

Considering the Three Dimensions of Traditional Chinese Architectural Layout - Beijing's Central Axis as an Example

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Abstract

Chinese traditional architecture has a long history, representing the essence of Chinese civilization, and its unique spatial layout deeply integrates multiple factors of philosophy, culture, and society. Taking the buildings on the central axis of Beijing as an example, this paper explores the connotation and features of the layout of traditional Chinese architecture through three dimensions of thinking: space, time, and society. Firstly, by reviewing the historical evolution of traditional Chinese architecture, it expounds its position in cultural heritage and points out the importance of architectural layout in Chinese civilization. Subsequently, the paper elaborates on the three dimensions of thinking: spatial dimension, temporal dimension, and social dimension. In empirical analysis, through in-depth research on the buildings along the central axis of Beijing, it highlights the performance of traditional architecture in different dimensions. Finally, it summarizes the main points and findings of the paper, emphasizes insights into modern architectural practice, and puts forward recommendations to promote the continuation and development of traditional architectural layout. Through this rich and comprehensive perspective, this paper aims to provide an in-depth understanding and inheritance of the value of traditional Chinese architecture.

Keywords

Central Axis, Space, Time, Society, Dimensions.

1. Introduction

Traditional Chinese architecture represents a treasure of Chinese civilization, and its architectural layout carries the precipitation of millennium cultural heritage and wisdom inheritance. With the rapid development of society and the impact of modernization, our understanding of traditional architecture is constantly evolving. Especially in modern society, with the rapid development of urbanization and the diversification of architectural styles, the contemplation and inheritance of traditional Chinese architecture have become particularly important.

The layout of traditional Chinese architecture is not simply a matter of arranging space, but a profound reflection of culture, philosophy, and social concepts. The principles of spatial positioning originate from the profound understanding of geographical location by ancient humans, which is a summary and elevation of their valuable experience in daily life and production.

In this context, there is an urgent need to deeply understand the logic behind traditional architecture in order to better respond to the challenges of contemporary urban development, as well as to better inherit and pass on this valuable cultural heritage. Why is the layout of traditional Chinese architecture highly valued? This is not just a technical issue, but also a cultural choice. This article aims to conduct a multidimensional in-depth study of the layout principles of traditional Chinese architecture, revealing the cultural logic and wisdom therein,

and providing beneficial experience and insights for contemporary architectural practice. By profoundly understanding the design principles of traditional architecture in terms of space, time, and society, we may better confront challenges in urban planning, architectural design, and cleverly integrate traditional culture with modern needs.

The purpose of this study is not only to conduct academic analysis of traditional Chinese architecture but also to provide a new path of thinking for contemporary society and architects, finding a way for the harmonious coexistence of tradition and modernity in the process of urbanization.

The complexity of the layout of traditional Chinese architecture lies not only in its aesthetic aspect, but also in its profound cultural connotations. Traditional architecture is not just a form of artistic expression, but also an understanding of society, nature, and human life. In this context, there is an urgent need to delve deep into this cultural heritage in order to integrate traditional wisdom into modern architecture, and to achieve the inheritance and innovation of traditional culture.

Therefore, this article aims to comprehensively analyze the three dimensions of the layout of traditional Chinese architecture, revealing its profound cultural connotations and potential value in contemporary architecture. Through this research, we hope to provide a new path of thinking for architects and designers, promote the integration of traditional culture in modern architecture, and achieve dialogue and integration between Chinese and Western cultures.

2. The Layout of Traditional Chinese Architecture and the Central Axis of Beijing

2.1. The Purpose and Significance of Choosing the Layout of Traditional Chinese Architecture

The evolution of traditional Chinese architecture has a long history, dating back to ancient civilizations thousands of years ago^[2]. From the earliest wooden structures to later tile-wood and brick-tile structures, architectural forms and techniques have gradually developed over a long history. Traditional architecture plays a crucial role in Chinese culture^[2], serving not only as structures but also as carriers of culture. The layout of traditional Chinese architecture reflects not only technical aspects, but also deeper cultural factors such as philosophy and religion.

