

# Rituals, Stories and Confucian Classics

## The Construction of Eastern Capital Luo in Zhou Dynasty

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**Keywords:** Urban Emergence, Rituals, Confucian Classics, Technological History, Urban Systems.

**Abstract:** Although many cities had already emerged and existed, the Eastern Capital City Luo (洛邑, *built in the 11th century B.C.*) of the Western Zhou Dynasty (c.11th century- 771 B.C) in ancient China was one of the earliest cities with detailed historical writings of its emergence and construction. This article will explain this ideal urban morphology of a foursquare city, city location of the “center” of the land and the world, and urban systems of numerous rank orders not only by the planning ideology, but by analyzing the “scientific” and “technological” rituals and stories written and explained repeatedly by later Confucian scholars with their progressive knowledge of geography, astronomy, technologies, economics and politics. With a criticism of Confucian scholar’s knowledge system, I would argue that numerous Confucian explanations had reconstituted the history and urban morphology ideal about traditional Chinese urban morphology of the capital city and I would distinguish the ideologies, discourses and history of the original urban forms in this article.

### 1. Introduction

Although many cities had already emerged and existed, the Eastern Capital City Luo (洛邑, *built in the 11th century B.C.*) of the Western Zhou Dynasty (西周, *c.11th century- 771 B.C*) in ancient China was one of the earliest cities with relatively detailed historical writings of its emergence and construction. As many examples told by Joseph Rykwert in his book *The Idea of A Town*, the story or history of constructions of Luo, which were always related to an ideal urban morphology of ancient China, also took some rituals and ceremonies before the construction. The emergence of cities including the capital city at that time is closely related to the system of royal and military power, marking a systematization of civilization and the political orders around Shang to Zhou Dynasties.

*Zhou Li* (周礼, *The Rites of Zhou*) is one of the earliest documents that reflect the primitive political thought including ideas of the cities and their system,<sup>1</sup> which were also discussed

1. Although the scholars’ research on dating the completion of *Zhou Li* and *Kao Gong Ji* is still inconclusive, whose possible time ranges from Western Zhou Dynasty to Han Dynasty, we can judge from the archaeological materials and the literature to say that *Kao Gong Ji* failed to become a powerful model for guiding the construction of cities of Zhou Dynasty regardless of the completion time and it was not a real reflection of the construction of the city Luo.

briefly in Rykwert's book. The first sentence of the book and of each chapter said: "When the king establishes the capital, exact orientations should be determined, the urban and rural areas should be well planned, the official systems should be set up and people is foremost important". Two passages about "Craftsmen's Construction of the Capital" in *Kao Gong Ji (Book of Diverse Crafts, the sixth and the last chapter of Zhou Li)* respectively reflect the rules of the craftsmen to build cities and the ideal layout of the kingdom capital. The text is extracted as follows:

To build the capital city, the craftsmen would first measure a flat piece of land with water-level measuring tools, and then erect a surveyor's pole vertically to observe the shadow of the sun. Record the shadow at sunrise, at sunset and at noon, observe the North Star at night, and then determine the exact orientation of the north, south, east, west.

The capital city built by craftsmen will be a foursquare area with Nine Li (traditional Chinese mile) on each side and with three gates on each side. There would be nine north-south thoroughfares and nine east-west thoroughfares, all of which were nine tracks in width. On the left side of the palace is the ancestral temple, and on the right is the Temple of Land and Grain. In front of the palace are the royal court and behind the palace are the market, the court or market is a square of a hundred steps on each side.

This urban form was also depicted to diagrams by later Confucian scholars (Figure 1). Many contemporary scholars in archaeology, history and architecture have studied this institutional description. By comparing the documents and archaeological findings, however, we can see that the ideal concept fails to match with the reality, the strictly hierarchical system of the capital and local cities presents a different state when "the ritual collapse" (礼崩乐坏) occurred in the Eastern Zhou Dynasty (Figure 2). But this illustration is very vital at the theoretical level.

