preservation in the modern world become evident. Urbanization and globalization have led to the decline of traditional architectural styles, along with the symbolic use of color (Jimeno-Morenilla *et al.*, 2021). This shift risks diminishing cultural identity, as Western design concepts increasingly overshadow traditional ones. Moreover, the use of natural pigments such as cinnabar presents environmental concerns due to the high ecological cost of their extraction and production.

Nevertheless, traditional color symbolism can still be recreated and applied in contemporary contexts. Artificial or bio-degradable pigments can preserve the qualities of traditional colors. Evaluating practical preservation methods for designers and architects can also promote greater familiarity with these cultural traditions, encouraging their continued use in modern architectural practices.

#### 5.6. Research limitations

This study has several limitations. First, it relies heavily on historical records, archives, visual materials, and secondary literature, which restricts the evidence to well-documented sources – mainly aristocratic furniture and the Forbidden City – potentially overlooking vernacular and less documented uses of color symbolism. Second, the qualitative interpretive method, while suitable for cultural and philosophical analysis, may introduce subjectivity into symbolic interpretations. In addition, access to some primary sources and preservation records was restricted, limiting regional comparisons to the most notable sites. Future research could address these limitations by

incorporating archaeological findings, oral histories, and quantitative visual analyses to capture a broader social spectrum.

## 5.7. Theoretical implications

This paper contributes to design theory by demonstrating how coherence in visual language can be applied across architectural and interior domains, grounded in ancient Chinese color symbolism based on *Wuxing* and *Yin–Yang* philosophies. It bridges disciplinary gaps that often separate the analysis of architecture and furniture by suggesting an integrated model of color as both a philosophical and social medium. The research advances theoretical discussions on cultural sustainability and contextual esthetics by revealing how those traditional systems adapted to regional climate, material constraints, and social functions. In addition, the findings offer a conceptual connection between traditional symbolism and modern architectural and product design, particularly in cross-cultural and ecologically conscious settings.

## 6. Conclusion

This study critically examined the use of color symbolism in ancient Chinese architecture and furniture through traditional Chinese philosophies, particularly *Wuxing* (Five Elements) and *Yin–Yang*. Color symbolism has influenced design choices ranging from spatial dimensions to material selection, such as wood. It was discovered that color was not merely decorative, but an essential means of cultural communication – conveying authority, spirituality, harmony, and social hierarchy. Focusing on the Forbidden City and Ming–Qing dynasty furniture, the study revealed a coherent philosophical foundation behind color choices, though their application varied according to regional conditions and functional purposes.

Most importantly, these systems of meaning were not fixed. They adapted to regional context and available materials that were inherently sustainable and responsive to their environment. Today, in many respects, these traditional frameworks are still applicable – offering insight into the role of cultural identity and ecological awareness in modern design practice.

This research contributes to the growing practice of the cultural foundations of sustainability and symbolic coherence in design. It encourages the use of traditional color philosophies in educational, conservation, and creative contexts – not as nostalgic revivals, but as active and adaptable frameworks. These ancient systems offer valuable insights, including for places like Jerusalem, on how to confront the challenges of cultural homogenization, material ethics, and heritage preservation. In doing so, they

help sustain a design language that remains meaningful and contextually grounded.

## Acknowledgments

None.

## Funding

None.

## Conflict of interest

The authors declare that they have no competing interests.

## Author contributions

*Conceptualization:* Xin Zhang

*Investigation:* Xin Zhang, Muhammad Faizal Abdul Rani, Yizhe Zhang

*Methodology:* Xin Zhang

*Visualization:* Xin Zhang

*Writing-original draft:* Xin Zhang, Muhammad Faizal Abdul Rani, Yizhe Zhang

*Writing-review & editing:* Xin Zhang, Muhammad Faizal Abdul Rani, Yizhe Zhang

## Ethics approval and consent to participate

Not applicable.

## Consent for publication

Not applicable.

## Availability of data

No new data was created or used in this research.

## References

- Aftab, M., & Rusli, H. A. (2017). Designing visceral, behavioural and reflective products. *Chinese Journal of Mechanical Engineering*, 30:1058-1068.  
<https://doi.org/10.1007/s10033-017-0161-x>
- Alnasuan, A. (2016). Color psychology. *American Research Journal of Humanities and Social Sciences*, 1(1):1-6.
- Appiah-Kubi, O. P., Jiufang, L., & Zhihui, W. (2021). Historical overview of the Chinese traditional furniture. *Asian Journal of Science and Technology*, 12(5):11704-11708.
- Bray, F. (2023). *Technology and Gender: Fabrics of Power in Late Imperial China*. Univ of California Press, United States.
- Bumgardner, M. S., & Nicholls, D. L. (2020). Sustainable practices in furniture design: A literature study on customization, biomimicry, competitiveness, and product communication. *Forests*, 11(12):1277.  
<https://doi.org/10.3390/f11121277>