Ancient traditional Chinese architecture has a rich historical heritage, integrating traditional Chinese literature, painting, sculpture, music, dance, calligraphy, and drawing. Their design, construction, materials, and structural choices are the essence of traditional Chinese architectural art and a symbol of the crystallization of the wisdom of the Chinese people throughout the ages^[16].

2.2. The Purpose and Significance of Choosing the Central Axis from the Layout of Traditional Chinese Architecture

The purpose and significance of selecting the central axis of Beijing from the traditional layout of China is reflected in the grand traditional layout of China, which is manifested in the city-building system as “selecting the central location for building the capital”, “selecting the central location for building the palace”, and “selecting the central location for building the hall”. “The Book of Rites” is a classic Confucian work in ancient China, which introduces the official system of the Zhou Dynasty and depicts the political organization and social structure under the ideal state concept and is the source of ancient Chinese national institutional design. “The Record of Examination of Crafts” is the oldest existing manual industry document in China, with the date of its compilation being a matter of dispute, estimated to have been written from the Spring and Autumn Period to the Warring States Period, and was included in “The Book of Rites” around

the Western Han Dynasty. The chapter “Craftsman Building the State” records a large number of ideal city construction systems, ceremonial construction, and other aspects of city construction systems officially formulated, and has a role in the historical development of urban planning in China. The book puts forward various systems for urban construction, formulates the methods of urban planning, and lays an important foundation for China’s traditional urban planning system. It is the earliest and most widely influential work in the theory of ancient Chinese urban planning, proposing that ancient Chinese urban architecture had a special spatial structure: craftsmen built a square city, with three gates on each side, nine meridians and nine latitudes inside the state, with nine tracks drawn on each, and ancestral temples on the left and earth altars on the right, facing the rear market, and the city facing a single market. The central axis of Beijing reflects the ideal city paradigm of “The Book of Rites” and “The Record of Examination of Crafts.”

The central axis of Beijing presents the ideal city planning paradigm described in the “Book of Rites” and “Record of Rites” with a symmetrical layout. It serves as the backbone with north-south orientation, connecting carefully arranged architectural complexes and urban spaces with different functions. The Outer Court of the Forbidden City located in the middle of the central axis, together with Tiananmen Square and Duanmen, collectively constitute the part of the court in the “Record of Rites” that “faces the market”. The Bell and Drum Towers located at the northern end of the central axis and the surrounding commercial streets were the inner-city markets of Beijing during the Yuan, Ming, and Qing dynasties, representing the “market” in the “Record of Rites” that “faces the market”. The Imperial Ancestral Temple, formerly used for the worship of the royal ancestors, located to the southeast of the Forbidden City, and the Altar of Land and Grain, formerly used for the worship symbolizing the national political power, located to the southwest, have a meticulously symmetrical architectural layout, forming the layout of “ancestral temple on the left and Altar of Land and Grain on the right”.

This central axis was established in the Yuan Dynasty, developed in the Ming Dynasty, enriched in the Qing Dynasty, and has been transformed and extended in modern times, gradually developing into an open urban space facing the public^[2]. The central axis of the Yuan Dynasty’s Dadu is the beginning and prototype of Beijing’s traditional central axis, establishing the position and direction of Beijing’s central axis, and directly influencing the central axis of Beijing in the Ming and Qing dynasties. Although the Ming Dynasty destroyed the palaces of the Yuan Dynasty, it still retained the spatial structure of the city, including the city’s axis, and by moving south and expanding, it formed a “convex” shaped city wall. After the Qing Dynasty established its capital in Beijing, it respected and continued the central axis of the Ming Dynasty, and repaired or rebuilt some damaged buildings, constantly enriching and strengthening the overall structure and order^[8]. During the Republic of China, the area around Zhengyangmen was transformed for the development of new transportation. After the founding of the People’s Republic of China, Tiananmen Square was renovated and expanded. In the new era, the construction of the National Olympic Sports Center and the Asian Games Village continued the extension of the central axis of Beijing to the north^{[13][15]}. This central axis runs through the entire Beijing, originating from Yongdingmen, passing through Zhengyangmen and Tiananmen, and finally reaching the Bell and Drum Towers. The total length of the central axis is 7.8 kilometers, and along the way, there are many ancient buildings^[4].

