The Application and Concept of the Theory of Five Colour in Ancient Chinese Urban Architecture

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ABSTRACT

This study explores the application and concept of the Theory of Five colours in ancient Chinese urban architectural design. Nowadays, urban colour has emerged as a crucial aspect of urban planning, carrying significant historical, cultural, and aesthetic information in the evolution of cities. Colour plays a symbolic role in expressing the character and quality of cities, with its impact evident in various aspects of human habitation and daily life. The conceptual analysis via on-site observation and secondary data delves into the historical shifts in architectural colour schemes for various periods, including the Warring States, the Qin Dynasty, the Han Dynasty, the Wei-Jin Northern and Southern Dynasties, and the Tang, Song, Ming, and Qing Dynasties. Through an analysis of the evolution of architectural colour across different historical eras, the finding reveals that the use of colour in ancient Chinese urban architecture was rooted in the traditional Theory of Five colours. Notably, red and yellow predominantly adorned noble, imperial, and religious structures, underscoring their esteemed and sacred significance. Conversely, colours like black, white, and green were prevalent in civilian constructions, emphasising the vibrancy and diversity of primary buildings through extensive use of neutral colours. This practice of colour differentiation contributed to distinctive regional variations within cities, reflecting a hierarchical architectural concept. However, with the passage of time and the disappearance of the hierarchical system, the application of colour in urban architecture became more flexible. Modern urban architecture, based on the foundation of ancient urban colour, exhibits diverse expressions according to factors such as cultural history, geographical location, and urban characteristics. As a result, the architectural landscapes of different cities display rich and varied colour palettes. These research findings will contribute as a significant reference value for the cultural connotations of ancient urban architecture and the colour design of modern urban spaces in China.

Keywords: *Ancient Chinese urban colour, Aesthetic, Historical, Cultural, Theory of five colours*

INTRODUCTION

Since the initiation of China's reform and opening-up policy, the country has undergone rapid social and economic development, leading to a significant increase in urbanisation and urban construction (Gu et al., 2012). While the expansion and modernization of cities have brought convenience and progress to people's lives, they have also had an impact on traditional urban patterns and appearances, resulting in a need for improvement in the quality of urban environments (Kai et al., 2023). The challenge lies in reconciling the rapid development of cities with the preservation of traditional landscapes and the enhancement of environmental quality, which has garnered significant attention.

One prominent issue in this urban development context is urban colour. Urban colour has emerged as a crucial aspect of urban planning, carrying significant historical, cultural, and aesthetic information in the evolution of cities (Wen et al., 2023). Colour plays a symbolic role in expressing the character and quality of cities, with its impact evident in various aspects of human habitation, daily life, and recreational activities (Jaglarz, 2023). However, with the accelerated urbanisation process, the issue of urban disease has become increasingly prominent, with the colour landscape of China'sChina's cities often appearing disorganised and disorderly (Wang et al., 2019). In response to this situation, Chinese urban planners have turned to foreign experiences and introduced urban colour planning theories to address the problem. The utilisation of colour in ancient Chinese architecture embodies a profound historical and cultural background. The evolution of colour usage in ancient Chinese architecture traverses'' various epochs (Wang & Qi, 2017). In primitive society, Chinese architecture gradually took shape, yet the understanding of colour remained limited, with only rudimentary concepts of primary colour and intermediate colour (Wang & Qi, 2017). Over time, the application of colour in ancient Chinese urban architecture became increasingly rich and sophisticated.

Starting in the Tang Dynasty, colour began to symbolise hierarchy and status, imposing strict regulations and constraints on their selection and application in architecture (Wang, 2017). In the Song Dynasty, colour became a mainstream feature, with architecture adorned in diverse and vibrant colour decorations, reflecting societal and cultural prosperity (Xiaoguang, 2018). The Yuan Dynasty witnessed a further proliferation of vibrant and colourful architectural hues, showcasing an opulent decorative style (Yan et al., 2023). In the Ming Dynasty, colour became more intense and visually pleasing, as bright colour schemes infused architecture with vitality and charm (Zhao, 2010). In the Qing Dynasty, the application of colour became even more intricate and delicate, with the prevalence of oil painting and colourful artwork in architecture showcasing a wide range of artistic expressions (Liu et al., 2019). Thus, this paper aims to explore the development and application of the Theory of Five colours in ancient Chinese urban architecture and elucidate the understanding and utilisation of colour during different historical periods.

LITERATURE REVIEW

Theory of Five Elements

The Theory of Five Elements, one of the most profound theories in Chinese traditional culture, has its origins traced back to the Xia and Shang dynasties and further developed during the Spring and Autumn periods. Its enduring influence continues to shape various aspects of Chinese society (Chen et al., 2019). The Theory of Five Elements has permeated ancient political systems, social culture, language, and other domains, exerting a far-reaching impact on the formation, development, and refinement of the Theory of Five Colour (Haferkamp & Neil, 1991). In ancient philosophical thinking, the Theory of Five Elements serves as a fundamental theoretical basis for the Theory of Five colours and stands as a

significant characteristic in shaping the aesthetic perspectives of traditional Chinese culture (Jian, 2018; Di, 2018).

