

Article

Spatial Distribution Characteristics and the Evolution of Buddhist Monasteries in Xi'an City Area

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Abstract: Buddhist monasteries have played important roles in the development of both the culture of and urban planning in ancient Chinese cities. In this paper, the Buddhist monasteries in the city of Xi'an, Shaanxi Province, during the Song (宋), Yuan (元), Ming (明), and Qing (清) dynasties are collated from historical documents. The characteristics of the spatial distribution of Buddhist monasteries are analyzed by using kernel density estimation (KDE), and the evolution of that spatial distribution is explored by documentary analysis. The results show that Buddhist monasteries are closely surrounded by cultural buildings and warehouses, discretely surrounded by administrative buildings. The spatial distribution evolution of Buddhist monasteries has evolved evenly during the expansion of the Xi'an city area, through the Song, Yuan, Ming, and Qing dynasties. This study provides a reference for the preservation of Buddhist monastery spaces in the historical context of Xi'an city area.

Keywords: Buddhist monasteries; spatial distribution and evolution; Xi'an city area

1. Introduction

Cultures around the world are experiencing rapid changes, and traditional cultures are being increasingly protected. China, whose civilization is over 5000 years old, is also facing the general trend of globalization and multi-cultural development, and the need for the preservation of its traditional culture is becoming more and more evident. The country has attached great importance to the preservation and renewal of historical heritage for almost 40 years. In 1985, China joined the UNESCO Convention Concerning the Protection of the World Cultural and Natural Heritage,¹ which aims to protect natural and cultural heritage around the world. The country's implementation of its Code of the Conservation Planning for Historical and Cultural Cities (历史文化名城保护规划)² and the proposal of a "cultural confidence" (文化自信) policy show that the protection of the country's traditional culture has moved from the public realm into that of policy. The historical Xi'an city area (Chang'an 长安 in the Tang dynasty) was the capital city of thirteen dynasties and thus possessed an extremely rich historical and cultural heritage. In recent years, Xi'an city area has been strengthening its strategy for preserving and renewing its historical and cultural heritage. Significant to the area's history is the Buddhist monastery. Buddhist monasteries have long been deeply interwoven into the lives of the people in the area, in terms of politics, economics, and culture. The study of these monasteries contributes to the exploration of the changing patterns of city space and the direction of urban planning that is based on research about the history of Xi'an city area for the conservation and renewal of the city's heritage.

A Buddhist monastery is an important carrier of Buddhist religion and culture. The architectural type that evolved in China, which adopted aspects of traditional Chinese architecture, differs from the "stūpa" form in India. The stūpa originated in India and initially referred to the structure in which the Buddha's relics were buried after death, which was the earliest form of Buddhist architecture. It was introduced to China during the Han



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dynasty and combined with Chinese architecture to form a pagoda with Chinese characteristics; the pagoda often appears within monasteries (Pan 2008, pp. 154–55).

There are numerous studies related to Chinese Buddhist monasteries, especially on those in Xi'an city area. In 1910, George Ernest Morrison embarked on a six-month expedition to examine the ancient architecture of western China, including the Xi'an area. He created visual records of what he saw and compiled them into an album called "Views of China" (Morrison and Lun 2008). In 1901, Itō Chūta was one of the first Japanese scholars to conduct fieldwork in China. His book *History of Chinese Architecture* describes some important Buddhist monasteries of various historical periods. The collection of Chūta's manuscripts records in detail Ci'en Temple (慈恩寺)³ and Jianfu Temple (荐福寺)⁴ in the Xi'an area (Chūta 2018). Ernst Boerschmann was the first German architect to conduct, between 1906–1909, a comprehensive survey of ancient Chinese architecture. This included a number of Buddhist monasteries and pagodas in the Xi'an area, such as the Dayan Pagoda (大雁塔)⁵ and Jianfu Temple (Boerschmann 2010). The work of these three scholars, the first to research China's Buddhist monasteries, contains the earliest photographic records of some of the Buddhist monasteries in the Xi'an area and provides a good idea of what they looked like in the first half of the twentieth century.

Since then, Chinese scholars have studied Chinese Buddhist monasteries more comprehensively. In the 1960s, Liang Sicheng provided a systematic description of the development and evolution of Chinese Buddhist monasteries, constructing a macroscopic and systematic analysis in his books *Buddhist Architecture in China* 中国的佛教建筑 and *A History of Pictorial Chinese Architecture* 图像中国建筑史. His research also included monasteries in the Xi'an city area (Liang 1961, pp. 53–54). Liu Dunzhen, in his book *The History of Ancient Chinese Architecture* 中国古代建筑史, published in 1984, discusses in detail the Buddhist monasteries and pagodas in this area that date to the Sui and Tang dynasties (Liu 1984). In more recent years, Gong Guoqiang used historical archaeology to systematically integrate the documentary records of Buddhist monasteries in Chang'an City (长安城, the name of Xi'an city area in the Tang dynasty), and discussed the distribution pattern of Buddhist monasteries of Chang'an City in different periods. The interrelationship between Buddhist monasteries and city space is explored in his publication of 2006, *Study on Chang'an Buddhist Monasteries in Sui and Tang Dynasties* 隋唐长安城佛寺研究 (Gong 2006). Buddhism and the development of Buddhist monasteries in northwest China is the subject of Jie Yongqiang's work, with a particular focus on the development of Buddhist monasteries in the Xi'an city area. In his study of 2014, he presents an overview of Buddhist monasteries in Chang'an City of the Tang dynasty, including their distribution, types, and layout (Jie 2014, pp. 1–6). Wang Guixiang describes the history of the development of Chinese Buddhist monasteries in the book *The History of Chinese Han Buddhist Architecture* 中国汉传佛教建筑史. In his discussion of the development of Buddhist monasteries during the Sui and Tang dynasties, he takes the Buddhist monasteries in the Xi'an city area as a typical example for the examination of the construction, historical evolution, and spatial layout of monasteries (G. Wang 2016). This collection of research over the last hundred years provides us with a basic overview of the ancient Buddhist monasteries in the Xi'an area.

In addition to in-depth studies of Buddhist monasteries, scholars have studied the spaces occupied by Buddhist monasteries in the Xi'an city area because monasteries are affected by the development of the city or the change in the city's axis. Wang Shusheng, in his 2004 study of the evolution of the city's layout in the early Ming dynasty, found that the central axis of the most important building group of the Ming period was located at the midpoint of the horizontal distance between the Dayan Pagoda and the Xiaoyan Pagoda (小雁塔) (S. Wang 2004). From the perspective of the landscape, Gu Yuxin and Gong Bi analyzed the characteristics of garden space in Buddhist monasteries in the area (Gu and Gong 2013, pp. 215–19). However, relatively few studies have examined how the spaces occupied by Buddhist monasteries in Xi'an interact with city spaces and urban planning. Among the existing studies are those on the relationship between Buddhist monastery space and urban planning or city space in other regions. There is a study on

how religious space was planned in Chinese cities (Abramson 2011, pp. 67–88), a comparative one on the influence of different religions on city space (W. Wang 2021, p. 972), and a study on the influence of Buddhist monastery space on the development of the political axes of cities (Xie 2021, p. 984). These research ideas and methods help to fill the gap of related studies in Xi'an city area.

However, these studies do not identify spatial distribution characteristics that relate to the evolution of Buddhist monasteries in the same area across time and through different historical periods. The way Buddhist monasteries are distributed reveals the interaction between their space and the historical context of the old Xi'an city as well as the way space has evolved in this area. An examination of the spatial distribution and evolution of Buddhist monasteries is thus an important step in compensating for the absence of any planning for Buddhist monasteries in Xi'an city area.

This research explores the relationship between urban spaces occupied by Buddhist monasteries and urban planning, with the intent to clarify the influence religious space has on the evolution of urban space. In this paper, certain Buddhist monasteries within old Xi'an ("Xi'an city area") during the Song, Yuan, Ming, and Qing dynasties are selected to explore their spatial distribution and evolution characteristics. A map of the distribution of Buddhist monasteries and the spatial relationship between these monasteries and urban planning is examined by using kernel density estimation (KDE) to perceive the historical context of the city. In addition, the evolution of the spatial distribution of Buddhist monasteries over the Song, Yuan, Ming, and Qing dynasties is explored by the documentary analysis method to discern the historical and cultural development in Xi'an city area. The term "Xi'an city area" defines the scope of the study: different area within the city walls of Song, Yuan, Ming, and Qing dynasty. This is different from the concept of Xi'an, which includes not only the area within the city walls of each dynasty but also the area beyond—the surrounding suburbs that developed from the Song dynasty to the Qing.

As this study will show, the evolution of Buddhist monastic space is closely tied to the evolution and development of urban space. Therefore, this study systematically compares the number, location, and founding dates of Buddhist monasteries in Xi'an city area during the Song, Yuan, Ming, and Qing dynasties, it also provides a logical overview of that information. The spatial distribution characteristics and evolution of Buddhist monasteries are expressed in digital and visualized ways. This study considers the Buddhist monastic space as part of the composition of cultural space from the urban spatial perspective. By examining the city's religious space as a continuum, this study contributes to the continuity and development of the world's civilization. From the perspective of urban space, this study is an in-depth exploration of the spatial evolution and development of the "Historical and cultural city", such as the Xi'an city area, providing basic data for architectural heritage conservation.

2. The Historical Development of Buddhism in Xi'an City Area

Buddhist culture came to China from India and specifically to Xi'an, the capital of the country and its political, economic, and cultural center. Xi'an was thus the first site of Buddhist culture in China. It is generally accepted that Buddhism was introduced to Xi'an, and China, during the reign of Emperor Ai of the Western Han (西汉哀帝) dynasty (6 BC–1 BC), when emissaries from the Dayuezhong Kingdom (大月氏) in Central Asia came to Xi'an and taught the Fudo Sutra (浮屠经) (Wu 1991; Gong 2006).

2.1. General Development of Buddhism

In the Northern Zhou (北周) dynasty, the development of Buddhism was inhibited by a policy to suppress the rise of Buddhism, which involved the demolition of Buddhist monasteries, reducing the number of monks, and burning large amounts of scriptures (H. Shi 1983). The rulers of the next dynasty, the Sui, changed this policy and made great efforts to revive Buddhism. They established Daxing City (大兴城, the name of Xi'an city area in the Sui dynasty) as their capital and encouraged Buddhism in the city (Gong 2006),

building monasteries and relocating the Da Xing Shan Temple (大兴善寺) there. Since the Sui dynasty had unified the north and south of China, the Buddhist cultures of the north and south also merged. Groups of southern monks went north to Daxing City and then formed a new Buddhist cultural system in Daxing City, and city area once again it became China's center of Buddhism.

Buddhism continued to grow during the Tang dynasty, which followed the Sui. Monasteries were built throughout Chang'an City (长安城, the name of Xi'an city area in the Tang dynasty) according to a system. They appeared on both sides of Zhuque Street (the main north-south line of the Tang Chang'an City, the central axis of the city), giving Buddhist monasteries a central role in the layout of Chang'an City. Several famous monasteries were established there during this period, such as Ci'en Temple (慈恩寺), Qinglong Temple (青龙寺), and Jianfu Temple (荐福寺) (Tang 2008).

Chang'an City was also the main birthplace of six of the eight major Chinese Buddhist sects (宗),⁶ the exceptions being Tiantai (天台宗) and Chan (禅宗). The development of Buddhism in Chang'an city also had a direct impact on the life of the common people, with the increase in Buddhist activities, including sermons in the monasteries during festivals, the production of literature based on Buddhist scriptures, and the creation of Buddhist paintings, sculptures, music, architecture, and ornaments (Song 1891). The Tang dynasty attached great importance to foreign diplomatic activities, so the Buddhist culture in Chang'an City also had a direct influence on neighboring countries. The ambassadors to the Tang court (遣唐使) from Japan and Korea studied Buddhism in Chang'an City and brought it back to their home countries, where Buddhism further developed (Luo 1985). The rise of Buddhism in Chang'an City during the Sui and Tang dynasties was the period of the greatest development in the history of Buddhist culture in China.