3. Literature Review

3.1. Research on the Layout of Traditional Chinese Architecture at Home and Abroad

The uniqueness of ancient traditional Chinese architecture has prompted an increasing number of domestic and foreign scholars to research Chinese traditional architecture.

3.1.1. Domestic Research on the Layout of Traditional Chinese Architecture

In China, one of the four ancient civilizations, the history and culture are profound. Traditional Chinese culture, which has continued for over five thousand years, permeates all aspects of architecture. Chinese traditional architecture is the essence of the Chinese nation. It is not only an important part of Chinese civilization but also a uniquely charming form of environmental space art. In the vast Chinese land that heavily relied on agriculture, the ancient ancestors experienced the changes of day and night and the concept of orientation with the daily sunrise and sunset, developing a deep sense of reverence. They established the concept of orientation early on. In the traditional Chinese book "I Ching", a vast cosmic pattern was constructed, interpreting the interactions and changes of yin and yang, the repetitions of day and night, the growth and decline of yin and yang in the four seasons, and the life cycles of all things in the world. The spatial orientation concept of "I Ching" first manifested its influence on traditional Chinese architecture in the positive layout of buildings: regardless of the landforms and environments, important buildings such as cities, temples, and palaces would choose a layout close to the positive direction and rarely freely choose a direction based on terrain or scenery. This formed the most fundamental spatial form of the regular and square layout of traditional Chinese architecture^[3].

3.1.2. Domestic Research on the Layout of Traditional Chinese Architecture

In the 19th century, the rise of Western countries led to an unprecedented level of economic and cultural interaction between the East and the West. European scholars used their cutting-edge scientific knowledge to conduct in-depth explorations of China's history, culture, social phenomena, and development trends, gaining a clearer understanding of this former empire and a deeper appreciation of its unique charm^[15]. Ernst Boerschmann, a writer and German philosopher known as the "first person to comprehensively survey and record ancient Chinese architecture", is recognized as an outstanding figure. His masterpiece "Chinese Architecture" revealed the Chinese architectural sentiment and insights of this European scholar a century ago. In 1925, Liang Sicheng's "History of Chinese Architecture" was born as a vibrant work, consisting of over 700 images and more than 130,000 words in two volumes and 20 chapters. Through the combination of text and images, it comprehensively revealed the essence of ancient Chinese architecture, providing important reference value for the writing of Chinese ancient architectural history, and also sparked a craze for the study of traditional Chinese architecture in the West.

3.2. Domestic and Overseas Research on the Beijing Central Axis

As one of the representative achievements of ancient Chinese urban planning, the Beijing Central Axis has attracted the attention and research of many domestic and foreign scholars since the 1950s. With the increasing efforts to protect the overall ancient capital of Beijing and the advancement of the declaration process, the research interest in the Beijing Central Axis has been growing.

3.2.1. Domestic Research on the Layout of Traditional Chinese Architecture

The domestic research on Beijing's central axis is currently progressing actively, aiming to apply for the World Cultural Heritage. In June 2011, the application for the World Heritage of Beijing's central axis officially began. In November 2012, the Beijing Municipal People's Government and its relevant agencies jointly released the "Reserve List of World Cultural Heritage of the People's Republic of China" and formed an elite group to better promote the cultural inheritance and environmental improvement of the central axis. In June 2018, the "Beijing Central Axis World Heritage Environmental Protection Action Plan" and the "Beijing Central Axis World Heritage Comprehensive Improvement Plan Outline" have been fully implemented, while the "Beijing Central Axis World Heritage Comprehensive Improvement

Plan Execution Plan” and the “Beijing Central Axis World Heritage Style Building Design Management Guidelines” have also begun to be studied.