The Origin of Wu Xing Theory - Materialistic Perspective

The true origin of Wu Xing's theory has been a subject of debate in academia. According to historical records, during the Yin and Shang dynasties, there existed the concept of associating the four seasons with the four cardinal directions, which further encompassed the notion of five directions (Huang, 2021). With the progression of history, feudalism and backwardness led to the emergence of worshipping deities, including the veneration of the Five Emperors. Both the worship and the understanding of directions were closely intertwined with the number "five" (Yang, 2008). Subsequently, various concepts emerged, such as the Five Chambers, Five Classics, Five Rites, Five Punishments, and Five Chapters, all of which intersected with the concept of "five" (Guo et al., 2017). This concept inherited historical perception provided the prerequisite conditions for the emergence of the Wu Xing theory. It is generally believed that the original Wu Xing theory can be traced back to the "Book of Documents: Hong Fan", which states, "The five elements are as follows: water, fire, wood, metal, and earth (Alexey, 2018). Water is moistening, fire is scorching, wood is bending, metal is altering, and earth is nurturing crops. Moistening creates saltiness, scorching creates bitterness, bending creates sourness, altering creates spiciness, and nurturing crops creates sweetness" (Jiang, 2024). The Hong Fan Wu Xing theory represented an initial understanding of the five substances, namely gold, wood, water, fire, and earth, based on their properties and tastes. It marked the beginning of ancient people's cognition of the surrounding world. The Hong Fan Wu Xing theory, as the rudimentary form of Wu Xing, reflected a simplistic materialistic perspective and embodied historical progress (Feng, 2020).

Subsequently, with the integration of Yin and Yang and the Wu Xing elements, the Wu Xing theory expanded from a comprehension of material substances to representing abstract meanings in explaining natural and social phenomena, continuing its development (Sun & Chen, 2018).

The Development of Wu Xing Theory - The Perspective of Abstraction

During the Warring States period, Wu Xing's theory ceased to exist as an independent line of thought and gradually merged with the Yin-Yang theory. The original Wu Xing theory was influenced by two theories: the concept of "qi" as formless vitality and the dynamic interaction of Yin and Yang (Wang et al., 2011). It gradually integrated with the Yin-Yang theory, giving rise to the concept of mutual generation and mutual restraint among the five elements. The combination of the Yin-Yang theory and Wu Xing theory formed a systematic and comprehensive theoretical framework known as the Yin-Yang Wu Xing theory, which played a crucial role in the future development of the theory of Five colours (Jiang, 2024; Li, 2020).
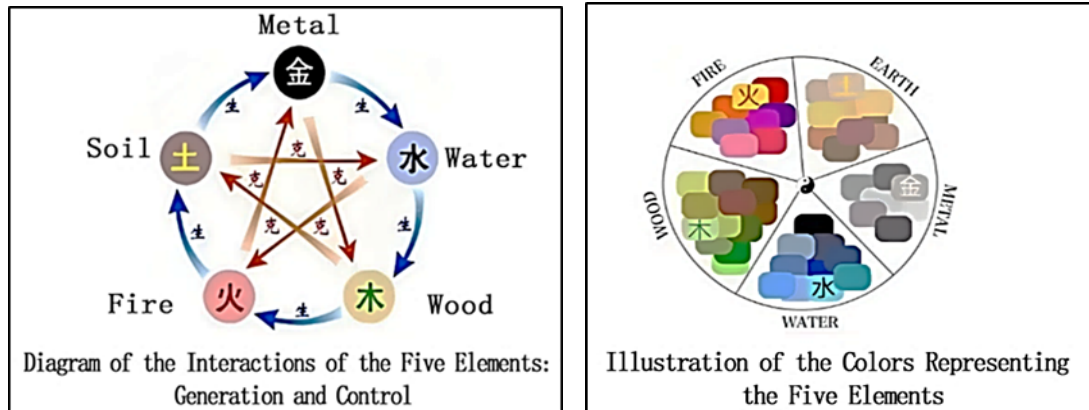
Figure 1. Diagram of the Interactions of the Five Elements: Generation and Restraint
(Source: Author's collection)

One of the most representative figures in this regard was Zou Yan, a Yin-Yang scholar from the state of Qi in the late Warring States period. Building upon the foundation of the original Wu Xing theory, Zou Yan further developed the concept of "the generation and conquest of the five elements" (Stephen, 2023). He proposed that "wood generates fire, fire generates earth, earth generates metal, metal generates water, and water generates wood," illustrating the mutually generative relationships among the five elements (Jiang, 2024) (Figure 1). On the other hand, "water conquers fire, fire conquers metal, metal conquers wood, wood conquers earth, and earth conquers water" represents the relationships of conquest and mutual restraint among the five elements (Skonicki, 2016). Zou Yan also put forth the theory of "the conquest of the Five Virtues," which explains the natural universe based on the relationships of conquest among the five elements (Nylan, 1996). He pointed out that human history also follows the pattern of "the conquest of the Five Virtues," characterised by the cyclic rise and fall of different virtues. This gave rise to the concept of the "beginning and end of the Five Virtues." According to Zou Yan, each virtue has its period of prosperity and decline, and the dominance of the Five Virtues governs the changes in history (Nylan, 1996). When a virtue flourishes, the corresponding dynasty prospers, and when a virtue declines, the corresponding dynasty declines (Kommonen, 2011).

The Refinement of the Five Elements System

Zou Yan integrated the theories of Yin-Yang and the Five Elements, establishing a connection between Yin-Yang and various phenomena. He utilised the dynamic Five Elements theory to explain the development and changes of these phenomena. As a result, the "Yin-Yang and Five Elements theory" permeated various fields such as astronomy, geography, politics, military affairs, traditional Chinese medicine, and economics (Lushchenko, 2018). Its most profound impact was in explaining the phenomenon of historical succession in human society. One notable concept that emerged was the "theory of perpetual change of the Five Virtues," which identified the Five Virtues associated with different eras, such as the Earth virtue representing the Yu era, symbolised by its yellow colour; Wood virtue representing the Xia era, symbolised by its green colour; Metal virtue representing the Yin era; and Fire virtue representing the Zhou era. Qin Shi Huang, influenced by these ideas, embraced the concept of "perpetual change of the Five Virtues" and declared himself as embodying the Fire virtue, proclaiming the current era as the beginning of the Water virtue, symbolised by its black colour (Liu et al., 2019; Liu, 1986). Successive emperors adhered to this belief system, implementing new calendars and changing the colour of vehicles, horses, and sacrificial animals during dynastic transitions.