In this paper, I do not want to focus on the morphology of the city itself because many researches have already done it. Instead, I want to explore the ritual and ceremony in the construction process of the eastern capital *Luo*, which, to a certain extent, lead to the above-mentioned orthogonal urban morphology in people's mind. Although there are differences between the ideology and the reality about the urban form, the construction of *Luo* is an event mentioned in both Confucian classics and historical writings, and the event itself is truly testable. However, the specific process of this event and the method of city construction are not exact, because the early texts such as *Zhou Li* and *Shang Shu* (尚书, *The Book of History*) were very brief. These books, however, had become an orthodox Confucian Classics in the Western Han Dynasty (in the time of Emperor Wu, 156B.C.-87B.C.) and been enriched with numerous annotations by later Confucian scholars. Thus, the originally simple narrative of the activities and rituals started have more details in Confucian books of later generations since Han Dynasty. In this article, I'll focus on the concepts "the center of the land" and "the center of the world", to discuss the "scientific" and "technological" rituals to find the "central position" geologically or politically hold in the construction of the capital city, and thus to critically analyze our existing knowledge, which include the original and the derived texts of the construction activities at that time.

## 2. Rituals and Stories: Confucian Explanations of the Construction

Whether it is *The Rites of Zhou*, *The Book of History*, or *The Historic Records* (史记, *Shi Ji*), their original texts are a few words about the story or history of establishment of *Luo* at the beginning of Zhou Dynasty, which means that we only know the "event" but are not sure of the "details". This problem is also the one faced by Confucian scholars before and after the works became classics. Therefore, they constantly interpret the "deep meanings in the sublime words"

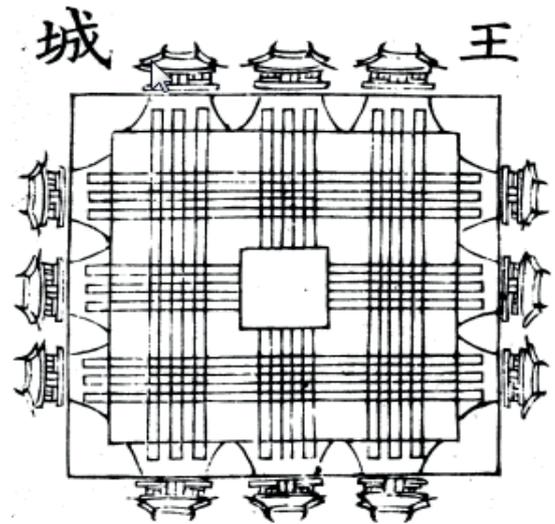


Figure 1. A Diagram of the Ideal Form of the Capital City.

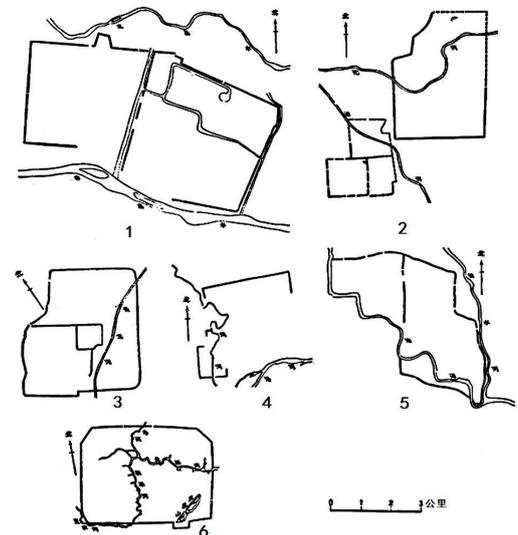


Figure 2. Several Actual Forms of Cities in Zhou Dynasties.

in the classic literature by making notes to the scriptures and annotations to those notes from one generation to another. By “stories”, however, I mean I regards those narratives may be history, may partly be or may not, which should be analyze with a critical idea.

Due to limited length I will select the annotations of three representative scholars Zheng Xuan (郑玄, 127-200), Jia Gongyan (贾公彦, 7th Century) and Jiang Yong (江永, 1681-1762) respectively in the late Western Han Dynasty, Tang Dynasty, and Qing Dynasty. With the evolution of knowledge, I want to examine how the later scholars differently interpret the same event after the related knowledge got evolved. In fact, these interpretations about finding the central position of the land has become the knowledge base we now understand. These knowledge involves relatively primitive astronomy, geography, the history of scientific thoughts and even political and cultural studies. Apart from Chinese scholars, the most well-known should be *The History of Chinese Science and Technology/ Science and Civilization in China* written by Joseph Needham, which mentions some scientific and technological questions including those occurred in urban construction process faced by ancient Chinese scholars from the perspective of the history of science. But here I want to return to the original texts written by these three scholars and analyze the intellect and knowledge background later.