After the Tang dynasty, Xi'an lost its role as the political, economic, and cultural capital of the country, and Buddhism in the area also began to decline. During the Five Period (五代) that followed, from 907 to 960,⁷ the distribution of Buddhist monasteries within the Xi'an city area gradually reverted to a self-determining pattern. When the Song dynasty began, the Buddhist monasteries in Xi'an city area had been restored and protected to a certain extent, due to the relatively stable social development, and a number of Buddhist monasteries were rebuilt (Zan 1999). One is Xi Wutai Temple, built in the Song dynasty upon a high platform dating to the Tang dynasty (Figure 1). However, during the period of Emperor Huizong (宋徽宗) of the Song dynasty, the prevalence of Daoism (道教)⁸ caused Buddhism and its monasteries to suffer catastrophes again. In the Yuan dynasty, which followed the Song, because of the ruler's eclectic attitude toward various religions, Buddhism continued to lose its dominant position in traditional Chinese religious culture (Bi 1784). Therefore, there was little growth in Buddhist culture in the Xi'an city area at this time. During the Ming and Qing dynasties, Buddhism received more attention than it had in the previous dynasties (Guo et al. 2020). Because the Qing dynasty's emperor, Kangxi (康熙皇帝), preferred Tibetan Buddhism, GuangRen Lama Temple (广仁寺) was built, the only Tibetan Buddhist monastery in Xi'an city area (Figure 2). The revival at this time mostly took the form of the restoration and preservation of ancient monasteries. The development of Buddhism and Buddhist monasteries within Xi'an city area gradually stabilized, allowing the preservation of the monasteries that we see today.

2.2. Historic Context for the Distribution of Buddhist Monasteries

The Buddhist monasteries in this study were selected from those four periods following the end of the Tang dynasty when Buddhism was active in China—the Song, Yuan, Ming, and Qing dynasties. After summarizing the different spatial distribution characteristics of Buddhist monasteries in the four dynasties, it is then possible to propose the concept of spatial distribution evolution. During and before the Tang dynasty, the spatial distribution of Buddhist monasteries were influenced by the planning of the rulers, which made the distribution orderly.



Figure 1. Xi Wutai Temple.



Figure 2. GuangRen Lama Temple.

In the Sixteen Kingdoms (304–439) period, Chang’an was already the center of Buddhist culture in the north, the site of numerous monasteries. In 581, in the first year of his ascension, Emperor Wen of Sui began to build more monasteries. He also vigorously promoted the restoration of the monasteries in Chang’an that had been destroyed in the reign of Emperor Wu (543–578) of the Northern Zhou dynasty as part of his actions on Buddhism extermination. At the same time, to promote the revitalization of Buddhist monasteries, Emperor Wen of Sui also conceived of the idea to erect hundreds of Buddhist monastery tablets, urging architects to take the tablets to build Buddhist monasteries. It is recorded in “Chang’an Zhi” (《长安志》) that when Emperor Wen first moved to the capital, he issued one hundred and twenty temple plaques in the imperial court and established a strategy to promote the growth of Buddhism: Anyone who can repair and build will be allowed to take them (文帝初移都, 便出寺额一百二十枚于朝堂, 下制云: 有能修造, 便任取之). Emperor Yang of the Sui dynasty was also fond of Buddhism, and he attached great importance to the Buddhist doctrinal classics. The “Guanghongming Ji” (《广弘明集》) contains a “BaoTaiJingZang Yuanwen” (《宝台经藏愿文》) that Emperor Yang wrote, in which he specifically mentions his concern about the destruction of Buddhist monasteries caused by warfare at the end of the Northern and Southern dynasties and his commitment to the collection and arrangement of Buddhist scripture collections. He also went to great lengths to build Buddhist monasteries. It is recorded in Chang’an Zhi (《长安志》) that Emperor Yang had built a Buddhist monastery in the southeast corner of Daxing City before he became emperor: “When Emperor Yang was the king of Jin, he built a temple in the first year of Renshou and recruited famous monks to live there” (隋炀帝为晋王, 仁寿元年施营第材所造, 因广招名僧以居之). At the beginning of Daye (605), Emperor Yang also built a very grand temple in Daxing City, which was called the Dachanding Temple (later called the

Dazongchi Temple, 隋称大禅定寺, 唐称大总持寺), adjacent to the Changding Temple (later called the Dazhuangyan Temple, 隋称禅定寺, 唐称大庄严寺) built by Emperor Wen of Sui.

The period from the Tang dynasty's Wu Zhou (唐武周时期, 690–705) to Zhongzong (唐中宗时期, 705–710) was the most significant for the emergence of Buddhist monasteries in the Tang dynasty. In the first year of Yongchang (永昌元年, 689), Wu Zetian (武则天) ordered the construction of a Da Yun Temple (大云寺) in all provinces, which caused a frenzy of monastery construction, resulting in a particularly large number of monasteries named Dayun Temple in the Tang dynasty; many monasteries today are still named Dayun Temple. After Emperor Zhongzong of Tang (唐中宗) ascended to the throne, he inherited some of Wu Zetian's practices regarding Buddhist monasteries. He issued an edict to instruct all provinces of the country to build Zhongxing temples (中兴寺). Although his reign lasted only five years, he not only revitalized Buddhist culture but also personally participated in the construction of Buddhist monasteries. For example, it was recorded in the Song Yue Temple Monument (嵩岳寺碑) that he built a thirteen-story pagoda on the terrace at the top of the south side of the mountain (南有辅山者, 古之灵台也。中宗孝和皇帝诏于其顶, 追为大通秀禅师造十三级浮图).

In the late Tang period, during the reign of Emperor Wu Zong Hui Chang (唐武宗会昌年间, 841–846), the state's finances were in the doldrums and the Buddhist monastic economy was over extended, severely damaging the state treasury's income and also conflicting with ordinary landowners. The ruler of the period ordered the demolition of a number of Buddhist monasteries for economic purposes, and initiatives such as the surrender of gold and silver Buddha statues to the state treasury were implemented (Song 1891). The destruction of Buddhist monasteries during this period was extremely harsh. Not only were all the Buddhist monasteries built during the centuries of the Sui and Tang dynasties destroyed, but also sculptures, stone carvings, scriptures, inscriptions, and other artworks accumulated over the centuries. According to the "Quan Tang Wen" (《全唐文》), there was a policy requiring the demolition of Buddhist monasteries during the Hui Chang period of the Tang dynasty. Whatever was not completely destroyed was severely damaged, leaving nothing left. The central government sent commissioners to inspect each locality. Provinces and cities were so afraid that they ensured the policy was followed in their jurisdictions by burying the destroyed objects (会昌中, 有诏大除佛寺。凡镕塑绘刻, 堂阁殿宇, 关于佛祠者, 焚灭销破, 一无遗余。遣御史覆视之。州县震畏, 至于碑幢铭楼赞述之类, 亦皆毁拆瘞藏之).

The campaign to exterminate Buddhism during the Huichang period of the Tang dynasty was devastating for the development of Buddhism in China. Only a few of the hundreds of Buddhist monasteries that had been built in Chang'an city remained, serving only to embellish the city. The wars and turmoil at the end of the Tang dynasty further inhibited the growth of Buddhism. As a result, the development of Buddhism and Buddhist monasteries, which was very active from the Northern and Southern dynasties to the Sui to near the end of the Tang, came to an abrupt end. The Sui-Tang city of Chang'an, once lined with pagodas and monasteries, was nearly in ruins. After the Tang dynasty, during the Later Zhou period of the Five Dynasties (五代后周时期, 955), the rulers overhauled Buddhism again. The emperor Zhou Shizong (周世宗) did not hold Buddhism in high esteem. From the time he ascended to the throne, he began to further eliminate and restrict Buddhism and Buddhist monasteries. Zhou Shizong introduced the policy of restricting Buddhism, largely because of economics. The reasons for the extermination of Buddhism by Zhou Shizong were recorded in the "History of the Old Five Dynasties" (《旧五代史》): the massive expansion of Buddhist monasteries, mentioned in many documents reported from various regions, resulted in the construction of Buddhist monasteries that encroached on state land and embezzled from the state treasury (近览诸州奏闻, 继有缁徒犯法, 盖无科禁, 遂至尤违。私度僧尼, 日增猥杂。创修寺院, 渐至繁多, 乡村之中, 其弊转甚). Therefore, according to the "History of the New Five Dynasties" (《新五代史》), the ruler began to destroy Buddhist monasteries on a massive scale in the second year of Xiande of the Hou Zhou dynasty (后周显德二年, 955), and for-

bade people to become monks or to privately serve monks and nuns (大毁佛寺，禁民亲无侍养而为僧尼及私自度者). In the same year, Zhou Shizong ordered the abolition of 3336 Buddhist monasteries throughout the country. Because of the shortage of money, the state ordered the recasting of bronze Buddha statues into coins (即位之明年，废天下佛寺三千三百三十六。是时中国乏钱，乃诏悉毁天下铜佛像以铸钱). From this, it can be seen that the main reason Zhou Shizong suppressed the development of Buddhism was the economic depression caused by years of war. These two successive campaigns to destroy Buddhism led to an overall decline in the development of Buddhism in China (H. Shi 1983). The growth of Buddhism was no longer valued by the rulers, and monasteries gradually became less common among the ruling class and social level. As a result, the establishment of Buddhist monasteries shifted from planned to spontaneous. The distribution of Buddhist monasteries lost its policy guidance; subsequently, this distribution in an urban space such as Xi'an evolved characteristics that became an important part of the spatial evolution of the city.

3. Methodology

In this paper, kernel density estimation was used to study the characteristics of the spatial distribution of Buddhist monasteries in Xi'an city area, and three patterns of aggregation of Buddhist monasteries distribution were obtained. The documentary analysis method was used to explore the spatial distribution evolution of Buddhist monasteries in Xi'an city area, and the evolution of Buddhist monasteries were obtained.

3.1. Kernel Density Estimation

Kernel density estimation (KDE), a way to estimate the density of points plotted on a graph, is used to analyze the distribution of Buddhist monasteries and urban patterns in Xian city area over the ages. The monasteries are treated as points of data on a grid, to reveal their relative proximity. KDE is useful because it smooths fundamental data by which inferences about a population can be made, based on a finite data sample. This method establishes a specific point as the center, and the capture range is set within a specified threshold (a circle with radius h). The measured point has the highest density at the central position. At the same time, the density decays with the elongation of the position from the center point until the density at the limit distance is 0. The method visualizes the decay pattern of the distance between the study object points. The closer the distance between the study object points, the greater the weight considered in the calculation. Because KDE derives a continuous smooth spatial density variation that is represented in a visual image, the resulting visualization invites intuitiveness suitable for analyzing the characteristics of the spatial distribution of the study object data (Wikipedia 2022).

Therefore, the problem of discovering the distribution characteristics of Buddhist monasteries is defined as

$$f_x = \frac{1}{nh} \sum_{i=1}^n k\left(\frac{x - x_i}{h}\right) \quad (1)$$

where f_x is the kernel density relationship of the distribution of Buddhist monasteries; x_i is the location of the estimated element point; x is the position of any element point in the threshold range; h means bandwidth, which can be interpreted as a smoothing parameter for the kernel density measurement band from a visualization perspective ($h > 0$); n represents the number of Buddhist monasteries within Xi'an city area; and k is the Gaussian kernel function, $(x - x_i)$ representing the distance between any two Buddhist monasteries. The results of the kernel density estimation indicate that the closer the Buddhist monasteries were to the aggregation center, the higher the density in the region; the further the Buddhist monasteries were from the aggregation center, the closer the density of Buddhist monasteries in the region was to zero.