During the Eastern Han dynasty, Emperor Wu abolished a hundred schools of thought, promoting Confucianism as the dominant ideology. To meet the demand for imperial authority and national unity, Dong Zhongshu, in his work "Gongyang Commentary," integrated Confucianism with the theories of Yin-Yang, Huang-Lao, and Legalism, forming a new school of thought known as New Confucianism (Ge, 2014). He combined Confucian philosophy with the Yin-Yang and Five Elements theory, proposing a series of comprehensive and detailed political and philosophical concepts, including "the harmonious interaction between heaven and humans," "the unity of heaven and humans," and "the three cardinal guides and the five constant virtues" (Table 1). The Yin-Yang and Five Elements theory, as an extensive theoretical system, not only classified static substances but also operated as a dynamic system characterised by perpetual change, cyclical patterns, and the interplay of generation and restraint. This system, in turn, guided human behaviour and historical development (Guo et al., 2022).

The table summarises the application of the "Five colours" concept within ancient Chinese urban architecture, incorporating the principles of the traditional Chinese Five Elements theory. It enumerates various categories associated with the five elements from the Five Elements theory, including Five Seasons, Five Planets, Five Organs, Five colours, Five Qi, Five Directions, Five Flavors, Five Positions, Five Tones, Five Emperors, Five Constants, Five Spirits, Five Temperaments, and Five Animals. The table is intended to elucidate how the Five Elements theory influenced various aspects of ancient Chinese urban architecture, encompassing considerations such as colour palettes, architectural layouts, material selections, and decorative elements.

Table 1: List of Corresponding Factors for Five Elements

No.	Authors and Date	Study topic	Categories	Elements				
				1st Option	2nd Option	3rd Option	4th Option	5th Option
1.	Li et al., (2023); Di (2018)	The psychosomatic traits of "people with the five elements in traditional Chinese medicine": A qualitative study; Chinese Five Elements Conceptual Metaphors on Time and Space.	Five Elements	Wood	Fire	Earth	Metal	Water
2.	Lai et al., (2018); Chen et al. (2019)	Window-opening behaviour in Chinese residential buildings across different climate zones; A method for exploring word-colour associations.	Five Seasons	Spring	Summer	Mid summer	Autumn	Winter
3.	Bian, (2015)	Research on sustainable development of Urban colour based on new contextual-ism.	Five colours	Green	Red	Yellow	White	Black
4.	Wu et al., (2015); Lidong & Guang (2021)	An ancient Chinese wisdom for metabolic engineering: Yin-Yang; Research on the Development Path of "Yin Yang and Five Elements" Cultural Creative Products Based on Cross-border E-commerce.	Five Qi	Dry	Yang	Harmony	Moist	Yin
5.	Pei & Forêt, (2018); Di (2018)	Introduction to the Climate Records of Imperial China. Chinese Five Elements Conceptual Metaphors on Time and Space	Five Directions	East	South	Center	West	North

6.	Li & Chao, (2021)	The combination of Chinese traditional pentatonic rhythm and new media art	Five Tones	Jue	Zhi	Gong	Shang	Yu
7.	Langlois & Elman, (2001)	A Cultural History of Civil Examinations in Late Imperial China	Five Emperors	Tai	Yan	Huang	Shao Hao	Zhuan Xu
8.	Matthews, (2017)	Making "Science" from "Superstition": Conceptions of Knowledge Legitimacy among Contemporary Yijing Diviners	Five Spirits	Jumang	Zhurong	Houtu	Rushou	Xuanming
9.	Kim, (2022)	Zoomorphizing the asterisms: Indigenous interpretations of the twenty-eight lunar mansions in the history of china	Five Animals	Azure Dragon	Vermilion Bird	Yellow Dragon	White Tiger	Black Tortoise
10.	Gill & Huang, (2006)	Sources and limits of Chinese 'soft power'	Five Qi	Wind	Sun	Rain	Cloud	Cold

Theory of Five colour

The theory of the five colours originated from the labour and empirical observations of our ancestors regarding natural phenomena. Initially, it encompassed five fundamental colours: "(qīng) - blue/green, (chì) - red, (huáng) - yellow, (bái) - white, (hēi) - black," which vividly reflected the prevailing natural environment and the inner emotional responses of the people at that time (Luo, 2019). Subsequently, the theory of five colours integrated with the concepts of Yin-Yang and the Five Elements, thus acquiring the dynamic characteristics of mutual generation and conquest inherent in Yin-Yang and the Five Elements (Lidong & Guang, 2021). This amalgamation gave birth to an ancient philosophical paradigm and became a prominent aspect of traditional Chinese colour theory. In the course of this development, influenced by the Five Elements, a multitude of intermediate colours emerged, contributing to the enhanced maturity and refinement of the theory of five colours under the influence of ancient philosophical thought (Chen & Chu, 2022). Its profound impact extended across diverse domains of ancient people's lives, establishing it as the earliest formulated, most influential, and enduring colour system (Tang et al., 2017).