(website screenshot of UNESCO and proved that Chinese Government is in progress)

In China National Knowledge Infrastructure (CNKI), a search with the theme of “Beijing Central Axis” yielded 415 documents between 1973 and 2020. After excluding irrelevant documents, there were 302 valid documents remaining, including 182 academic journals, 10 theses, 41 conference papers, 28 newspaper articles, and 37 special journals. Looking at the trend of publication years, there were 39 papers in 2012 and 35 in 2019, which were closely related to the policy background at that time. The main themes included urban design, Beijing urban planning, cultural heritage, historical and cultural cities, protection and inheritance, cultural origins, spatial structure, and involved disciplines such as architectural science and engineering, history, culture, tourism, and geography. It can be seen that the research on Beijing’s central axis covers various disciplinary fields, exploring and discussing from different perspectives.

3.2.2. Research on the Beijing Central Axis Overseas

At the end of the 13th century, Marco Polo embarked on a long journey across Europe, Asia, and Africa. During his 25-year journey, he visited the Yuan Dynasty capital (present-day Beijing) and endured a 9-year trial. Due to Marco Polo’s experiences, his “Travels of Marco Polo” also records many unforgettable aspects of the city of Beijing. The book mentions that the streets of the Yuan Dynasty capital were very straight, so that one could see from one end to the other. Along both sides of the main streets, there were various shops and residences^[14]. The entire city was divided into squares, with orderly lines and architecture. Each square was sufficient for the construction of large houses, and there was still space left for courtyards and gardens. Marco Polo’s “Travels” illustrated the magnificent scene of the Yuan Dynasty capital, designing the entire city’s landscape like a chessboard, which was breathtaking. This grand architectural style made Europeans full of longing for the civilization of the Far East and ignited their passion to explore the Orient. With the establishment of new sea routes, Europeans were not only able to see the diverse connotations of Chinese politics, morality, religion, and literature, but also experience their unique charm. All of this brought new opportunities for the “China fever”, and the influence of Chinese culture spread to various European countries. Beijing is one of the most famous cities in European history. Since the arrival of Matteo Ricci in Beijing in 1598, dozens of Jesuits have visited the city. Their whereabouts and experiences were collected by European

historians. Their research and archaeological discoveries not only enriched their understanding of Beijing, but also provided valuable historical resources.

Matteo Ricci was an Italian, who visited Beijing twice and lived there for over ten years. "The Notes on Matteo Ricci in China" made significant contributions to the cultural exchange between Europe and China in the late Ming and early Qing dynasties. It not only promoted the development of European culture but also changed European thinking, philosophy, religion, and daily life. In this book, Matteo Ricci discovered a unique central axis in Beijing, with the imperial palace located within the southern wall, serving as an entrance that spanned the entire city and pierced through its core, with other buildings distributed on both sides of the palace. In 1654, Dutch envoy Johan Nieuhof first mentioned the traditional central axis of Beijing in "An Embassy from the East-India Company", using it as an important reference to showcase the city's spirit. This carefully designed central axis line highlighted the city's unique charm with its exquisite meandering lines. He not only recorded the customs and practices of the time in China but also created numerous exquisite watercolor paintings, which were compiled into "An Embassy from the East-India Company to China", becoming an important reference for 18th-century Europe. Many artists and architects drew inspiration from his work, creating stunning Chinese-style creations. Nieuhof described the Forbidden City as a square construction, covering an area of about twelve li, which could be reached within a three-quarter hour walk. It was located within the second city wall of Beijing, with gates in all four directions, and buildings distributed along the cross-shaped central axis line, forming a complete structure^{[11][14]}.