The institutional text quoted above have basically outlined the basic processes and ideal forms of the early Chinese capital city. However, when the later generations of scholars interpret *Zhou Li*'s first sentence "When the king establishes the capital", they emphasized that the capital city *Luo*, established in the Zhou Dynasty, was built at "the center of land" through a series of technical methods. This original statement indeed shown in the third chapter of "the Office of The Earth" in *Zhou Li*, as it said:

Measure the land and revise the shadow with Gui (note: a kind of traditional measuring scale) to find the central position of the land... the position where the shadow on the summer solstice is one chi (note: a traditional Chinese unit like English foot) and five cun (note: a traditional Chinese unit like English inch) can be called the center of the land. It is the point where the heaven and the earth, the four seasons and various climates, Yin and Yang meet. Therefore, it is rich in natural resources, where the capital city built to control the territory of thousands faraway.

There are two problems with this text if we take it with a modern scientific view. First, it mentions the length of the shadow without telling the height of the object itself, so we cannot calculate the exact position it is; Second, it doesn't tell us the time of observation, the location may vary because the shadow varies in length over the course of a day. Since Zhou Dynasty, scholars started to explore or, I may say, hypothesize the exact method took by Zhou's people in this story. Before Han's Confucian *Zheng Xuan*, numerous scholars and Confucians had put forward their ideas of this measuring method but *Zheng Xuan* is a synthesizer of all those opinions and he've gotten high achievement in astronomy at that time. Now we put three of them all together to discuss the evolution of their perception of the event.

## 2.1. *Zheng Xuan*

According to *Zheng Xuan*'s interpretation, the method by Zhou Gong (周公, *The Duke of Zhou*) to make sure the center of the land was to erect a *Biao* (a kind of traditional Viewing Tablet) of eight feet (*chi*) high on the ground at high noon, and to record the directions of the shadow on the north, south, west and east during different times, as well as the length of the shadow as shorter or longer as the solar altitude changes with the help of *Gui* (a kind of traditional Measuring Scale) of one foot and five inches long. When the shadow faces exact north at noon on the summer solstice, and it is one foot and five inches long, just as long as the length of one *Measuring Scale*, and then the position of this *Scale* is at the center of the land. By this way, *Zheng Xuan* has pointed out that the exact noon of summer solstice will be the time of measuring, that is the time be representative among the whole year. The one-foot-and-five-inches shadow at noon is exactly the same as the length of that *Measuring Scale*, which is why *Zheng Xuan* emphasizes the relationship between the length of the shadow and the length of *Gui*. Comparing the length of the shadow with the length of the *Gui*, the principle is that the actual measurement is carried out on the ground.

*Zheng Xuan* and several of his previous scholars believed that at noon of the summer solstice, the projection of the shadow of the eight-foot tablet will coincid with the length of *Gui*. If this interpretation is translated from the point of view of modern science, then the determined noon altitude angle on the summer solstice implies a latitude, and the definition of noon time implies a longitude. At that time, however, they did not have the scientific thought of altitude and longitude but regarded the earth as a piece of square land with each side of thirty thousand miles. Under such idea, they came up with the thought that the shadow length differs one *li* when the actual distance along south-north direction differs one thousand *li* (traditional Chinese mile). Under this theory, *Zheng Xuan* can explain the latitude factor of the central position, but in fact it is not good enough

to justify the longitude problem. He even borrow the theories from Yin-Yang and Five-element Theory to explain how the central position in the east-west direction was determined.

## 2.2. Jia Gongyan

The question that Zheng Xuan has difficulties to answer got responded by Jia Gongyan in Tang Dynasty. Jia thought when Zhou Gong measured the shadow, he putted five *Biao* (*Viewing Tablets*) in five different places. The central one was placed in the area of *Luo*, the other four were placed one thousand away at the exact north, south, west and east respectively. Jia's explanation, in fact, was not what Zhou's people had done but *Zu Geng* (祖暅, 456-536), an astronomist of Southern Dynasties (420-589), which means Jia's retelling of the story owes to his own contemporary systems of knowledge.

Scholars of Southern and Northern Dynasties has already realized that the descriptions of the construction activities in the Confucian Classics is very simple and the explanation by the later Confucian scholars is not always right. Zu Geng, an astronomist of Southern Dynasties, adopted an measuring method of solar shadow with five surveyor's poles. First, put the south pole at noon according to the water clock (hourglass), then put another pole at the end of shadow of the south pole as the central one. At the midnight, locate the north pole by observing the North Star from the middle pole and then check if the three poles are in the straight line. He believes that if the three points are in a straight line at this time, then the line where it is located constitutes the correct orientation in a longitude, otherwise its position is not centered.