The selection of kernel density function (K) and bandwidth (h) are important factors in determining the results of kernel density analysis. Therefore, we must first to clarify

the selection of the kernel function K . The kernel function K is a weight function. The two most commonly used kernel functions are Uniform and Gaussian

Uniform:

$$\frac{1}{2}I(|t| \leq 1)$$

Gaussian:

$$\frac{1}{\sqrt{2\pi}} \exp\left\{-\frac{1}{2}t^2\right\} \frac{n_i}{nh}$$

where the Uniform kernel function as a density function can be used to estimate the value of $f(x)$ only when the absolute value of $\frac{x-x_i}{h}$ is less than 1 (or a point whose distance from x is less than the bandwidth h). In addition, for the Gaussian kernel function, it can be seen from $f(x)$ that if x_i is closer to x , the closer $\frac{x-x_i}{h}$ is to 0, the larger the density value would be then. Since the value domain of the normal density is the entire real axis, all data are used to measure the value of $f(x)$, and the closer the point x is to the measurement, the greater the impact. For the subject of this research, any Buddhist monastery and its neighboring Buddhist monasteries will have a clustering effect, increasing the density of Buddhist monasteries in the region, which means that all the Buddhist monasteries in Xi'an city area have a clustering effect on each other. Therefore, it is more reasonable to choose the Gaussian kernel function for the kernel density estimation, which is also the most popular choice in the literature on spatial distribution.

When conducting KDE calculations, the visualization results of the distribution density of Buddhist monasteries will appear smooth and flat as the bandwidth increases abruptly and uneven as the bandwidth h decreases. In the case of this research, the determination of the h value determines the intuitiveness of its visualization results directly. Determining the value of h , which is the search radius of a single Buddhist monastery point, is given by

$$S_R = 0.9n^{-0.2} \min(S_D, D_m \sqrt{\frac{1}{\ln 2}})$$

where the S_R is search radius, n represents the number of Buddhist monasteries within Xi'an city area, S_D is the standard distance, and D_m is the median distance. In the calculation of the KDE in this research, h was chosen in combination with the calculation of the formula and considering the intuitiveness of the expression of the visualization results. Taking all factors into consideration, h (the search radius) is chosen as 2 km^2 .

In this paper, the calculation using KDE is divided into three steps. First, the spatial scope of the calculation (within Xi'an city area in each period) is established, and the corresponding distribution points of Buddhist monasteries within Xi'an city area in different periods are marked. Second, the spatial scope and distribution points of the calculation are entered into KDE. Finally, KDE selects the object points and spatial extent into the computational model, and the results are calculated and illustrated in images showing the distribution points of Buddhist monasteries. The KDE calculation transforms the regional density of the spatial distribution of Buddhist monasteries into visualizations, which helps to reveal the distribution characteristics of Buddhist monasteries within Xi'an city area.

3.2. Documentary Analysis

The documentary analysis method refers to the collation and summary of the collected literature. The documentary analysis method consists of collecting the original literature, picking up useful information, and making summaries according to certain principles or logic.

This study integrates the historical records of Xi'an city area, county annals, and other ancient literature. Information about Buddhist monasteries built in Xi'an city area during the Song, Yuan, Ming, and Qing dynasties have been itemized from historical documentary sources and analyzed. As Table A1 (see Appendix A) shows, the itemized information includes the date of foundation, the location, and any records of reconstruction or alteration. For example, the two Buddhist monasteries in Jingzhaofu (the name of Xi'an City in

the Song dynasty), Anzhong Temple (安众寺) and Bao'en Temple (报恩寺), were originally private residences of nobles that were rebuilt as Buddhist monasteries.

To begin, a map of Xi'an city area was drawn based on the historical literature, and the distribution of Buddhist monasteries inherited from previous dynasties and new Buddhist monasteries built during the current dynasty were marked in different colors on the map of the city area. On this basis, the city area was divided into east–west and south–north quadrants along the central axis of each period, and the number of Buddhist monasteries in the divided areas was counted. The statistics were derived in three steps. First, the number of older Buddhist monasteries inherited from the previous dynasty is counted in the city area of a certain dynasty and the ratio was calculated according to the divided area, to determine the distribution characteristics of Buddhist monasteries in that dynasty when there were no new Buddhist monasteries. Next, the distribution quantities of new Buddhist monasteries built in this dynasty were substituted into the overall distribution quantities of Buddhist monasteries and the ratio calculated by area. Finally, the ratio of the two was compared and summarized, and the general distribution characteristics of Buddhist monasteries in the city area could then be derived after the new Buddhist monasteries were built in this dynasty.

By superimposing the results of the regional ratio calculations of the distribution of Buddhist monasteries in the dynasties of the Song, Yuan, Ming, and Qing, two trends in the distribution of Buddhist monasteries within Xi'an city area can be concluded.

4. Spatial Distribution Characteristics of Buddhist Monasteries in Xi'an City Area

During the Song to Qing dynasties, when Xi'an city area lost its status as the political, economic, and cultural center of the country, the Buddhist monasteries within Xi'an city area also lost any mandated protection they had, resulting in a decline in their construction. The distribution of new monasteries was no longer planned and became spontaneous instead, forming unique distribution characteristics of aggregation around what I call core buildings: buildings that played a functionally dominant role in the area where Buddhist monasteries aggregated. For example, in the Qing dynasty, the core buildings in the aggregation area, dominated by warehousing buildings, were the two granaries of Changping Cang (常平仓) and Yongfeng Cang (永丰仓). These two granaries defined the warehousing function of the area in the city, and were also the main reason for the distribution of Buddhist monasteries. This section thus explores the distribution of Buddhist monasteries within Xi'an city area through the Song, Yuan, Ming, and Qing dynasties with the help of the KDE method, and derives their distribution characteristics of different city areas in different periods.

Buddhist monasteries within Xi'an city area during the Ming and Qing dynasties also showed an aggregation in the East Outer City—the area outside the eastern city walls of the Song and Yuan dynasties. This area was established in the early Ming dynasty and did not exist in the Song and Yuan dynasties. Most of the Buddhist monasteries in this area were built during the Tang and Yuan dynasties; there was no significant evolution in the Song, Ming, and Qing dynasties. The monasteries in the East Outer City were dedicated to Buddhist activities for the local people and were not connected to the scope of Buddhist activities of the people in the main city. This aggregation was influenced by historical factors and did not have the characteristics of spontaneous distribution, so it is excluded from the scope of this chapter.

4.1. Spatial Distribution Characteristic: Dominated by Cultural Buildings

The visualization of the distribution characteristics of Buddhist monasteries was obtained after importing the scope of Xi'an city area and the points of Buddhist monasteries into the KDE over the dynasties. Figure 3 presents the distribution characteristic of Buddhist monasteries aggregated around cultural buildings during the Song, Yuan, Ming, and Qing dynasties. The aggregation of Buddhist monasteries was in the southeast of the city area in the Song dynasty. These include the Baoqing Temple (宝庆寺), the Shangan Temple

(善感禅院), the Longquan Temple (龙泉院), and the Xinglong Temple (兴龙寺), confirmed in historical records. A number of other Buddhist monasteries were erected in the area, along with Taibai Temple (Taoist building) and the Jingzhaofuxue (京兆府学, Confucian building). In the Yuan dynasty, the aggregation of Buddhist monasteries still occurred near Taoist buildings and Confucian buildings in the southeast area of the city. In addition to the Buddhist monasteries inherited from the previous dynasty, the area also included the Xiangcheng Temple (香城寺) and Wolong Temple (卧龙寺). There were Taoist buildings, such as the Taibai Temple and the Sanhuang Temple, and Confucian buildings, such as the Official School established by the government.

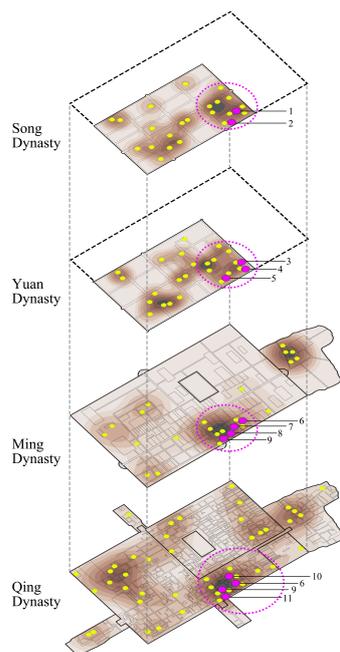


Figure 3. Buddhist Monasteries Aggregation around the Cultural Buildings. 1 Taibai Temple (Song); 2 Jingzhaofuxue; 3 Taibai Temple (Yuan); 4 Sanhuang Temple; 5 Official School (Yuan); 6 Confucious Temple (Ming and Qing); 7 Xi'an Official School; 8 Chang'an Official School; 9 Guanzhong Academy (Ming and Qing); 10 Forest of Steles; 11 Official School.

In the Ming dynasty, although the scale of the city area expanded, the aggregation of Buddhist monasteries, Taoist buildings, and Confucian buildings did not change geographical location. Buddhist monasteries were still located near Confucian buildings, such as the Confucious Temple, the Xi'an Official School, Chang'an Official School, and Guanzhong Academy. These construction of Buddhist monasteries continued to expand from the previous dynasty, and included Kaiyuan Temple (开元寺) and Qingliang Temple (清凉寺). In the Qing dynasty, this culture-based aggregation area was perpetuated. Buddhist monasteries were located near such Confucian buildings as the Forest of Steles, Confucius Temple, Guanzhong Academy, and Official School. The area contained Buddhist monasteries inherited from the previous dynasties as well as new ones built during the current dynasty, such as Huguo Temple (护国寺) and Fushou Temple (福寿寺).

This became an area of cultural aggregation. It is the area where, from the Song dynasty to the Qing, many cultural buildings, such as Buddhist monasteries, Taoist temples, and official academies, were built in the eastern part of the South City Gate. The construction of cultural buildings in this area never stopped during this period, giving the area a strong cultural character from a historical point of view. This cultural aggregation area, formed by Buddhist monasteries together with Taoist and Confucian buildings, has never changed its geographical location since its origin in the Song dynasty. This aggregation area was developed by the Yuan, Ming, and Qing dynasties, giving the Buddhist monas-

teries within Xi'an city area the distribution characteristic of being dominated by cultural buildings.

The reason for this proximity of cultural buildings was the new concept of “Integration of Confucianism, Buddhism, and Daoism (儒、释、道一体化)” in traditional Chinese religious concepts since the Song dynasty. During the Song dynasty, such concept restricted Buddhism but promoted Daoism and Confucianism. As a result, the focus of religion was directed toward the development of Neo Confucianism (理学), the integration of Confucianism, Buddhism, and Daoism. Under the influence of this religious concept, the Buddhist monasteries in Jingzhaofu city (京兆府, the name of Xi'an city area in the Song dynasty) began to have a tendency to be distributed together with Taoist buildings and Confucian buildings, gradually forming the cultural aggregation area within Xi'an city area. Because of the nature of this cultural aggregation, the area experienced a huge flow of people—believers of various religions, students from all over the city area, and literary enthusiasts. These factors led to the preservation of this area as a cultural aggregation area over the dynasties. During the Yuan, Ming, and Qing dynasties, Buddhist monasteries, Taoist temples, and Confucian schools continued to be added to this area of cultural aggregation.