- Deng, L., Zhou, F., & Zhang, Z. (2022). Interactive genetic color matching design of cultural and creative products considering color image and visual aesthetics. *Heliyon*, 8(9):e10768.  
<https://doi.org/10.1016/j.heliyon.2022.e10768>
- Dresser, C. (2023). *Principles of Decorative Design*. Good Press, Scotland.
- Fan, K. K., & Feng, T. T. (2019). Discussion on sustainable development strategies of the traditional handicraft industry based on su-style furniture in the Ming dynasty. *Sustainability*, 11(7):2008.  
<https://doi.org/10.3390/su11072008>
- Frampton, K. (2020). *Modern Architecture: A Critical History (Fifth) (World of Art)*. Thames & Hudson, Thames & Hudson.  
<https://doi.org/10.1080/10331867.2021.1989898>
- Hu, Z., Wen, Y., Liu, L., Jiang, J., Hong, R., Wang, M., et al. (2017). Visual classification of furniture styles. *ACM Transactions on Intelligent Systems and Technology (TIST)*, 8(5):1-20.  
<https://doi.org/10.1145/3065951>
- Huang, S. S. S. (2020). *Picturing the True Form: Daoist Visual Culture in Traditional China* (Vol. 342). BRILL, Netherlands.
- Hung, W. (2015). *Art of the Yellow Springs*. Reaktion Books, United Kingdom.
- Jimeno-Morenilla, A., Azariadis, P., Molina-Carmona, R., Kyratzis, S., & Moulaniotis, V. (2021). Technology enablers for the implementation of Industry 4.0 to traditional manufacturing sectors: A review. *Computers in Industry*, 125:103390.  
<https://doi.org/10.1016/j.compind.2020.103390>
- Kilmer, R., & Kilmer, W. O. (2024). *Designing Interiors*. John Wiley & Sons, Hoboken.
- Liu, J., Kamarudin, K. M., Liu, Y., & Zou, J. (2021). Developing pandemic prevention and control by ANP-QFD approach: A case study on urban furniture design in China communities. *International Journal of Environmental Research and Public Health*, 18(5):2653.  
<https://doi.org/10.3390/ijerph18052653>
- Liu, P. (2015). *Body in the Forbidden City* (Doctoral dissertation, Curtin University). Available from: <https://core.ac.uk/download/pdf/195631994.pdf> [Last accessed on 2025 Jul 22].
- Liu, W., Li, R., & Li, X. (2019). Research on Ming dynasty Huanghuali wood officialase study on urban furniture design in China communIOP Conference Series: Materials Science and Engineering, 490(2):022005.  
<https://doi.org/10.1088/1757-899X/490/2/022005>
- Liu, X. Y., Timar, M. C., & Yi, S. L. (2013). A study on the history and materials of traditional Chinese furniture. *Pro Ligno*, 9(4):256-264. Available from: [http://proligno.ro/en/articles/2013/4/Liu%20Xin%20You\\_final.pdf](http://proligno.ro/en/articles/2013/4/Liu%20Xin%20You_final.pdf) [Last accessed on 2025 Jul 22].
- Madeddu, M., & Zhang, X. (2017). Harmonious spaces: the influence of Feng Shui on urban form and design. *Journal of Urban Design*, 22(6):709-725.  
<https://doi.org/10.1080/13574809.2017.1336061>
- Martinez, P. G. (2016). Authenticity as a challenge in the transformation of Beijing's urban heritage: The commercial gentrification of the Guozijian historic area. *Cities*, 59:48-56.  
<https://doi.org/10.1016/j.cities.2016.05.026>
- Papanek, V. (2022). *The Green Imperative: Ecology and Ethics in Design and Architecture*. Thames & Hudson, United Kingdom.
- Ren, J., Gao, C., Wang, J., Shen, Y., Shi, J., Liu, Q., et al. (2021). Non-invasive optical technical identification of red pigments on Chinese paper notes. *Coatings*, 11(4):410.  
<https://doi.org/10.3390/coatings11040410>
- Robinson, N. (2017). *The Planting Design Handbook*. Routledge, London.
- Roskam, C. (2015). Non-aligned architecture: China11040410" n of red pigments on Chinese paper notArchitectural History, 58:261-291.  
<https://doi.org/10.1017/S0066622X00002653>
- Sellers, L. (2021). *Women Design: Pioneers from the Twentieth Century to Today*. Frances Lincoln Childrenm the Twen.
- Xiong, X., Ma, Q., Wu, Z., & Zhang, M. (2020). Current situation and key manufacturing considerations of green furniture in China: A review. *Journal of Cleaner Production*, 267:121957.  
<https://doi.org/10.1016/j.jclepro.2020.121957>
- Zhang, D. (2018). Cultural symbols in Chinese architecture. *Architecture and Design Review*, 1:1-19.  
<https://doi.org/10.24294/adr.v1i1.211>