This method can determine the middle point in the east-west direction. The middle line in the east-west direction had been established, then the middle line in the north-south direction was determined at the spring and autumn equinox. When the sun rises in the east, set the eastern viewing pole by observing the sun from the central pole; when the sun goes down in the west, set the western viewing pole by the same way like the one above. The same with the longitude aspect, he believes that if these three points are in a straight line at this time, then the line where it is located constitutes the correct orientation in an latitude, otherwise the position of the middle pole is not centered.

The core problem of Jia's explanation, however, is that the method of measuring is first used by the astronomist of South and North Dynasties rather than the rulers of Zhou Dynasty, which means the methods are almost drawing wrong conclusions by false analogy. It's totally a retold "story" rather than the exact history reflected the fact. Like Zheng Xuan, they all put forward the time of "noon" to measure shadows. However, due to the scientific and technological concepts at that time, they did not necessarily realize that the local time in different longitude was different, but adopted the constant concept of time, believing that the noon time in different places on the earth happened at the same time. Otherwise, the difference in midday shadow length between different longitudes in the same day should be negligible.

## 3. Criticism of the Story: Jiang Yong and other Qing's Scholars

As I have just analyzed the astronomical descriptions of two representative scholars of Han and Tang dynasties, their scientific descriptions are not adequate to describe the activities of geodetic surveying, either intentionally or unintentionally. Based on modern knowledge of geography, an eight-*chi*-high object getting a one-*chi*-five-*cun* shadow at noon in the summer solstice equals to the situation happened in the latitude where the solar altitude is 78.5 degrees,

which is 35-36 degree of north latitude. The latitude and longitude of “the center of the land” was determined respectively by the solar altitude in the day of summer solstice and the local time of noon. The noon of a place is closely related to its longitude. To get a certain length of shadow, the longitude span will not be very large. Thus we can say, the center of the land determined by the astronomically technological rituals were actually determined by the ideology of Zhou’s people and this ideology is more of geography than astronomy, which is as Jiang Yong, a Confucian scholar in Qing Dynasty once said,

The so-called Center of the Land has already been known from the geographical features of the regions people lived., rather than making a one-foot-five-inch earth measuring scale first, and the place where the shadow of the summer solstice is equal to it is in the central position. Actually, the King had already decided Luo to be the location of the capital, erect the tablet with 8 feet tall, shadow grows one foot and five inches to be the shadow at the central position. The rulers regarded making the scale as a law, the data used in the measurement are conceptually determined by the King, not by the shadow.

This statement is closer to the facts at the beginning of Zhou Dynasty than the depictions of Zheng Xuan and Jia Gongyan. Especially when we draw the scope of the Chinese activities in the historical records, from the core culture scope of the *Three Emperors* and *Five Emperors* to the *Xia, Shang and Zhou* dynasties, we will find that Luoyang is indeed in the geographical center of the Chinese civilization at that time. But the more realistic issue is that Zhou people lived on the western edge of the core civilization circle. When they finally conquered the Shang Dynasty, they needed to further move the political and military forces eastward. On the other hand, they need to manage the land and people of the Shang Dynasty; on the other hand, it also inherits the central district of Xia and Shang Dynasties. Whether in the natural environment, civilized development or urban system, this area has outstanding advantages, which is convenient for strengthening political, economic and transportation links and control to other places. Therefore, choosing *Lou* to be the capital city is a very realistic choice, and not the result of finding central position of the land, the ceremonies of all kinds of measurements are largely not historical facts.

However, when we’ve done criticism to the depictions of scholars of Han and Tang dynasties based on their knowledge systems, our further question is what kind of rituals and activities took place before the construction of the city *Luo*.

#### 4. Rituals and History Legalization of the Construction of the Capital City

This section will focus on the original historical narrative of the construction of *Luo* by the rulers of *Zhou* Dynasty. I will first sort out the text of the earliest narrative from *He Zun* inscriptions (何尊铭文), *Shang Shu* (《尚书》) to *The Historical Records* (《史记》) in the early Western Han Dynasty. *He Zun* was a bronze vessel of the early Western Zhou Dynasty, which was made by an aristocrat named *He* in the early Western Zhou Dynasty. The inscription on the inner side of the bronze ware said:

In April of the fifth year of the King Cheng of Zhou, the King began to build a capital city in Cheng Zhou (Luo)... After the King defeat the Shang, he said to the heaven, “I live in the central nation and thus rule the people”.