Formation of the Theory of Five colour

Throughout the history of human colour development, both technology and conceptual understanding have played significant roles in the recognition and application of colour (Pedigo & Krell, 2021). In primitive societies, humans began extracting the desired colour from plants, soil, minerals, and even animals. During the Neolithic period, advancements in refining techniques led to the production of more stable and purer colours. The sources of colour became more standardised during this time: hematite for red, manganese oxide coal for black, and clay for white (Thavapalan & Warburton, 2020). However, due to limited technological capabilities, the colour "(qīng)" could not be extracted during this period. Nevertheless, it is evident that the material and technological foundations established in primitive times contributed to the formation of the "Theory of Five colours." Conceptually, primitive humans were unfamiliar with nature and unable to explain natural phenomena. Consequently, concepts such as witchcraft and rituals emerged, leading to the veneration of monochromatic colour and the initial formation of the Theory of Five colours (Zhang, 2022). For instance, red was associated with fire and the

sun, yellow represented skin colour and the nurturing Yellow River, while the reverence for black and white originated from the perpetual transformations between day and night.

During the Xia, Shang, and Zhou periods, Chinese society transitioned to a slave system, and significant developments occurred in handicrafts and agriculture (Fu & Cao, 2019). With continuous improvements in knowledge and technology, colour applications became highly sophisticated during the Zhou dynasty. People eventually synthesised and summarised five fundamental colours from the complex array of colours: (chì) - red, (huáng) - yellow, (qīng) - blue/green, (bái) - white, and (hēi) – black (Gao & Sutrop, 2014). In the Warring States and Qin-Han periods, the merging of Yin-Yang and the Five Elements gave rise to the "Theory of Yin-Yang and the Five Elements." Subsequently, the theory of five colours was derived from the theory of yin-yang and the five elements. As history progressed, the Theory of Five colours underwent continuous refinement and gradually formed its system, becoming the "Theory of Five colour System" with distinct characteristics of traditional Chinese culture (Birdwhistell & Smith, 2016).

Development of the Five-colour Theory System: Emergence of Intermediate colour

As a part of the Yin-Yang and Five Elements theory, the Five-colour Theory system possesses the attributes of Yin-Yang and Five Elements (Yang et al., 2020). As mentioned earlier, the concept of "Five Elements generate and overcome each other", proposed by Zou Yan, was applied to explain the interactions and influences among various phenomena in the world. This concept also corresponds to the five basic colours in the Five-colour Theory, deriving a diverse range of "monochromatic" orientations through the principles of "generation" and "overcoming" (O'Connor, 2010). Tracing back to the pre-Qin period, people had already acquired certain knowledge of colour blending and coordination, and they put forth the concept of "primary colour" and "intermediate colour" in colour theory, stating that "qīng, chì, huáng, bái, hēi are the five primary colour, and lù, hóng, bì, zǐ, and huáng are the five intermediate colour" (Yang, 2020). This stage only included the five generative primary colours and ten overcoming mixed colours. By examining the descriptions of the five primary colours and ten intermediate colours in Xu Shen's "Shuowen Jiezi", one can observe the evolutionary pattern of colour in the ancient "Five-colour Theory system" (Wu, 2011). The fundamental five colours (primary colour) and ten intermediate colours derived from the theory of the generative and overcoming relationships among the Five Elements had already taken shape during the Han Dynasty. They were extensively applied, further refined, and established as a systematic study of colour. The refinement and establishment of the "Five-colour Theory system" marked the formation of aesthetic consciousness regarding colour in ancient China, acquiring new independent aesthetic concepts from primitive aesthetic views (Al-Humaiqani & Al-Ghamdi, 2022).

In addition to summarising the five primary colours and ten intermediate colours, ancient people also discovered variations in brightness and purity of colour, which were applied in dyeing fabrics (Cao & Fu, 2019). With technological advancements during the Han Dynasty, the colour of silk had evolved from the "five hues" of the pre-Qin period to the "seven colour", predating Newton's discovery of the "seven-colour spectrum" by over 1,600 years. As time progressed, particularly during the Tang and Song Dynasties, the variety and application of colour became highly abundant. According to the records in the "Xue Huan Xiu Pu" (Embroidery Patterns by Xue Huan) from the late Qing Dynasty, embroidery colour employed a combination of five primary colours and three intermediate colours, resulting in 88 mixed colours (Weichen, 2013). Furthermore, by manipulating the depth and shade of colour, a total of 745 different shades could be achieved, showcasing the pinnacle of colour development.

The Evolution of the Theory of Five colour

After becoming integrated into the Five Elements system, the theory of five colours was used to explain the influence of colour on various phenomena in the world. Among these, the most prominent is the "Theory of Five Virtues and Their Cycles" proposed by Zou Yan, which introduces the concepts of the cyclic nature of celestial principles and the perpetual presence of the five virtues (Inchauspe & Arakaki, 2023; Hu, 2015). During the reign of Emperor Gaozu of the Han Dynasty, Liu Bang established the Black Emperor Shrine, symbolising the Water virtue and designating black as the colour that counteracts water (Jian, 2018). Subsequently, during the reign of Emperor Wu of the Han Dynasty, under the influence of Confucianism and the theological thoughts of Dong Zhongshu, there was an emphasis on the central position of "Earth" in the Five Elements and the Five Directions (Zhao, 2015). Earth was likened to the fundamental element of all things. Hence, yellow became the symbolic colour of central imperial authority throughout different dynasties (Gao, 2016). From the Tang Dynasty onwards, yellow became exclusively reserved for the imperial family, further solidifying its status. During the Ming Dynasty, it was stipulated that black, yellow, and purple were the exclusive colours for the royal court (Tang et al., 2017).