In 1648, António de Andrade, a foreigner from Portugal, arrived in Beijing and began his arduous 29-year life there. Beijing became as familiar to António de Andrade as his second homeland. In 1688, he published "The New History of China" in Paris, where he delved into the central axis of the city of Beijing and deeply understood its cultural, political, and geomantic implications. He proposed a systematic and orderly urban planning approach to achieve better results^{[11][14]}.

4. Reflection on the Three Dimensions of Beijing's Central Axis

Taking the buildings on the central axis of Beijing as an example, this paper explores the three dimensions of traditional Chinese architectural layout: space, time, and society, in order to analyze its design principles and cultural influences in depth.

4.1. Spatial Dimension

The spatial layout of traditional Chinese architecture is one of its unique features. In this section, we will delve into the basic principles of spatial layout in traditional architecture, such as symmetry, balance, and hierarchy. Through the analysis of typical architectural cases, we can understand how these principles influence the architectural form and the organization of internal and external spaces.

The central axis is an important spatial element that can orderly organize the spatial structure of the city. It not only controls the direction of urban development but also regulates the overall spatial layout of the city, making it more beautiful and harmonious^[7]. As the backbone of Beijing, the central axis determines the overall spatial layout of the city and has a significant and far-reaching impact on the urban spatial structure of Beijing. The "Overall Urban Plan of Beijing (2016-2035)" aims to showcase the cultural function as a primary feature in order to demonstrate the cultural self-confidence of the capital of a great country. It also insists on maintaining the traditional central axis as an important part of urban development to ensure its importance in the overall urban spatial layout. At the same time, the central axis of Beijing is also a special geographical space, including a series of buildings, open spaces, and symmetrical

buildings on both sides of the axis with self-organized relationships (such as the Temple of Heaven, the Altar of Earth, etc.).

4.2. Time Dimension

In the ancient times, the construction of royal capitals required a considerable amount of time. Therefore, the builders usually did not plan cities for hundreds or even several hundred years in advance, although there were some basic planning principles, but these plans were not as complex as people imagined. In studying the central axis of royal capitals, we should avoid using “excessive” explanations. The ancient Chinese dynasties had a long history, some lasting for decades, some for several hundred years. Even for the capitals of the same dynasty, their architectural forms were diverse, albeit with varying degrees of change. Therefore, in exploring the central axis of ancient royal capitals, a “dynamic” research perspective can provide valuable insights.

4.2.1. The issue of the axis of royal capitals in the Xia and Shang periods

After in-depth research, we have discovered the ruins of Erlitou and the ruins of the Shang city in Yanshi, which are likely to be palace constructions^[2]. In these ruins, we have found two southern gates described as “three games in one” and located in the center of the city. According to our speculation, the central buildings of the Shang city in Yanshi may have been composed of two main axes: one located in the center of the city, and the other on the sides of the city.

4.2.2. The “Central Axis” was a palace in the Warring States period, and it was the origin of royal capitals.

The archaeological excavations in the 1980s indicated that the “Central Axis” palace, such as the Zheng and Han ancient cities, the Wangcheng of Handan in the Zhao capital, and the Xiaodu of Yan, were all local historical relics. The “Central Axis” palace was an important part of the former city of Lu, located on the east side of the old city and 1,735 meters south of the city’s southern gate. The Shuangque Palace was the same, and their southern gates and the entrance of the Wu Hu Tai Palace formed a sharp contrast^[2]. The “Central Axis” described a north-south corridor leading to the palace, which was located near Wu Hu Tai.

4.2.3. In the historical context of the transition from “Imperial City” to “Capital City” and the “Central Axis”, the capital of feudal kingdoms has been constantly changing and expanding.

“Zhi Cheng Men Da Jie” and “An Men Da Jie” regard the “Central Axis” and “central axis road” as “Zhi Cheng Men Da Jie” and “An Men Da Jie”^[2], but they neglect the core concept of Han Chang’an City: a true “left ancestral right social”, which must start from the main hall of the imperial city, closely integrating the gates of the imperial city and the ancestral shrines of the temples in order to construct the city layout of “left ancestral right social”. Therefore, from the Han Dynasty to the Ming and Qing Dynasties, “left ancestral right social” has always been recognized as the core layout of Han Chang’an City.