Because the geographical location of the cultural aggregation area did not change, the growth of new Buddhist monasteries in this area was relatively stable. This area on the southern side of Xi'an city area was preserved and allowed to develop, although the city area had expanded in the early Ming dynasty. This distribution model of cultural aggregation area in the south of the city area has influenced the urban planning of Xi'an city area in the present day. For example, not only was the aggregation of Buddhist monasteries inherited from the Song, Yuan, Ming, and Qing dynasties well preserved, but it also laid the foundation for the pattern of cultural buildings that appear in the south of Xi'an city area today. In view of the uninterrupted cultural attributes of the area, the Xi'an Municipal Government pronounced the area a historical and cultural district in December 2020, publishing the plan of it online (Figure 4).

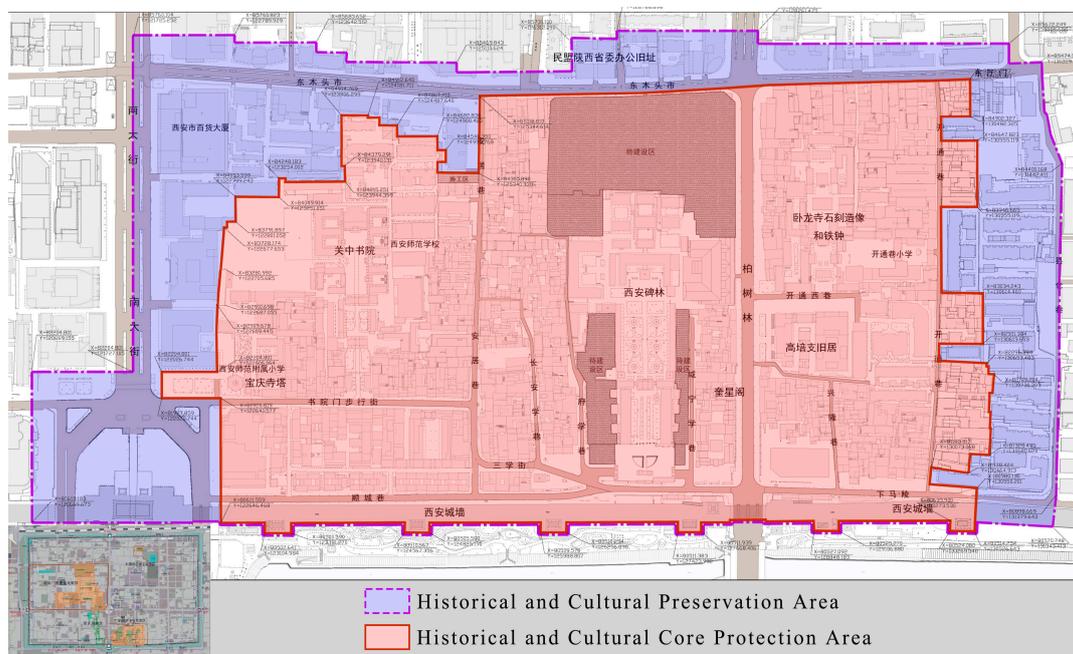


Figure 4. Xi'an Sanxue Street Conservation Planning Scope Public Announcement (Creative Commons: <http://www.xa.gov.cn/gk/ghjh/cxgh/ghglpqgs/5fe5794af8fd1c5966575fe6.html> (accessed on 1 November 2022)).

4.2. Spatial Distribution Characteristic: Dominated by Warehousing Buildings

The distribution of Buddhist monasteries in Xi'an city area was characterized by their proximity to warehousing buildings in Yuan, Ming, and Qing dynasties, located primarily around the Qiansi Warehouse (千斯仓)⁹ and the Post Station (马站) on the southwest side of Xian city area of the Yuan dynasty (Figure 5). Thus, the earliest distribution characteristic of Buddhist monasteries is that of being in an area dominated by warehouses. These include Xiangyan Temple (香严禅寺), Guangjiao Temple (广教禅寺), Kaifu Temple (开福寺), built in the Song dynasty, and Xi Kaifusi Temple (西开福寺), built in the Yuan dynasty. During the Ming dynasty, the location of warehouses within Xi'an city area had moved northward, and the area for new Buddhist monasteries were also moved, distributed instead around the Changping Warehouse (常平仓) and Yongfeng Warehouse (永丰仓).¹⁰ The monasteries already in that area included Anzhong Temple (安众寺) and Xiwutai Temple (西五台寺), built in the Song dynasty, and the Ming added Lianchi Temple (莲池寺) and Yuanjue Temple (圆觉寺). The Qing dynasty inherited this warehouse area and the number of Buddhist monasteries around the warehouses increased. The large number of new Buddhist monasteries included Guangren Temple (广仁寺) and Shuifo Temple (睡佛殿) and some smaller temples, such as Shuiyue Temple (水月庵) and Yonghe Temple (永和庵). The aggregation of monasteries around warehouses that had begun during the Yuan and continued in the Ming finished during the Qing.

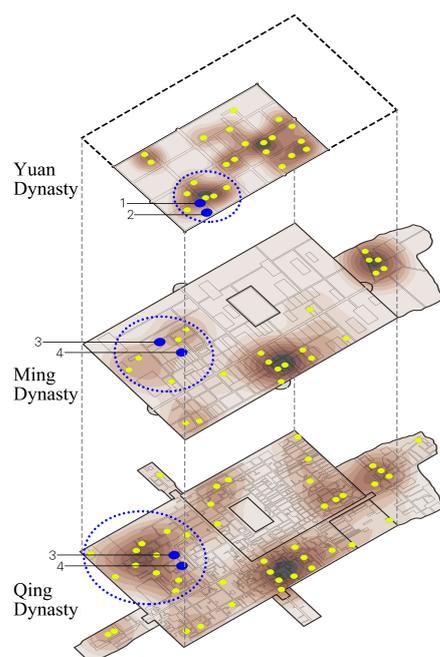


Figure 5. Buddhist Monasteries Aggregation around the Warehousing buildings. 1 Qiansi Warehouse; 2 Post Station; 3 Changping Warehouse (Ming and Qing); 4 Yongfeng Warehouse (Ming and Qing).

The reason Buddhist monasteries were distributed in an area dominated by warehouses is that the warehousing of grain was a vital lifeline for not only people's survival but also the survival of the administration in ancient Chinese society. Because of the limitations of transportation and the vagaries of climate, grain warehousing was significant for dynasties, and grain warehouses played an important role in every Chinese ancient city. In the traditional Chinese religion, paying homage to Buddha included praying for peace and blessings in life. No mistakes can be made in the process of grain storage and transportation, therefore many Buddhist monasteries were thus located in that area where they could protect the safety of the harvest. During the Yuan dynasty, although Fengyuanlu City (奉元路, the name of Xi'an city area in the Yuan dynasty) was not the political and

economic center of ancient China, it was the most significant military city in the north-western region of the country. The warehouses there were thus highly significant, and this was when the distribution characteristic of Buddhist monasteries being dominated by warehousing buildings first formed.

During the Ming dynasty, Xi'an city area expanded, and its internal structure changed. The original warehousing area in the southwestern of Fengyuanlu City was moved towards the northwest. The relocation of the warehousing area had no effect on the distribution characteristic of Buddhist monasteries being located around warehouses. Yongfeng Warehouse (永丰仓), located at the center of the warehousing area, was established in the early Ming dynasty. As a granary for storing grain taxes, regulating market prices, and providing disaster relief, it was an important warehouse by which the rulers maintained social stability and was used until the end of the Qing dynasty, in the 10th year of Guangxu. There were five Buddhist monasteries in this area during the Ming dynasty, two of which were inherited from the Song dynasty, and two, Lianchi Temple and Yuanjue Temple, were built after the Yongfeng Warehouse. This construction history, of first building temples, then warehouses, then temples again, demonstrates the aggregation pattern of Buddhist monasteries around warehouses, while the warehouses depended on the monasteries. In the Qing dynasty, many new small monasteries were built in the area, which further supports this finding. Through the development of the Ming and Qing Dynasties, the Buddhist monasteries were surrounded by the warehouses had been accomplished.

4.3. Spatial Distribution Characteristic: Dominated by Administrative Buildings

The relationship between the distribution of Buddhist monasteries and administrative buildings formed a characteristic that developed over the Yuan, Ming, and Qing dynasties (Figure 6). For this characteristic, monasteries are distributed around administrative buildings, but discretely rather than in close proximity. In the Yuan dynasty, monasteries were located around administrative buildings such as the Liwensuo (理问所),¹¹ Wenjinju (纹锦局),¹² with the Jingzhaofu City Government at the center. The monasteries include Taiping Xingguo Temple (太平兴国寺), Baoqing Temple (宝庆寺), and Guanyin Temple (观音寺), all built in the Tang dynasty. They were deliberately built at a distance from the administrative buildings. In the Ming dynasty, Buddhist monasteries were also located around administrative buildings but also at more of a distance from them. These include Baoen Temple (报恩寺), built in the Tang dynasty, and the Xi Kaifusi Temple (西开福寺), built in the Song dynasty. Most Buddhist monasteries in the west part of Xi'an city area were located around Xi'an's city government, military, and civilian offices. Again, all were kept at some distance from those administrative buildings. In the Qing dynasty, the administrative center within Xi'an city area was relocated to the northeast region and was known as Man City. Monasteries were located around the Manchu Army Station and the Eight Banners Drill Ground (八旗教场)¹³ at the center of Man City (满城)¹⁴, which was located in the northeastern of Xi'an city area. Most of these were small monasteries, such as Jile Temple (极乐庵) and Ciyun Temple (慈云庵). There were only two large monasteries, Huazang Temple (华藏寺), from the Tang dynasty, and Xiemo Temple (蝎魔寺), from the Ming.

The reason for this distribution characteristic is that, in ancient Chinese urban planning, the placement of every functional building discretely, separate and at some distance from the administrative buildings, was according to a particular distribution of urban space (Figure 7). In the *Zhouli Kaogongji* (《周礼·考工记》), the layout is described in some detail: "The city was built by craftsmen, eighteen kilometers long and eighteen kilometers wide, with three gates on each of the four walls of the city. There were nine north-south avenues and nine east-west avenues in the city. Each avenue could accommodate nine carriages in parallel. The royal palace was in the center, with the temple on the east side of the main road and the altar of heaven on the west side. The administration was set up on the south side of the palace and the marketplace on the north side. Each administration was separated from the marketplace by a hundred paces" (匠人营国, 方九里, 旁三门。国中

九经九纬，经涂九轨，左祖右社，面朝后市，市朝一夫). According to this plan, the imperial palace was in the center of the city, while the rest of the functional buildings, such as markets and monasteries, were arranged around the palace. At the same time, administrative buildings were high in rank, large scale, and high security, and were often clustered together. Religious buildings and other functional buildings were not allowed to be built near higher-ranking administrative buildings. As a result, the Buddhist monasteries within Xi'an city area were located at a distance from administrative buildings. Although the orientation of the administrative area in Xi'an city area changed during the period from the Yuan dynasty to the Qing dynasty, the distribution characteristic of Buddhist monasteries discretely surrounding administrative buildings remained the same.

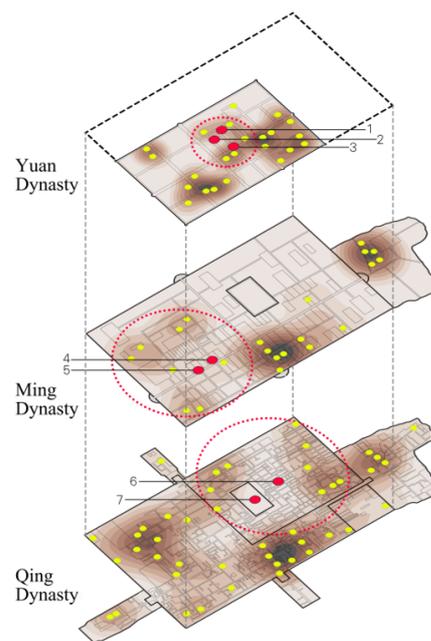


Figure 6. Buddhist Monasteries Distribution around the Administrative Buildings. 1 Liwensuo; 2 Wenjinju; 3 Jingzhaofu City Government; 4 Xi'an City Government; 5 Military and Civilian Office; 6 Manchu Army Station/Man City; 7 Eight Banners Drill Ground.