Under the influence of the "Theory of Five Virtues and Their Cycles" and Confucianism, the entire nation embraced a specific colour and combined the hierarchical system with colour, resulting in a clear classification of colours that were originally equal. The ruling class directly associated this differentiation in colour with the national order, making the Five Colour System an absolute criterion that influenced ancient architecture, clothing, ceremonial objects, and other aspects of the ceremonial system (Cao & Fu, 2019). This criterion shaped social and ideological concepts in China from the Shang Dynasty to the late Qing Dynasty, influencing the development of traditional material civilization in China (Leese, 2012). In addition to its application in ceremonial systems, the influence of the theory of five colours is also evident in areas such as clothing, architecture, and murals.

RESEARCH METHODOLOGY

This study employs a qualitative method. The collection of primary data using on-site observation to explore the application of the Five-colour Theory in ancient Chinese urban architecture. On-site observation is the process of recognising and noting objects and getting the information. The information seeker is detached from the Five Colour Theory on the building being observed (Sharma, 2024; Salminen, 2001). This study investigates the application of the Five-colour Theory in ancient Chinese urban architecture. Primary data are the original data derived from your research endeavours, while secondary data are data derived from the review of primary data, the Five Colour Theory (Stewart, 2024). By collecting, analysing, and synthesising both secondary and primary data, a comprehensive understanding of the traditional application of the Five Colour Theory in ancient urban architecture will be revealed. The data encompasses ancient texts, historical records, architectural design manuals, and related research achievements. This approach enables a detailed examination of the application methods, principles, and significance of the Five Colour Theory in ancient Chinese urban architecture.

Field Study

A field study was conducted to observe and document the application of the Five Colour Theory in ancient urban architecture directly. Visits were made to ancient urban sites and existing ancient buildings, allowing for detailed observations and records of the practical application of the Five Colour Theory in China. The specific area is located around Beijing, Taiyuan, and Shanxi Provinces, which represent

ancient cities of China (Song, 2023). Through the field study, a deeper understanding of the methods and effects of the Five Colour Theory in actual architectural practice was gained. During the field study, careful observations were made regarding colour selection, pattern design, and decorative details of the buildings. Specific manifestations of the Five Colour Theory in Practical Architecture, including principles of colour coordination, symbolic meanings, and their correlation with architectural functions and styles, were recorded. The field study provided direct evidence and observational results of the actual application of the Five Colour Theory in ancient urban architecture. By integrating the approaches from secondary and primary data in the field study, this study enhances its credibility and depth, offering a comprehensive and accurate analysis of the application of the Five Colour Theory in ancient Chinese urban architecture. The secondary data establishes the theoretical foundation and builds upon previous research achievements, while the field study provides direct evidence and practical observations. Both data (secondary and primary) complement each other, ensuring a more comprehensive and reliable investigation.

RESULTS AND DISCUSSION

The theory of five colours, as a fundamental aspect of colour in ancient Chinese architecture, has had a profound impact on the application characteristics of colour in Chinese architectural history (Shi, 2020). The development of Chinese architecture can be traced back to its origins in primitive society, but it was during the Shang and Zhou dynasties that architectural development truly began. During this period, architecture started incorporating wooden beam structures, and buildings exhibited features of axial symmetry and rectilinear forms. In the Western Zhou period, people gained a certain understanding of zhengse (primary colour) and jianshe (intermediate colour) and identified five zhengse colours (qing, chi, huang, bai, hei) and five jianshe colours (gan, hong, piao, zi, liu huang) as representatives of different colour, which were formed by mixing the five zhengse colour. This period witnessed the emergence of a hierarchical system of colour, and the application of zhengse and jianshe colour gradually extended to architecture. The following Figure 2 shows the evolution of colour in ancient China.