4.2.4. The comprehensive formation of the central axis in the capital city

Since the beginning of the Han Dynasty, there has been a significant change in the orientation of ancient Chinese cities, with a major shift in the orientation of Chang’an City from its original westward orientation to the east, and Luoyang City also underwent a transformation to a northward orientation. The architectural style of the Wei, Jin, Northern and Southern Dynasties made the “Central Axis of ancient cities basically located in the center of the capital city from east to west” more distinct^[2]. The city center was built around a grand urban landscape consisting of a main north-south thoroughfare and a large palace - the Taiji Palace. From the 23rd year of Jiajing, the central axis of Beijing city in the Ming and Qing Dynasties underwent significant changes, not only continuing the basic layout of the Yuan Dynasty’s capital, but also

constructing a more spacious and vibrant main thoroughfare in the area north of Zhengyangmen to Yongdingmen.

4.3. Social Dimension

The traditional architecture is not only individual buildings, but also a part of society and culture. In China, there is a certain concept of the positioning of buildings. The term “Central Axis” is not explicitly mentioned in ancient Chinese classics, nor is there a specific definition of the central axis; instead, it is referred to as the “meridian line”. As early as in the “Zhou Li · Tian Guan”, the orientation and ritual were linked, proposing the concept of “only when the king establishes the country, should the square be set in the correct position”, which included the idea of being central and facing south. According to ancient Chinese Feng Shui theory, the ideal location for buildings is to have shade at the back, face the sun, have mountains at the back, and face water, while sitting north and facing south^[3]. In Feng Shui compass, “truly north” and “truly south” are respectively located in the “Wuzi” and “Jiawu” positions, hence it is called the “meridian line”. During a construction in the 1950s, stone rats (representing “Zi” rat) were unearthed under the Di’anmen Bridge, and a stone horse (representing “Wu” horse) was unearthed near Zhengyangmen, which coincidentally implied the old term for central axis, the meridian line. In modern times, the term “Central Axis” has become widely used across various disciplines such as architectural design, urban planning, and archaeology. “History of Chinese Architecture” names the main road of magnificent ancient buildings as the “Central Axis”, while “Chinese Encyclopedia” considers it a key factor in the structure of the entire city.

5. Conclusion

Traditional Chinese architecture is not just a physical structure, but also a symbol of culture and history. Its spatial layout not only considers practicality, but also reflects profound philosophical and cultural concepts. Time and social factors are also manifested in the architecture, making it a comprehensive cultural heritage. Taking the Beijing Central Axis as an example, we have conducted an in-depth analysis from the perspectives of time, space, and society. The Beijing Central Axis not only demonstrates symmetry and balance in space, but also carries profound cultural symbols and symbolic meanings, serving as an outstanding representative of traditional Chinese culture^[4]. Currently, traditional architecture faces challenges of preservation and innovation in contemporary society. Through the exploration of the functions and challenges of the Central Axis architecture in contemporary society, we have comprehended how to balance the inheritance of traditional culture with meeting the needs of modern society. Through this research, we hope to stimulate a deeper understanding of traditional Chinese architecture and bring attention to its sustained value in contemporary society, providing valuable thoughts and insights for architects, designers, and cultural preservationists.

Overall, this study delves into the three dimensions of traditional Chinese architectural layout, and through empirical analysis of the Beijing Central Axis, it demonstrates the far-reaching impact of traditional architecture on different cultural levels. This contributes to a better understanding of the design principles of traditional architecture and provides beneficial experiences and insights for modern architectural practice. In contemporary society, the preservation and inheritance of traditional Chinese architectural culture are particularly important to achieve dialogue and integration between Chinese and Western cultures^[9].

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