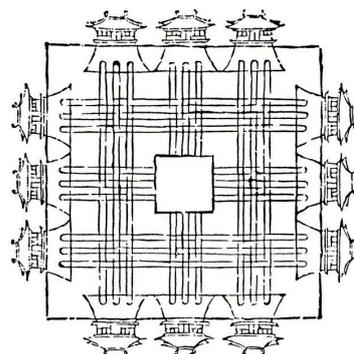


Figure 7. Illustration of urban planning from *Zhouli Kaogongji* (《周礼·考工记》, He.).

The Buddhist monasteries within the Xi'an city area developed their spontaneous pattern through the Song, Yuan, Ming, and Qing dynasties, forming the three characteristics of being distributed around core buildings, in close proximity to them, or discretely away from yet surrounding them. These three different patterns of aggregation existed independently of each other and did not have any influence on or correlation with each other. From the Song dynasty to the Qing, Buddhist monasteries in areas dominated by cultural buildings were never relocated, and the distribution pattern of Buddhist monasteries remained unchanged. Although the location changed of areas dominated by warehouses

and administrative buildings, around which monasteries were built, the actual distribution of monasteries in this layout was not affected.

5. Spatial Distribution Evolution of Buddhist Monasteries in Xi'an City Area

As has been shown, during the Song, Yuan, Ming, and Qing dynasties, the Buddhist monasteries within Xi'an city area began to appear spontaneously, without official planning. In this study, the spatial distribution evolution of Buddhist monasteries refers to the changes in the location of areas of the city proper where these monasteries aggregated, changes that accompanied changes in the city structure that resulted from the succession of dynasties. Meanwhile, after the end of the Tang dynasty, when the distribution of Buddhist monasteries was no longer planned but spontaneous because Buddhist monasteries had lost their leading position in the religious culture of ancient China, the choice of their location depended more on the requirements of a monastery's builders and worshippers in terms of the coverage of a monastery's services. This section explores the spatial distribution evolution of Buddhist monasteries within Xi'an city area by the methods of documentary analysis.

Table A1 shows the distribution evolution of Buddhist monasteries within Xi'an city area, which includes the outer city, in the Song, Yuan, Ming, and Qing dynasties. During this long period, the city was divided into different areas by its axis. For example, in the Song Dynasty, the city was divided by the north–south axis into eastern and western areas. Ten Buddhist monasteries inherited from the previous dynasties were located in the eastern area and two in the western area. After new Buddhist monasteries were added in the Song dynasty, there were eleven monasteries in the eastern area, while the number rose to seven in the western area. In the same way, the east–west axis divided the city into southern and northern areas. The southern area contained ten monasteries from the previous dynasties and the northern area contained two. Including the new Buddhist monasteries built during the Song dynasty, the number of Buddhist monasteries in the southern area was fourteen, while the number in the northern area rose to four. The method of dividing the Xi'an city area and the statistics of the distribution of Buddhist monasteries in the Yuan, Ming, and Qing dynasties followed that of the Song dynasty.

A ratio of the number of Buddhist monasteries between the east with the west area and the south with the north area is also evident in Table 1. When the ratio between the two areas tended closer to 1:1, the distribution of Buddhist monasteries between the two areas tended to be more balanced. Without taking into account the new Buddhist monasteries built in the Song dynasty, however, Buddhist monasteries were concentrated in the east and south of the city, with the ratios of east–west and south–north of 5. After counting the newly built Buddhist monasteries, the ratio decreased to 1.57 and 3.5, which means that the new Buddhist monasteries built in the Song dynasty were intentionally built towards the west and north areas, achieving a evolution of Buddhist monastery space that was balanced throughout Xi'an city area. The same evolution also persisted in the Yuan Dynasty. When only the Buddhist monasteries inherited from the previous dynasties are included, the spatial distribution of Buddhist monasteries still had a tendency to be more to the east and south of the city. After taking into account the new Buddhist monasteries in the Yuan Dynasty, the ratio between the eastern and the western area decreased from 1.83 to 1.57. This means that the difference in quantity between the spatial distribution of Buddhist monasteries in the eastern and western areas had decreased over time in Xi'an city area. In the Ming Dynasty, the same pattern of evolution persisted. The ratio of Buddhist monasteries of east–west of 2.2 and north–south of 1.29 shows that the distribution of Buddhist monasteries inherited from the previous dynasties was relatively more balanced. After the newly built Buddhist monasteries are included into the count, the ratio of the east–west distribution of Buddhist monasteries decreased to 1.71, while the ratio of the north–south decreased to 0.9. The distribution of the Buddhist monasteries changed from being mostly located in the south to north area. During the Qing Dynasty, the spatial distribution of Buddhist monasteries in all areas in Xi'an city area continued to evolve

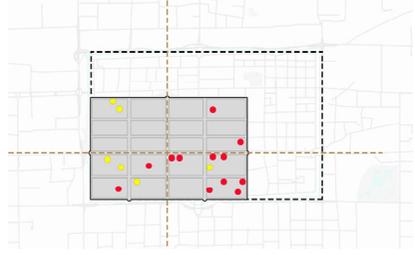
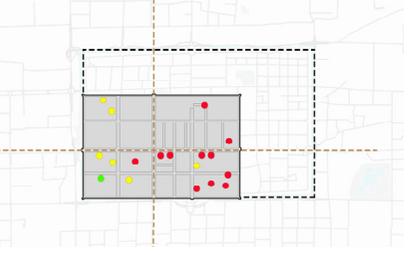
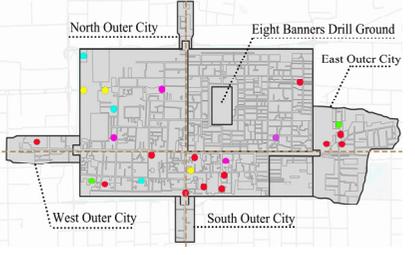
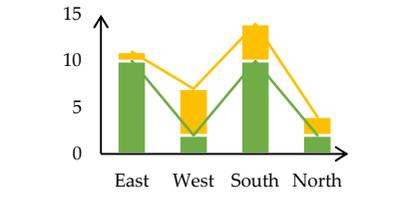
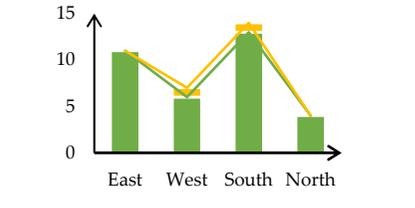
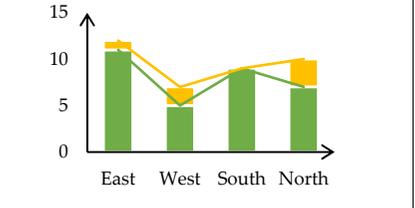
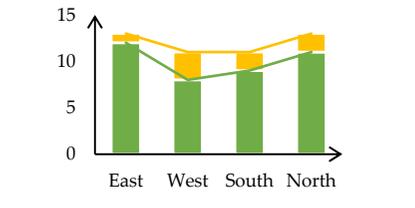
in a balanced way, attaining a balanced distribution. The statistical charts in Table 1 were drawn based on the number of Buddhist monasteries in Xi'an city area. The lines gradually become smoother from the Song Dynasty to the Qing, another indicator that the distribution of Buddhist monasteries within Xi'an city area had a balanced evolution.

Buddhist monasteries within Xi'an city area formed this balanced spatial distribution evolution during the Song, Yuan, Ming, and Qing dynasties because, beginning with the Song dynasty, the social structure within Xi'an city area entered a stable stage of development compared to previous dynasties. During the Xining years of Emperor Shenzong of the Song Dynasty (1068–1077, 宋神宗熙宁年间), the city contained millions of households, and the market was full of stores, merchants, and businesses, making it the most important economic capital in the northwest (N. Shi 1996). There was no longer a clear separation of the city's functional areas—administrative, commercial, and residential. These areas were interspersed with marketplaces, and large-scale handicraft production, commerce, and residences appeared in the west and north of the city. The service coverage of monasteries from previous dynasties could no longer meet the needs of Buddhist believers in the city. New Buddhist monasteries were therefore built in the west and north of the city in the Song dynasty, achieving a relatively stable and balanced distribution in all areas of the city. This evolution improved the service coverage of Buddhist monasteries and met the needs of the people. The Yuan, being similar to the Song, also allowed a stable evolution of the Buddhist monasteries within Xi'an city area, and the distribution of Buddhist monasteries further evolved toward a balance.

In the Ming and Qing dynasties, the distribution evolution of Buddhist monasteries continued toward a balanced development. However, the reasons were different from those in the Song and Yuan dynasties. There were more Buddhist monasteries in the northern area and fewer in the southern area because of the expansion of the city and the change in the city structure in the Ming dynasty. The expansion of the city and the construction of outer cities brought some Buddhist monasteries built in the former dynasties into the city area, especially from the East Outer City, which had the largest quantity of Buddhist monasteries from former dynasties. The main residential areas in the East Outer City were to the north of the city axis, so many monasteries were also located in the north. The Man City construction had cut off the city space, and the space in which monasteries could grow was also simultaneously blocked by its walls. Many new Buddhist monasteries were built within Man City, at an architectural scale that was far smaller than the traditional ancient monasteries and were intended only to serve the military and political organs. It is for these reasons that the distribution of Buddhist monasteries within Xi'an city area evolved from being mostly located in the south and less in the north to being located more in the north and less in the south.

In summary, the evolution of the distribution of Buddhist monasteries within the Xi'an city area was influenced by two factors: the distribution of Buddhist monasteries from previous dynasties and changes to the scale and structure of the city. The distribution of Buddhist monasteries inherited from the previous dynasties was the basis for the selection of sites for Buddhist monasteries built in new dynasties. The changes in the scale and structure of the city changed the distribution characteristics of Buddhist monasteries within the city area. The expansion of the city encompassed those Buddhist monasteries that were originally placed outside the city, while changes to the city structure led to the interruption of city space, such as the construction of the Qin Palace in the Ming dynasty and Man City in the Qing dynasty. The Buddhist monasteries outside the Man City retained an evolution toward the balanced development of the previous dynasties, while the Buddhist monasteries in the Man City were newly built around the administrative buildings and had different distribution characteristics from the outer city areas, contributing to a balanced spatial distribution evolution.

Table 1. The Distribution Evolution of Buddhist Monasteries in Song, Yuan, Ming, and Qing Dynasties.

Dynasty		Song			Yuan			Ming			Qing		
Distribution of Buddhist Monasteries													
Statistics	Inherited	Orientation	Quantity	Ratio	Orientation	Quantity	Ratio	Orientation	Quantity	Ratio	Orientation	Quantity	Ratio
		East	10	E/W = 5	East	11	E/W = 1.83	East	11	E/W = 2.2	East	12	E/W = 1.5
		West	2		West	6		West	5		West	8	
		South	10	S/N = 5	South	13	S/N = 3.25	South	9	S/N = 1.29	South	9	S/N = 0.82
	North	2	North		4	North		7	North		11		
	All	East	11	E/W = 1.57	East	11	E/W = 1.57	East	12	E/W = 1.71	East	13	E/W = 1.18
		West	7		West	7		West	7		West	11	
		South	14	S/N = 3.5	South	14	S/N = 3.5	South	9	S/N = 0.9	South	11	S/N = 0.85
North		4	North		4	North		10	North		13		
Distribution Evolution of Buddhist Monasteries													
Key		<ul style="list-style-type: none"> ● Built before the Song ● Built in the Song ● Built in the Yuan ● Built in the Ming ● Built in Qing ⋯ The main Xi'an city area in the Ming and Qing Scope of Xi'an City Area - - - City Axis ■ New Buddhist monasteries in the current dynasty ■ Buddhist monasteries inherited from previous dynasties 											

6. Discussion

This investigation rectifies the absence of studies about the spatial distribution characteristics of Buddhist monasteries and their evolution across dynasties in the same region. It also reveals the frequency with which these monasteries were constructed in Xian city area during the Song, Yuan, Ming, and Qing dynasties. There is a strong connection between the spatial development of Buddhist monasteries and the evolution of the spatial pattern of the Xi'an city area in different historical periods from the city space perspective. This connection is significant for directing the spatial arrangement of Buddhist monasteries in the Xi'an city area at present.