During the Spring and Autumn and Warring States periods, the theory of five colours was combined with the theory of five elements, providing the five colours with a greater explanatory function (Feng, 2018). colour used in the roofs, pillars, and components of buildings carried specific meanings. Palaces commonly employ polychrome decorations, utilising colours such as red, green, yellow, grey, white, and black. After the unification of China by the Qin Dynasty, there was a trend towards standardised architectural styles, inheriting the rituals of the Warring States period and embracing the preference for black colour, as expressed in the saying "determining the supreme by distinguishing black and white." However, architectural colour schemes were not limited to black, and additional colours such as he, shiqing, shilü, and zhu hong were applied to architecture.
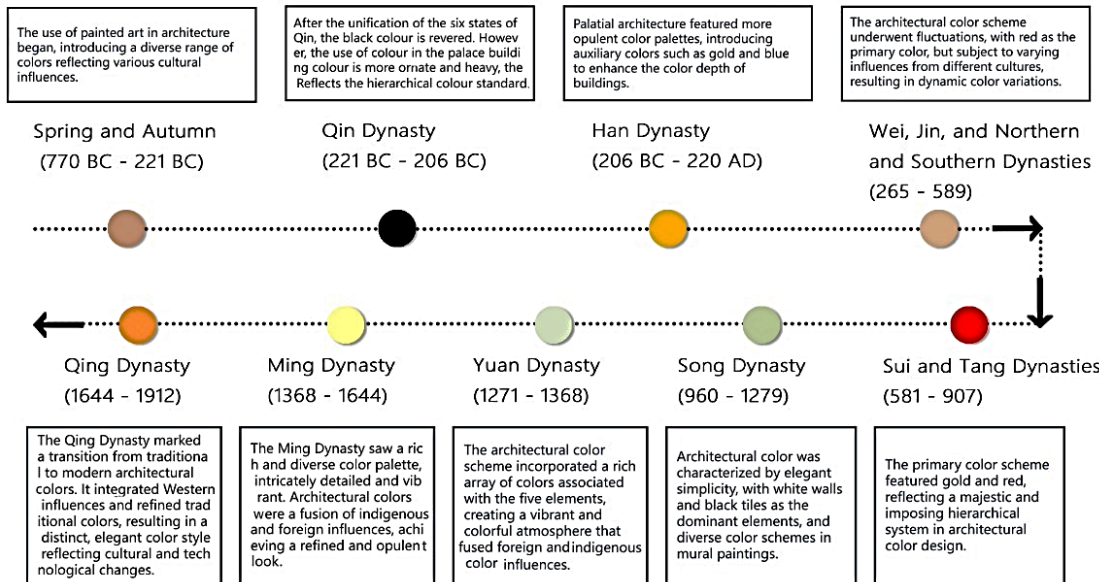
The use of painted art in architecture began, introducing a diverse range of colors reflecting various cultural influences.	After the unification of the six states of Qin, the black colour is revered. However, the use of colour in the palace building colour is more ornate and heavy, the Reflects the hierarchical colour standard.	Palatial architecture featured more opulent color palettes, introducing auxiliary colors such as gold and blue to enhance the color depth of buildings.	The architectural color scheme underwent fluctuations, with red as the primary color, but subject to varying influences from different cultures, resulting in dynamic color variations.
Spring and Autumn (770 BC - 221 BC)	**Qin Dynasty (221 BC - 206 BC)**	**Han Dynasty (206 BC - 220 AD)**	**Wei, Jin, and Northern and Southern Dynasties (265 - 589)**

Qing Dynasty (1644 - 1912)	**Ming Dynasty (1368 - 1644)**	**Yuan Dynasty (1271 - 1368)**	**Song Dynasty (960 - 1279)**	**Sui and Tang Dynasties (581 - 907)**
The Qing Dynasty marked a transition from traditional to modern architectural colors. It integrated Western influences and refined traditional colors, resulting in a distinct, elegant color style reflecting cultural and technological changes.	The Ming Dynasty saw a rich and diverse color palette, intricately detailed and vibrant. Architectural colors were a fusion of indigenous and foreign influences, achieving a refined and opulent look.	The architectural color scheme incorporated a rich array of colors associated with the five elements, creating a vibrant and colorful atmosphere that fused foreign and indigenous color influences.	Architectural color was characterized by elegant simplicity, with white walls and black tiles as the dominant elements, and diverse color schemes in mural paintings.	The primary color scheme featured gold and red, reflecting a majestic and imposing hierarchical system in architectural color design.

Figure 2. Schematic diagram of the evolution of architectural colours in the ancient Chinese era

During the Han Dynasty, architecture experienced significant development and gradual refinement. In terms of colour, ancient architecture inherited the traditional theory of five colours, which was derived from the Yin-Yang and Five Elements theory of the Zhou Dynasty. Each of the five colours represented different cardinal directions and possessed distinct symbolic meanings. Green symbolised the Azure Dragon of the east, red symbolised the Vermilion Bird of the south, white symbolised the White Tiger of the west, black symbolised the Black Tortoise of the north, and yellow symbolised the dragon, representing the centre (Tang et al., 2017). This ideology continued to influence architectural colour schemes until the end of the Qing Dynasty. Palaces and towers exhibited a wide variety of colours, with ceilings often adorned in shades of green, while columns and beams displayed hues of yellow, red, gold, and blue. Pillars and walls were typically painted in red or deep red. Conversely, folk architecture during the Han Dynasty commonly employed brick or mud and timber structures, featuring a more modest colour palette in the interiors (Zhou & Taylor, 2019).
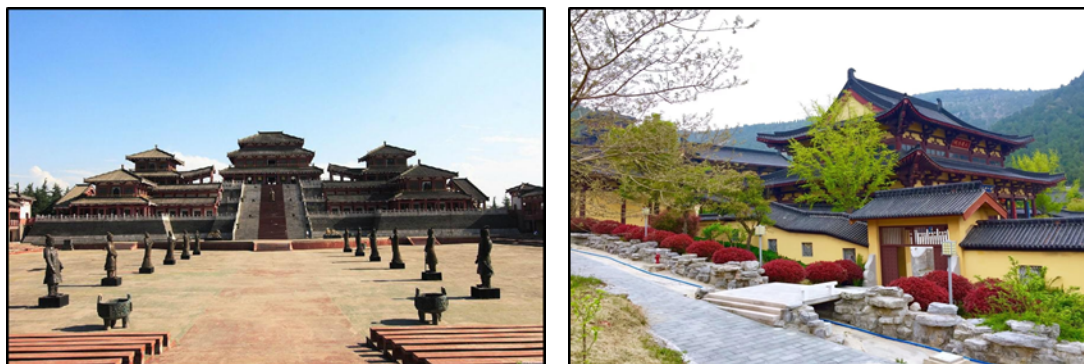

Figure 3. Architecture of the Weiyang Palace (Han Dynasty) (left) and Dogwood Temple (Northern Wei) (right)
(Source: Marcie, 2015)

However, due to the dominance of Confucianism and the policy of "suppressing all other schools of thought and exclusively promoting Confucianism," there was a fusion of politics and religion, which strengthened imperial authority but also imposed limitations on intellectual freedom. Consequently, the artistic development of architectural colour was hindered, and further progress was impeded (Li, 2020). During the Wei, Jin, Northern, and Southern Dynasties, when Buddhism flourished, numerous Buddhist cultural structures were constructed. While vibrant and colourful pigments were used in artistic works such as Buddhist statues, the colour application in architecture itself was relatively simple and exhibited a more rustic style (Figure 3).