The book *Shang Shu* is a collection of the earliest historical documents with high degree of credibility, which include 28 documents retold by Dr. Fusheng in the early years of Han Dy-

nasty after the book burnt by First Emperor of Qin. There are three documents related to the events of Luo's construction, which can be simply cited as follow:

Zhao Gao (An Admonition to Zhao): It was February, Zhao Gong (the Duke of Zhao) went to the area of Luo to inspect the construction site before Zhou Gong. He led many Shang people to determine the location of the new capital at the confluence of the Luo River and the Yellow River. When Zhou Gong arrived, he sacrificed two oxen to the god in the southern suburbs. And the other day a sacrificial ceremony with an ox, a sheep, and a pig was held in the new city. On the seventh day, Zhou Gong ordered the people of the former Shang Dynasty to build Luo.

Kang Gao (An Admonition to Kang): It was March, Zhou Gong (the Duke of Zhou) held the foundation ceremony of a new capital at the eastern nation, and people from all directions attended the event, who all express the willingness to obey the management of the Zhou Dynasty.

Luo Gao (An Admonition in Luo): Zhou Gong said to the King: "I arrived at Luo in the morning and then did divination in several different areas around, Luo is the most auspicious place".

The above cited documents are relatively primitive documents formed in the *Zhou* Dynasty or little later. Through these more primitive texts, it can be known that the main activities before the urban construction activities were the senior officials of the two Duke levels, including Zhaogong and Zhougong, who came to the site to inspect, measure, divination, sacrifice, sacrifice, especially divination and sacrifice. It is very ceremonial and is considered to be an activity that communicates with God, obtaining the legitimacy of construction activities. What is more noteworthy is that the above-mentioned many texts are not only in the literature and historical sense, but also have a very strong ritual nature. In particular, the admonitions I quoted not only provide us with core historical information, but more importantly, the text itself is preached and taught in the process of building a city as a propaganda and education, that ceremony also played an important role at that time.

Finally, the above ordinary Confucian literatures had become the classics of Confucianism after the Emperor Wu of the Han Dynasty, and they were the focus of scholars of later generations. It was also during the period of Emperor Wu of the Han Dynasty that an important his-



Figure 3. He Zun, a Ritual Wine Vessel and Its Inscription.

torical work *“Historical Records”* concisely retell the history of the construction of *Luo* at Zhou Dynasty on the basis of previous literature:

The King Cheng lived in Feng and ask Zhao Gong to rebuild the city Luo to obey the former King Wu's wishes. Zhou Gong re-divinated, made field investigation, and finally completed the construction. He said: This is the center of the world. It is almost the same for people from all directions to come here paying tribute.

In this narrative, the concept of “the center of the land”(地中) has become “the center of the world”(天下之中), which is not only a simply literary change but actually a political transform in the ideology.

## 5. Conclusion

How to find out “the center of the land”, the two Confucian scholars of Zheng Xuan and Jia Gongyan have made a lot of efforts to explain the classical words of “*the position where the shadow on the summer solstice is one foot and five inches can be called the center of the land* “. Of course, in the respect of the scriptures, they tried to restore a kind of technically “geometric” activity from the limited narrative of the Confucian Classics, which try to make people believe that what was originally used as a concept and discourse by Zhou Gong was actually the fact and “the central position” was actually measured by rigorous technical measurements.

Compared with scholars in Han and Tang Dynasties, the discussion of Confucian Classics in the Qing Dynasty is more in line with the actual situation of the construction of *Luo*. Qing scholars said directly “the center of the land is actually the center of territory and the politics of power”. This statement solved the problem, especially in astronomical and geological aspects, previous scholars faced, wiped off the embellishment of scientific and technological activity, and touched directly the core issue of system of enfeoffment. Therefore, this series of activities is very ritualistic, no matter it is the story of measurement of the land and the earth told by later generations of Confucian scholars, or the history of investigation, divination and sacrifice that actually took place at that time. To a large extent, it is a ritual of legalization and propaganda of existing concepts and decisions. During the process, the idea of “the center of the land” started to change into “the center of the world”, which finally became a key concept in traditional Chinese politics and urban morphology of the capital city.

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