Due to the unfamiliarity with spatial technology and the limited scope of data collection, there are many shortcomings in this study. First, the original data collection of Buddhist monasteries has limitations. Buddhist monasteries that are recorded in historical materials but have no specific location are not included. This absence implies there may be inaccuracies in the identification of distribution characteristics of Buddhist monasteries in the conclusion. Second, in the process of dating individual Buddhist temples, there are cases in which the dates of their founding cannot be confirmed. Finally, the kernel density analysis method is one of many spatial analysis methods. In this research, only the mean geometric center and discrete distance are used as the measure to discern the distribution characteristics of Buddhist monasteries, which entails some errors. In future research, we would attempt to expand the collection of more literary and historical data, and use different spatial distribution research methods to make the conclusions more specific and accurate.

7. Conclusions

In this paper, the distribution of Buddhist monasteries within Xi'an city area was drawn by first examining documents from the Song, Yuan, Ming, and Qing dynasties. Then, the distribution characteristics of Buddhist monasteries within Xian city area were explored by the KDE method. The evolution of this spatial distribution was then explored by using documentary analysis and mathematical statistics methods. The connection between the spatial development of Buddhist monasteries and urban planning within Xi'an city area was explored.

The establishment of Buddhist monasteries within Xi'an city area through the Song, Yuan, Ming, and Qing dynasties has several characteristics of distribution. After the end of the Tang dynasty, the declining importance attached to Buddhism by the rulers and the loss of Buddhism's related religious policies eventually led to a loss of planning and order in the construction of Buddhist temples after the Song dynasty. From this period onward, the distribution of Buddhist monasteries shifted to a trend of spontaneous distribution.

Then, during the Yuan, Ming, and Qing dynasties, the distribution of Buddhist monasteries gradually developed the characteristic of being located in close or discrete locations around core buildings. The distribution pattern of some Buddhist monasteries around cultural buildings was based on the high concentration of other cultural attributes of such areas. The clustering in one area of Buddhist monasteries, Taoist and Confucian buildings, and various schools constitutes a strong cultural attribute of that space.

The formation of a distribution area of other Buddhist monasteries with warehousing buildings as the core was based on the importance of warehouses under the ancient Chinese administrative system. In Xi'an, warehouses served the entire northwest region and were key to the rulers' efforts to maintain social stability. Therefore, the Buddhist monasteries, where people gathered to pray for peace and happiness, were erected around the warehouses to meet the worshipping needs of the staff managing the warehouse. This conclusion is supported by the timing of the mutual construction of Buddhist monasteries and storage buildings.

Finally, the discrete distribution of Buddhist monasteries around administrative buildings was a pattern formed by concepts of urban planning prevalent at the time. In ancient China, administrative buildings had to be located in the center of the city, and the rest

of the functional buildings had to be spaced out and surrounded by the rest of the city. Buddhist monasteries were places frequently visited by officials and nobles, thus forming a discrete yet encompassing distribution pattern of monasteries on the periphery of the administrative class.

This research connects case studies of Buddhist monasteries and then explores their distribution characteristics in detail, with the aim of revealing the patterns of evolution of religious space in an urban area. There are few studies about Buddhist monasteries similar to this paper, and explore of the distribution characteristics of Buddhist monasteries in both time and space in one urban context is limited. Therefore, the approach and method of research demonstrated in this study provides a model for the study of the distribution characteristics of Buddhist monasteries and other religious buildings in other historical cities. The conclusions of this paper provide detailed basic data and information on the spatial evolution of urban history and the spatial distribution pattern of Buddhist monasteries, and offer research ideas for the study of the spatial distribution of the same type in Xi'an.

The spatial distribution of Buddhist monasteries in Xi'an city area had gradually evolved toward balance since the Song Dynasty, when the decisions about where to site monasteries moved away from official policy. This tendency toward a balanced distribution of monasteries across the city was the result of stable social development, city expansion, and changes in city structure. The stability of the social situation resulted in an increase in people and thus in the demand for Buddhist activities. The service area of the existing Buddhist monasteries could not meet this rapid increase in demand, so a number of new Buddhist monasteries were built in areas not previously covered. The expansion of the city boundary had annexed the land outside the city, encompassing areas that included many historical Buddhist monasteries. This expansion and annexation toward the east and north broke the original concentration of Buddhist monasteries in the south, one of the primary reasons for the evolution of Buddhist monasteries toward a balanced distribution. The establishment of Man City in Xi'an city area during the Qing Dynasty broke the original urban structure but at the same time contributed to the evolutionary dynamics of the Buddhist monasteries toward balance. The establishment of a number of small Buddhist monasteries in Man City for the official and aristocratic classes weakened the original distribution of Buddhist monasteries in the southern part of the city, and strengthened the balanced distribution of Buddhist monasteries in Xi'an city area.

Buddhism was introduced to China two thousand years ago, and it has long been an important part of Chinese religious culture. An architectural expression of Buddhist culture, Buddhist monasteries combined with certain characteristics of classical Chinese architecture and became a reflection of the historical and cultural lineage of ancient Chinese cities, playing an influential role in ancient Chinese urban spaces. Buddhist monastery space carries the architectural information of a city's history and cultural evolution. It is regrettable that only four Buddhist monasteries and one pagoda have been preserved within the city walls of Xi'an today, which is not comparable to the development of Buddhist monasteries in any period of history. The spatial distribution characteristics of Buddhist monasteries, from an urban perspective, are an important part of the development and evolution of the city's heritage and should be reasonably protected and planned for. For Xi'an city and other similar historical cities, it is important to ensure that the spontaneous patterns of various historical architectures are not destroyed, but that their value is acknowledged and the buildings preserved as part of the city's heritage.

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Appendix A

Table A1. Buddhist Monasteries in Xi'an City Area during the Song, Yuan, Ming, and Qing Dynasties.

NO.	Name	Dynasties of Construction	Descriptions	References
Song				
1	West Wutai Temple (西五台寺)	Song	Located in the northwest corner of the city, its building pedestals were first built in the Tang. The building was constructed in the Song and rebuilt in the Ming.	Ming—Wanli 39th year “Shaanxi General Records” (明万历三十九年·《陕西通志》)
2	Anzhong Zen Temple (安众禅院)	Song	Located on Yeting Street. Originally a royal garden, it was later transformed into a Buddhist temple.	The Historical Atlas of Xi'an (《西安历史地图集》)
3	Qingshou Temple (庆寿寺)	Unknown	Located on Penglaifang Street.	The Historical Atlas of Xi'an (《西安历史地图集》)
4	Tianning Temple (天宁寺)	Unknown	Located on the north side of Zhihui East Street.	The Historical Atlas of Xi'an (《西安历史地图集》)
5	Taiping Xingguo Temple (太平兴国寺)	Tianyou period in Tang	Located on Eastern Street.	Chang'an Annals·Chang'an Drawing Record 《长安志·长安图志》
6	Renwang Temple (仁王院)	Tang	Located on the north side of Jingfeng Street, it was the lower court of Jianfu Temple (荐福寺).	The Historical Atlas of Xi'an (《西安历史地图集》)
7	Guangjiao Zen Temple (广教禅寺)	Song	Located on Zhihui West Street.	The Historical Atlas of Xi'an (《西安历史地图集》)
8	Kaifu Temple (开福寺)	Song	Located on the west side of Hanguang Street.	The Historical Atlas of Xi'an (《西安历史地图集》)
9	Bao'en Temple (报恩寺)	Reign of Tang Emperor Zhongzong	Located in the south of the county. It was built during the reign of Emperor Zhongzong in the Tang to pray for Prince Yide. In the mid-Yuan period, it was given the name of Daxingguo Bao'en Temple (大兴国报恩寺), which was changed to Bao'en Temple (报恩寺) in the Ming. The building was rebuilt in the second year of the Hongzhi period of the Ming. (明弘治二年)	The Historical Atlas of Xi'an (《西安历史地图集》)
10	Xiangyan Zen Temple (香严禅寺)	Song	Located on Shuichi Street.	The Historical Atlas of Xi'an (《西安历史地图集》)
11	Miaoguoni Temple (妙果尼寺)	Tang	Located in the southwest of the Xian city area. It was originally used as the Censorate in the Tang, which can be verified by the Inscription of The Censorate Vihara (《御史台精舍碑》) written by Cui Shi. It was reconstructed into Miaoguoni Temple (妙果尼寺) during the Kaibao period in the Song.	Chang'an Annals·Chang'an Drawing Record 《长安志·长安图志》
12	Chongsheng Temple (崇圣禅院)	Unknown	Located on Shuichi Street, it was commonly known as Jingta Temple (经塔寺).	The Historical Atlas of Xi'an (《西安历史地图集》)
13	Guanyin Temple (观音寺)	Second year of the Tianbao period in the Tang	Located in Guangji Fang of Xian city area.	The Historical Atlas of Xi'an (《西安历史地图集》)

Table A1. Cont.

NO.	Name	Dynasties of Construction	Descriptions	References
Song				
14	Baoqing Temple (保庆寺)	Middle of the Jinglong period in the Tang	Located in Tongzheng Fang, in the north of Wannian County.	Class compilation of Changan Records 《类编长安志》
15	Kaiyuan Temple (开元寺)	Kaiyuan period in Tang	Located on the north side of Caochang Street and the south side of Jingfeng Street in Xian city area.	The Historical Atlas of Xi'an (《西安历史地图集》)
16	Fuchang Pagoda Temple (福昌宝塔院)	Tang	Located on the east side of Kaiyuan Temple (开元寺).	The Historical Atlas of Xi'an (《西安历史地图集》)
17	Erlong Temple (二龙寺)	Song	Located in Yongning Fang.	The Historical Atlas of Xi'an (《西安历史地图集》)
18	Baoqing Temple (宝庆寺)	Reign of Sui Emperor Wen	Located in the southeast of Xian city area (Shuyuan Gate).	Ming—Wanli 39th year “Shaanxi General Records” (明万历三十九年·《陕西通志》)
19	Shangan Zen Temple (善感禅院)	Jin	Located on Caochang Street in Xian city area.	The Historical Atlas of Xi'an (《西安历史地图集》)
20	Xingguo Temple (兴国院)	Unknown	Located on the south side of Jingfeng Street.	The Historical Atlas of Xi'an (《西安历史地图集》)
21	Longquan Temple (龙泉院)	During the reign of Han Emperor Ling	Located on Caochang Street in Xian city area.	The Historical Atlas of Xi'an (《西安历史地图集》)
22	Xinglong Temple (兴龙寺)	Han	Located in Xiaoyi Li.	The Historical Atlas of Xi'an (《西安历史地图集》)
Yuan				
1	West Wutai Temple (西五台寺)	Song	Located in the northwest corner of the city, its building pedestals were first built in the Tang. The building was constructed in the Song and rebuilt in the Ming.	Ming—Wanli 39th year “Shaanxi General Records” (明万历三十九年·《陕西通志》)
2	Anzhong Zen Temple (安众禅院)	Song	Located on Yeting Street. Originally a royal garden, it was later transformed into a Buddhist temple.	Class compilation of Changan Records 《类编长安志》
3	Taiping Xingguo Temple (太平兴国寺)	Tianyou period in Tang	Located on Jiuyao Street in Xian city area. It was commonly known as Jiuyao Temple (九耀寺).	Class compilation of Changan Records 《类编长安志》
4	Qingshou Temple (庆寿寺)	Unknown	Located on Penglailang Street.	Class compilation of Changan Records 《类编长安志》
5	Tianning Temple (天宁寺)	Unknown	Located on north side of Zhihui East Street.	Class compilation of Changan Records 《类编长安志》
6	Renwang Temple (仁王院)	Tang and before Tang	Located on north side of Jingfeng Street. It was the lower court of Jianfu Temple (荐福寺).	Class compilation of Changan Records 《类编长安志》
7	West Kaifu Temple (西开福寺)	Yuan	Located in Hanguang Fang of Xian city area.	The Historical Atlas of Xi'an (《西安历史地图集》)
8	Kaifu Temple (开福寺)	Song	Located on the west side of Hanguang Street. It was rebuilt in the tenth year of the Yuan.	Class compilation of Changan Records 《类编长安志》
9	Guangjiao Zen Temple (广教禅寺)	Song	Located on Zhihui West Street.	Class compilation of Changan Records 《类编长安志》
10	Bao'en Temple (报恩寺)	Reign of Tang Emperor Zhongzong	Located in the south of the county. It was built during the reign of Emperor Zhongzong of Tang to pray for Prince Yide. In the mid-Yuan period, it was given the name of Daxingguo Bao'en Temple (大兴国报恩寺), which was changed to Bao'en Temple (报恩寺) in the Ming. The building was rebuilt in the second year of the Hongzhi period in the Ming. (明弘治二年)	The Historical Atlas of Xi'an (《西安历史地图集》)