Tang Dynasty - colour Representation and Hierarchy

Prior to the Tang Dynasty, architectural styles were characterised by simplicity, with colour primarily reflecting the natural shades of materials. However, during the prosperous Tang period, influenced by Buddhism, there was a prevalent trend of opulence and extravagance, leading to the extensive use of colour as decorative elements in architecture. The application of colour was bold and rich, including vibrant reds, greens, blues, yellows, browns, and various gradations of blended colour. Additionally, gold and silver were employed as accent colours. Furthermore, the Tang architecture retained the traditional practices inherited from the Han Dynasty, such as the "vermilion columns and plain walls" and "white walls and red doorframes." The exposed parts of wooden structures were uniformly painted in vermilion red, while the wall surfaces were coated with white powder, creating a concise and vibrant appearance that was visually pleasing. Building Coupled with the plain cray foundations and rooftops against the backdrop of the blue sky and green trees, an atmosphere of simplicity, elegance, and reverence was achieved.

The Tang Dynasty was a pinnacle period in the development of Chinese architecture, characterised by unified planning under the jurisdiction of the "Rites Ministry." colour became a significant indicator of architectural hierarchy, serving to uphold the interests of the ruling class. Among the five colours, yellow was exclusively associated with the imperial family and symbolised their status. The combination of yellow and red hues was employed in the design of imperial palaces and temples (Figure 4), while red, blue, and green were reserved for the residences of nobles and high-ranking officials. Commoner dwellings were restricted to the use of black, grey, and white colours.

Figure 4. Tang Dynasty Architecture Qinglong Palace (left), and The Great Hall of the Buddha's Light Temple (right)
(Source: Cai, 2011)

Song Dynasty - colour Reflects the Mainstream

The Song Dynasty embraced a preference for simplicity and elegance, with emphasis placed on artistic taste. Influenced by the colour schemes of the Tang Dynasty, the Song Dynasty employed shades of green, vermilion, and gold for architectural decoration, complemented by the integrated use of white stone foundations, red walls, and yellow glazed roof tiles, resulting in a clear and composed colour palette. In addition, influenced by the philosophical ideas of Confucianism and Zen Buddhism during the Song Dynasty, the colour tones in architectural design and interior decoration pursued tranquillity and serenity, favouring understated, pure, and subtly refined hues.
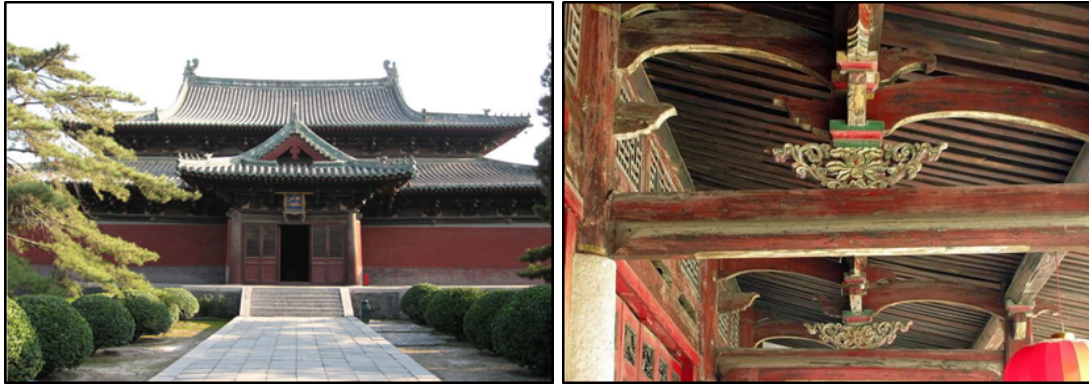
Figure 5. Song Dynasty Architecture: Longxing Temple (left) and Top of Sanqing Guan (right)
(Source: Zhao, 2016)

On the other hand, since the Tang Dynasty, Buddhist culture and artistic forms have permeated various aspects of Chinese culture, leading to an increased emphasis on decorative details, colourful paintings, and intricate carvings in architecture. The combination of vibrant Buddhist colour and the serene tones favoured by Confucianism created a gentle and splendid impression in the architectural landscape of this era (Figure 5). The colour schemes in Song Dynasty architecture, influenced by the spiritual realm, fully reflected the mainstream culture of the time and held significant guiding significance for the subsequent development of Chinese architectural decorative culture.

Yuan Dynasty - colourful and Splendid Style

The Yuan Dynasty served as a transitional period between the architectural styles of the Song-Liao-Jin era and the Ming-Qing era. During this time, ethnic minority groups came to power in the Yuan Dynasty and launched military expeditions to the west, establishing a vast empire spanning Asia and Europe. As a result of cultural exchanges among different ethnic groups, architectural colour schemes exhibited a diverse range of styles (Figure 6). Despite this diversity, the orthodox position of Han Chinese architectural colour, based on the Five colour Theory, remained unshaken and continued to evolve during this period.

Figure 6. Yuan Dynasty Architecture, White Pagoda of Miao Ying Temple
(Source: Lou & Chen, 2002)

One of the most representative architectural achievements of the Yuan Dynasty was the Yuan Dadu (also known as Khanbaliq or Beijing). In "History of Chinese Architecture," it is recorded that this palace is magnificent and prosperous, surpassing any other in its layout. The roof tiles are red, yellow, green, blue, and other colours, glazed and shining like crystal. Even from a distance, the brilliance of this palace can be seen, indicating its durable and enduring nature. From this, it is evident that the colour artistry of Yuan Dynasty architecture achieved significant visual breakthroughs. The use of colour and patterns in architectural design became more exquisite, showcasing a beautiful and splendid style. The interior of buildings featured a rich array of colours, with red, yellow, blue, and green used for decorative paintings and embellishments.

Ming Dynasty - Rich and Pleasing colour

During the Ming Dynasty, the feudal autocratic system further strengthened the standardisation and typification of official-style architecture. In terms of architectural colour, the sunlit portions of imperial city buildings typically used vermilion red, while the shaded areas employed complementary cool colours such as blue and green, creating a pleasing contrast. The architectural style of Tibetan Buddhist temples in the Ming Dynasty also employed a contrasting approach, combining colours such as red, white, black, and brown to create strong colour contrasts that emphasised the significance of religious architecture. In residential buildings, colours were often derived from the inherent hues of materials, such as the bluish-grey bricks and tiles and the wooden structures of beams, doors, and windows, which contributed to an elegant aesthetic (Figure 7).

Figure 7. Yuan Dynasty Architecture, Gautama Temple (Ming)
(Source: Guo, 2019)

The urban planning, form, and colour schemes of Ming Dynasty city architecture laid the foundation for the development of Qing Dynasty city architecture. The present-day capital city of Beijing and the ancient city of Nanjing, which boasts the largest extant city wall in China, owe their layouts and development to the planning and management practices of the Ming Dynasty.

Qing Dynasty - Flourishing Painted Decoration

As the last feudal dynasty in ancient China, the Qing Dynasty unified a vast and multi-ethnic country, reaching the pinnacle of feudal autocracy. During this period, with national stability and continuous economic development, architectural art experienced its final peak, which had a profound and far-reaching impact, representing the image of modern China. In the Qing Dynasty, the imperial-style architecture, represented by the Forbidden City in Beijing, inherited the colour characteristics of the Yuan Dynasty, with red walls and yellow glazed roof tiles, while some palaces and temples had green roofs.

Figure 8. Yuan Dynasty Architecture Forbidden City (Qing) (left) and Temple of Heaven (Qing) (right)
(Source: Li, 2020)

The colours used in the imperial palace were the most vibrant, gradually decreasing in intensity for altars, tombs, and temples. Residential buildings in the Qing Dynasty featured simpler colours, with grey tones predominant in the north and pink walls, blue-green tiles, and brown lacquer harmonising with the lush green environment in the south. The entire city of Beijing employed a colour scheme to distinguish architectural hierarchy, skillfully applying the essence of the traditional theory of the Five colours (Figure 8).

Table 2: The evolutionary process of the Five-Color Theory in ancient Chinese urban architecture

No.	Period/ Dynasty	Five Elements	The evolutionary process of the Five-Color Theory in ancient Chinese				
			Wood	Fire	Earth	Metal	Water
1.	Wei Jin Southern and Northern Dynasties	Initial Development	Gradual emergence of wooden structure	Formation of preliminary colour system	Gradual development of architectural colour hierarchy	Colour begins to be symbolic with specific meanings	Expansion of colour palette, formation of a hierarchical system
2.	Tang Dynasty	Simple and Natural	Rich and colourful, influenced by Buddhism	Flourishing period with luxurious Colour	Red, green, blue, yellow, brown	Gold and silver embellishment, traditional practices	Blue accents

3.	Song Dynasty	Elegant Art	Influenced by Tang Dynasty colour	Clear and harmonious colour combinations	White, red, yellow	Black accents	Influenced by Confucianism and Buddhism, subtle and serene
4.	Yuan Dynasty	Breakthrough and Innovation	Colourful architecture	Grand palaces	Colours such as red, yellow, green, and blue	Gold accents	The rich internal colour palette
5.	Ming Dynasty	Elegant Aesthetics	Vermilion, blue, and green	Contrastive methods of warm and cool colour	Contrasts of red, white, black, and brown	Gold accents	Traditional five-colour theory
6.	Qing Dynasty	Inheritance and Development	Northern simple grey tones	Royal style architecture	Red walls, yellow tiles, green roofs	Grey tones in the north, multiple colours in the south	Blue accents

This table meticulously documents the evolutionary process of the Five-Color Theory in ancient Chinese urban architecture. Buildings from different periods showcase distinctive styles based on the Five Elements and Five Colors, reflecting the influences of various factors such as society, culture, and religion.

CONCLUSION

In summary, the colour palette of ancient Chinese urban architecture was governed by the traditional theory of Five colours. Red and yellow were reserved for noble, imperial, and temple structures, while other colours, such as black, white, and blue, were predominantly used in common residential buildings, creating a contrast between the vibrant colour of the main structures and the large areas of colourlessness. This category unintentionally resulted in distinct colour zones within the cities, reflecting the concept of hierarchy. Interestingly, red and yellow were the colours most often used to decorate aristocratic, imperial, and religious buildings, emphasising their sacred and revered status. On the other hand, neutral colours like black, white, and green were widely used in civilian construction, highlighting the vitality and diversity of main buildings. However, as time progressed and the hierarchical system disappeared, the application of colour became more liberalised. In modern urban architecture, the colour schemes of different cities' architectural landscapes vary based on cultural history, geographical location, and unique urban characteristics. These variations have departed from the foundation of ancient urban colour palettes, presenting diverse appearances in urban architectural landscapes.

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