Table A1. Cont.

NO.	Name	Dynasties of Construction	Descriptions	References
Yuan				
11	Xiangyan Zen Temple (香严禅寺)	Song	Located on Shuichi Street.	Class compilation of Changan Records 《类编长安志》
12	Chongsheng Temple (崇圣禅院)	Unknown	Located on Shuichi Street, it was commonly known as Jingta Temple (经塔寺).	Class compilation of Changan Records 《类编长安志》
13	Guanyin Temple (观音寺)	Second year of the Tianbao period in Tang	Located in the Guangji Fang of Xian city area.	The Historical Atlas of Xi'an (《西安历史地图集》)
14	Baoqing Temple (保庆寺)	Middle of the Jinglong period in Tang	Located in Tongzheng Fang, in the north of Wannian County.	Class compilation of Changan Records 《类编长安志》
15	Kaiyuan Temple (开元寺)	Kaiyuan period in Tang	Located on the north side of Caochang Street and the south side of Jingfeng Street in Xian city area.	Class compilation of Changan Records 《类编长安志》
16	Taiping Xingguo Temple	Tianyou period in Tang	Also known as Jiuyao Temple.	Class compilation of Changan Records 《类编长安志》
17	Erlong Temple (二龙寺)	Song	Located in the Yongning Fang.	The Historical Atlas of Xi'an (《西安历史地图集》)
18	Baoqing Temple (宝庆寺)	Reign of Sui Emperor Wen	Located in the southeast of Xian city area (Shuyuan Gate).	Ming—Wanli 39th year “Shaanxi General Records” (明万历三十九年·《陕西通志》)
19	Xiangcheng Temple (香城寺)	Jin	Located on Caochang Street in the Xian city area, it was known as Shangang Zen Temple (善感禅院) in the Song.	Class compilation of Changan Records 《类编长安志》
20	Xinglong Temple (兴龙寺)	Han	Located in the Xiaoyi Alley.	The Historical Atlas of Xi'an (《西安历史地图集》)
21	Wolong Temple (卧龙寺)	Reign of Han Emperor Ling	Located on Caochang Street in Xian city area, it was known as Longquan Temple (龙泉院) in the Song.	Class compilation of Changan Records 《类编长安志》
22	Zisheng Temple (资圣院)	Unknown	Located on the south side of Jingfeng Street. It was originally called Xingguo Temple (兴国院) and was renamed Zisheng Temple (资圣院) during the Jin Empire.	Class compilation of Changan Records 《类编长安志》
23	Taiping Xingguo Temple (太平兴国寺)	Tianyou period in Tang	Located on Eastern Street.	Chang'an Annals·Chang'an Drawing Record 《长安志·长安图志》
Ming				
1	Anzhong Temple (安众寺)	Song	Located in the northwest of Xian city area. Originally the residence of Kou Zhun in the Song, it was later transformed into a Buddhist temple. It was recorded as Anquan Temple (安泉寺) in the Atlas.	Ming—Wanli 39th year “Shaanxi General Records” (明万历三十九年·《陕西通志》)
2	West Wutai Temple (西五台寺)	Song	Located in the northwest corner of the city, its building pedestals were first built in the Tang. The building was constructed in the Song and rebuilt in the Ming.	The Historical Atlas of Xi'an (《西安历史地图集》)
3	North Wutai Temple (北五台)	Unknown	Located in the vicinity of the lotus pond in the northwest of Xian city area.	The Historical Atlas of Xi'an (《西安历史地图集》)
4	Lotus Pond Temple (莲池寺)	Eighth year of the Chongzhen period in the Ming	Located in the vicinity of the lotus pond in the northwest of Xian city area, it was a tourist attraction for nobles in the Ming.	The Historical Atlas of Xi'an (《西安历史地图集》)
5	Yuanjue Temple (圆觉寺)	Second year of the Yongle period in the Ming	Located north of the government office in the Ming. It was rebuilt in the tenth year of the Shunzhi period in the Qing.	The Historical Atlas of Xi'an (《西安历史地图集》)
6	Xiemo Temple (蝎魔寺)	Ming	Located in Dachai Market, in the east of the city.	The Historical Atlas of Xi'an (《西安历史地图集》)

Table A1. Cont.

NO.	Name	Dynasties of Construction	Descriptions	References
Ming				
7	Bao'en Temple (报恩寺)	Reign of Tang Emperor Zhongzong	Located in the south of the county. It was built during the reign of Emperor Zhongzong in the Tang to pray for Prince Yide. In the mid-Yuan period, it was given the name of Daxingguo Bao'en Temple (大兴国报恩寺), which was changed to Bao'en Temple (报恩寺) in the Ming. The building was rebuilt in the second year of the Hongzhi period in the Ming.	The Historical Atlas of Xi'an (《西安历史地图集》)
8	Guanyin Temple (观音寺)	Second year of the Tianbao period in the Tang	Located in Guangji Alley of the Xian city area. It was rebuilt in the fifteenth year of Zhengde period in the Ming.	The Historical Atlas of Xi'an (《西安历史地图集》)
9	West Kaifu Temple (西开福寺)	Yuan	Located in the Hanguang Fang of the Xian city area. It was rebuilt during the reign of Ming Emperor Jiajing and in the first year of the Wanli period in the Ming, respectively.	The Historical Atlas of Xi'an (《西安历史地图集》)
10	Kaiyuan Temple (开元寺)	Fourth year of the Kaiyuan period in the Tang	Located in the east of Xian city area. There was a Xuanzong Imperial Pagoda (玄宗御塔) in the Back Hall.	Ming—Wanli 39th year “Shaanxi General Records” (明万历三十九年·《陕西通志》)
11	Baoqing Temple (宝庆寺)	Reign of Sui Emperor Wen	Located in the southeast of Xian city area (Shuyuan Gate). Only the Five-color Pagoda (五色塔) was built in the Ming.	Ming—Wanli 39th year “Shaanxi General Records” (明万历三十九年·《陕西通志》)
12	Huata Temple (花塔寺)	Unknown	Located in the southeast of the Xian city area. It was known as Huata Temple (华塔寺) in the Qing.	The Historical Atlas of Xi'an (《西安历史地图集》)
13	Xiangcheng Temple (香城寺)	Jin	Located in the southeast of the city. It was known as Guangfu Zen Temple (广福禅院) in the Later Zhou and was given the name of Xiangcheng Temple (香城寺) during the reign of Song Emperor Renzong. It underwent several periods of construction in the Yuan.	The Historical Atlas of Xi'an (《西安历史地图集》)
14	Wolong Temple (卧龙寺)	During the reign of Han Emperor Ling	Located in the north side of the Confucious Temple which is in the southeast of the city. Originally given the name of Guanyin Temple (观音寺), which was changed to Wolong Temple (卧龙寺) in the Song. It was rebuilt in the sixteenth year of Zhengde period in the Ming.	The Historical Atlas of Xi'an (《西安历史地图集》)
15	Qingliang Temple (清凉寺)	Unknown	Located in the southeast of the city.	The Historical Atlas of Xi'an (《西安历史地图集》)
16	Xinglong Temple (兴龙寺)	Han	Located in Xiaoyi Li.	The Historical Atlas of Xi'an (《西安历史地图集》)
17	Erlong Temple (二龙寺)	Song	Located in Yongning Fang.	The Historical Atlas of Xi'an (《西安历史地图集》)
18	Yuantong Temple (圆通寺)	Eleventh year of the Zhizheng period in the Yuan	Located in Eastern Outer City.	The Historical Atlas of Xi'an (《西安历史地图集》)
19	Wuji Temple (无极寺)	Unknown		The Historical Atlas of Xi'an (《西安历史地图集》)
20	Hongfu Temple (洪福寺)	Eighth year of the Zhenguan period in the Tang	Located in the Eastern Outer City. It was built as Hongfu Temple (弘福寺) under the order of Tang Emperor Taizong to pray for Empress Mu and was renamed Xingfu Temple (兴福寺) during the Shenlong period. In the fourth year of the Dading period in the Jin, the name was changed to Hongfu Temple (洪福寺). It was rebuilt in the second year of the Hongwu period in the Ming.	The Historical Atlas of Xi'an (《西安历史地图集》)

Table A1. Cont.

NO.	Name	Dynasties of Construction	Descriptions	References
Ming				
21	Wangji Temple (岡极寺)	First year of the Shenlong period in the Tang	Located outside the Eastern Gate and inside the Yingxuan Gate.	The Historical Atlas of Xi'an (《西安历史地图集》)
22	Anguo Temple (安国寺)	First year of the Jingyun period in the Tang	Located inside the Yingxuan Gate. It was originally used as the residence of Tang Emperor Ruizong.	The Historical Atlas of Xi'an (《西安历史地图集》)
Qing				
1	GuangRen Lama Temple (广仁寺)	Forty-fourth year of the Kangxi period in the Qing	Located beside the drill ground of Xihe Garden. It was built by order of Qing Emperor Shengzu in the forty-fourth year of the Kangxi period. The text "Compassion like clouds, sheltering the West"(慈云西荫) on the four-character plaque was written by the emperor and then engraved on a tablet during the emperor's travel to the west.	Yongzheng "Shaanxi General Records" (雍正《陕西通志》)
2	Shuiyue Nunnery (水月庵)	Unknown	Located in the west of the city. It is a Buddhist nunnery.	The Historical Atlas of Xi'an (《西安历史地图集》)
3	Bodhisattva Temple (菩萨庙)	Unknown	Located in the vicinity of Longevity Palace (万寿宫) in the northwest of the city.	The Historical Atlas of Xi'an (《西安历史地图集》)
4	Yonghe Nunnery (永和庵)	Unknown	Located in the west of the city. It is a Buddhist nunnery.	The Historical Atlas of Xi'an (《西安历史地图集》)
5	Hongji Temple (宏济庵)	Unknown	Located in the west of the city.	The Historical Atlas of Xi'an (《西安历史地图集》)
6	Lotus Pond Temple (莲池寺)	Eighth year of the Chongzhen period in the Ming	Located in the vicinity of the lotus pond in the northwest of Xian city area. It was a tourist attraction for nobles in the Ming.	Yongzheng "Shaanxi General Records" of the Yongzheng Period (雍正《陕西通志》)
7	Rushi Temple (如是庵)	Unknown	Located in the west of the city.	The Historical Atlas of Xi'an (《西安历史地图集》)
8	Yuanjue Temple (圆觉寺)	Second year of the Yongle period in the Ming	Located north of the government office in the Ming. It was rebuilt in the tenth year of Shunzhi period in the Qing.	Yongzheng "Shaanxi General Records" of the Yongzheng Period (雍正《陕西通志》)
9	West Wutai Temple (西五台寺)	Song	Located in the northwest corner of the city, its building pedestals were first built in the Tang. The building was constructed in the Song and rebuilt in the Ming.	Yongzheng "Shaanxi General Records" of the Yongzheng Period (雍正《陕西通志》)
10	Anzhong Temple (安众寺)	Song	Located in the northwest of Xian city area. Originally the residence of Kou Zhun in the Song, it was later transformed into a Buddhist temple.	Yongzheng "Shaanxi General Records" of the Yongzheng Period (雍正《陕西通志》)
11	Sleeping Buddha Hall (睡佛殿)	First year of Shunzhi period in the Qing	Located in West Wutai Xiangmi Garden.	Yongzheng "Shaanxi General Records" of the Yongzheng Period (雍正《陕西通志》)
12	Shanqing Temple (善庆寺)	Unknown	Located west of the imperial city.	The Historical Atlas of Xi'an (《西安历史地图集》)
13	Yuantong Temple (圆通庵)	Unknown	Located in the imperial city.	The Historical Atlas of Xi'an (《西安历史地图集》)
14	Jile Temple (极乐庵)	Unknown	Located in the imperial city.	The Historical Atlas of Xi'an (《西安历史地图集》)
15	Hongqing Temple (宏庆庵)	Unknown	Located in the imperial city.	The Historical Atlas of Xi'an (《西安历史地图集》)
16	Kaifu Temple (开福寺)	Unknown	Located in the imperial city.	The Historical Atlas of Xi'an (《西安历史地图集》)
17	Ciyun Temple (慈云庵)	Unknown	Located in the northeast corner of the imperial city.	The Historical Atlas of Xi'an (《西安历史地图集》)

Table A1. Cont.

NO.	Name	Dynasties of Construction	Descriptions	References
			Qing	
18	Huazang Temple (华藏寺)	Ninth year of the Tianbao period in the Tang	Located in Dexin Alley. It was given the name of Baoshou Temple (保寿寺) in the Tang, which was changed into Huazang Temple (华藏寺) because Monk Xingfang wrote his Sutra here.	Yongzheng “Shaanxi General Records” of the Yongzheng Period (雍正《陕西通志》)
19	Xiemo Temple (蝎魔寺)	Ming	Located south of the imperial city.	The Historical Atlas of Xi’an (《西安历史地图集》)
20	Ciyun Temple (慈云庵)	Unknown	Located southeast of the imperial city.	The Historical Atlas of Xi’an (《西安历史地图集》)
21	Guanyin Temple (观音庵)	Unknown	Located in the imperial city.	The Historical Atlas of Xi’an (《西安历史地图集》)
22	Bao’en Temple (报恩寺)	Reign of Tang Emperor Zhongzong	Located in the south of the county. It was built during the reign of Emperor Zhongzong in the Tang to pray for Prince Yide. In the mid-Yuan period, it was given the name of Daxingguo Bao’en Temple (大兴国报恩寺), which was changed to Bao’en Temple (报恩寺) in the Ming. The building was rebuilt in the second year of the Hongzhi period in the Ming.	Yongzheng “Shaanxi General Records” of the Yongzheng Period (雍正《陕西通志》)
23	Wanqing Temple (万清寺)	Thirty-fifth year of the Kangxi period in the Qing	Located in Shuichi Alley.	Yongzheng “Shaanxi General Records” of the Yongzheng Period (雍正《陕西通志》)
24	Guanyin Temple (观音寺)	The second year of the Tianbao period in the Tang	Located in Guangji Fang of Xian city area. It was rebuilt in the fifteenth year of Zhengde period in the Ming.	Yongzheng “Shaanxi General Records” of the Yongzheng Period (雍正《陕西通志》)
25	West Kaifu Temple (西开福寺)	Song	Located in Hanguang Alley of Xian city area. It was rebuilt during the reign of Ming Emperor Jiajing and then in the first year of the Wanli period in the Ming.	Yongzheng “Shaanxi General Records” of the Yongzheng Period (雍正《陕西通志》)
26	Kaiyuan Temple (开元寺)	Kaiyuan period in the Tang	Located in the east of the county. It was rebuilt in the fourth year of the Jianlong period in the Song, the twelfth year of Jiajing period in the Ming, and the thirtieth year of the Kangxi period in the Qing.	Yongzheng “Shaanxi General Records” of the Yongzheng Period (雍正《陕西通志》)
27	Huata Temple (华塔寺)	Unknown	Located in the southeast of the city.	The Historical Atlas of Xi’an (《西安历史地图集》)
28	Xiangcheng Temple (香城寺)	Jin	Located beside the government bank of the city, it was known as Guangfu Zen Temple (广福禅院) in the Later Zhou and was given the name of Xiangcheng Temple (香城寺) during the reign of Song Emperor Renzong. It underwent several periods of construction in the Yuan.	Yongzheng “Shaanxi General Records” of the Yongzheng Period (雍正《陕西通志》)
29	Wolong Temple (卧龙寺)	Reign of Han Emperor Ling	Located on the north side of the Confucious Temple, in the southeast of the city. Originally given the name of Guanyin Temple (观音寺), it was changed to Wolong Temple (卧龙寺) in the Song. It was rebuilt in the sixteenth year of Zhengde period in the Ming.	Yongzheng “Shaanxi General Records” of the Yongzheng Period (雍正《陕西通志》)
30	Xinglong Temple (兴龙寺)	Han	Located in the Xiaoyi Alley.	Yongzheng “Shaanxi General Records” of the Yongzheng Period (雍正《陕西通志》)
31	Fushou Temple (福寿寺)	Unknown	Located in the southeast of the city, near the southern city.	The Historical Atlas of Xi’an (《西安历史地图集》)

Table A1. Cont.

NO.	Name	Dynasties of Construction	Descriptions	References
Qing				
32	Qingliang Temple (清凉寺)	Second year of Dading period in Jin	Located in the south of the city. It was adjacent to the southern city.	Yongzheng “Shaanxi General Records” of the Yongzheng Period (雍正《陕西通志》)
33	Guanghui Temple (广惠寺)	Unknown	Located in the southern city.	The Historical Atlas of Xi’an (《西安历史地图集》)
34	Baoqing Temple (宝庆寺)	Renshou period in the Sui	Located in Anren Fang (Shuyuan Gate). It was rebuilt in the second year of Jingtai period in the Ming and then the first year of the Yongzheng period in the Qing.	Yongzheng “Shaanxi General Records” of the Yongzheng Period (雍正《陕西通志》)
35	Erlong Temple (二龙寺)	Song	Located in Yongning Alley.	Yongzheng “Shaanxi General Records” of the Yongzheng Period (雍正《陕西通志》)
36	Huguo Temple (护国寺)	Shunzhi period in the Qing	Located in the city.	Yongzheng “Shaanxi General Records” of the Yongzheng Period (雍正《陕西通志》)
37	Jile Temple (极乐庵)	Unknown	Located in the Northern Outer City.	The Historical Atlas of Xi’an (《西安历史地图集》)
38	Anqing Temple (安庆寺)	Tang	Located in the Western Outer City.	Yongzheng “Shaanxi General Records” of the Yongzheng Period (雍正《陕西通志》)
39	Hongshen Temple (洪神寺)	Unknown	Located in the Western Outer City.	The Historical Atlas of Xi’an (《西安历史地图集》)
40	Hongfu Temple (洪福寺)	Eighth year of the Zhenguan period in the Tang	Located in the Eastern Outer City. It was built as Hongfu Temple (弘福寺) under the order of Tang Emperor Taizong to pray for Empress Mu and was renamed Xingfu Temple (兴福寺) during the Shenlong period. In the fourth year of Dading period in the Jin, the name was changed to Hongfu Temple (洪福寺). It was rebuilt in the second year of the Hongwu period in the Ming.	Yongzheng “Shaanxi General Records” of the Yongzheng Period (雍正《陕西通志》)
41	Yuantong Temple (圆通寺)	Eleventh year of the Zhizheng period in the Yuan	Located in he Jinhua Fang in the eastern suburbs. It was rebuilt in the fifty-third year of Kangxi period in the Qing.	Yongzheng “Shaanxi General Records” of the Yongzheng Period (雍正《陕西通志》)
42	Wangji Temple (罔极寺)	First year of the Shenlong period in the Tang	Located outside the Eastern Gate and inside the Yingxuan Gate.	Yongzheng “Shaanxi General Records” of the Yongzheng Period (雍正《陕西通志》)
43	Wanling Temple (万灵庵)	Unknown	Located in the East Outer Dity and close to the Eastern Gate.	The Historical Atlas of Xi’an (《西安历史地图集》)
44	Anguo Temple (安国寺)	First year of the Jingyun period in the Tang	Located inside the Yingxuan Gate. It was originally used as the residence of Tang Emperor Ruizong.	Yongzheng “Shaanxi General Records” of the Yongzheng Period (雍正《陕西通志》)

Notes

- ¹ The Convention mainly defines cultural and natural heritage and the national protection and international protection measures for cultural and natural heritage.
- ² China’s Code of the Conservation Planning for Historical and Cultural Cities is designed to protect the historical and cultural city, coordinate its protection and construction development, and propose protection measures as the main content for the special planning design in urban planning. It is updated in real-time, with the most recent version for Xi’an City updated in 2018.

- ³ Ci'en Temple was built in the twenty-second year of Emperor Taizong of the Tang Dynasty (648, 唐太宗贞观二十二年). The monk Xuanzang once presided over the monastery and used it as a Buddhist scripture translation site.
- ⁴ Jianfu Temple was built in the first year of Emperor Ruizong of Tang (684, 唐睿宗文明元年). It was one of the most famous Buddhist monasteries in Chang'an City of the Tang Dynasty.
- ⁵ Dayan Pagoda was located in the Ci'en Temple. In the third year of Yong Hui of Tang Dynasty (652, 唐永徽三年), Xuan Zang presided over the construction of Dayan Pagoda to preserve the sutra scrolls and Buddha statues brought back to Chang'an from Tintu (an ancient Chinese generic term for present-day India) through the Silk Road.
- ⁶ The sects were different approaches to the pursuit of a common purpose in Buddhist culture.
- ⁷ The Five Period (907–960) was not a particular dynasty but a special historical period between the Tang and Song dynasties.
- ⁸ A religious practice that originated in China's homeland, Daoism had a profound impact on ancient Chinese politics, economy, and culture. Daoism was one of the three spiritual pillars—the others being Buddhism and Confucianism—of the ruling class.
- ⁹ Qiansi Warehouse was the most important granary in the Fengyuanlu (奉元路) City.
- ¹⁰ Changping Warehouse and Yongfeng Warehouse were the most important granaries in Ming and Qing Xi'an City.
- ¹¹ Liwen office was the institution responsible for handling judicial affairs in the Yuan dynasty.
- ¹² Wenjin situation was the agency responsible for managing textiles in the Yuan dynasty.
- ¹³ Eight Banners Drill Ground was where the Manchu military soldiers would drill and review.
- ¹⁴ Man City was set up in Qing Xi'an City by the Qing rulers to strengthen the management of the northwest region. It was exclusively for the Manchu rulers to live and work.

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