

The Structure of the Central Axis in Some Chinese Historical Cities and the Form of City

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The structure of central axis had been a important characteristic of many Chinese cities in historical time. The structures of the central axes of some ancient capitals were involved by some scholars. Especial the structure of central axis of the capital city Beijing in Ming and Qing dynasty was discussed by professor Hou Renzhi. In recent years the author investigated some ancient cities and the sites and ruins of some ancient cities, and furthermore recognize that the structure of central axis had been the universality in ancient Chinese cities, and also recognized that the structure of central axis had a forming and developing process in real city planning and idea and that the structure of central axis showed variety with the diversity of natural environment and human condition and made the urban morphology displaying variety. This paper tries to discuss the formation of the idea of the structure of central axis and the cause of its variety.

1. The idea of the structure of central axis

It is commonly considered that the idea of the structure of the central axis was first clearly put out by <Zhou Li · Kao Gong Ji> (a paper about the rulers of many sorts of engineering including how to plan the layout of capital city) in those words: “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。”

<Kao Gong Ji> was add to the book <Zhou Li> (a book about the all of the official positions in Zhou Dynasty) under the item “winter’s office” But in China there have been existed some different opinions on the time of <Zhou Li> and <Kao Gong Ji> accomplished. One has insisted that <Zhou Li> and <Kao Gong Ji> were written by the premier Zhou Gong in the beginning of Zhou Dynasty. And the other has considered that <Zhou Li> and <Kao Gong Ji> were written by the Confucian in Han Dynasty. But the third opinion considered that <Zhou Li> and <Kao Gong Ji> was written in the period of “Fighting Kingdoms” (战国时期, or Warring States). The discusses by following three authors have been representative and summarizing opinions on the time of <Zhou Li> and <Kao Gong Ji>.

Jia Gongyan who lived in Tang Dynasty considered: “<Zhou Li> had been

considered as the conspired book written by “six kingdoms” in the period of Fighting Kingdoms. And only Zheng Xuan, reading a lot of books, so could know that <Zhou Li> was written by Zhou Gong for creating a condition of peace and tranquility.”¹

Lin Xiyi who lived in Song Dynasty considered: “<Kao Gong Ji> was added into the book <Zhou Li> by the Confucian in Han Dynasty. However its character looks more ancient, so it must be written in the period of “Fighting Kingdoms,” such as those ancient books <Xiao Dai · Tan Gong> (<小戴 · 檀弓>), <Gong Yang Zhuan> (<公羊传>), <Gu Liang Zhuan> (<穀梁传>), <Chun Qiu Zhuan> (<春秋传>) for these books were hard to read and understand, but the book written in Han Dynasty could be read and understand more easily. In Han Dynasty, the government and the officers collected more old books with gold and silk cloth, and many “so call ancient books” were counterfeit. But the character of <Kao Gong Ji> (《考工记》) could be counterfeited by the scholars in Han Dynasty. <Kao Gong Ji> recorded not only the system in Zhou Dynasty, but also contained a lot of engineering in more ancient time.”²

And the chief editors of <Si Ku Quan Shu> (《四库全书》) who lived in Qing Dynasty considered: “The book <Zhou Li> (《周礼》) was dedicated by the king Xian who lived in Hejian to the emperor, this book was the last one to be found in the classical books, so there have been many different opinions on whether it was counterfeited. But on the layout of the capital <Kao Gong Ji> was different from <Zhao Gao> (<召诰>) and <Luo Gao> (<洛诰>) ---Before the capital was moved to east to Luo Yang, the Western Zhou came through about 300 years, its official system and statute were modified for many times. In the beginning of Zhou Dynasty it was not a long time from the king Cheng and Kang, the old regulations were modified only a little, and modifier was not entirely Zhou Gong. And it also could be modified and added in later time. ---So it was not written by Zhou Gong without doubt? However there was a fact that the <Southern Qi book> (《南齐书》) recorded that when the prince Wen Hui held the post of the chief in Yong Zhou (State), a thief dug the tomb of Chu king and got over ten pieces of bamboo tablets organized together with silk and showed to Wang Shengqian who was a intellectual man, and Shengqian said that the character on those bamboo tablet were very old and recorded the content of <Kao Gong Ji>, so it was clear that <Kao Gong Ji> had existed before Qin Dynasty.”³

From the time of Later Han Dynasty, some scholars wrote the book to explain <Kao Gong Ji> and denominated their book as <San Li Tu> (《三礼图》, three ceremonies

1 汉·郑玄注, 唐·贾公彦疏, 清·吴绂等考证, 《周礼注疏·序周礼废兴·贾公彦》, 《四库全书》本。

2 宋·林希逸撰《虞斋考工记解》, 《四库全书》本。

3 汉·郑玄注, 唐·贾公彦疏, 清·吴绂等考证, 《周礼注疏》, 《四库全书》本《提要》。

charts). The earliest version of <San Li Tu> was written by Zheng Xuan who was famous Confucian scholar. And down to Song Dynasty there were more than 8 scholars who wrote the same name book <San Li Tu>. They made approximately the same explanation on the rules of the layout of the capital in <Kao Gong Ji>. All of them made the explanation that the king palace should be in the center of the capital city, She Ji (社稷, the place offering the oblation to the land god and grain god who protect the country and the power of the emperor) should be in right, and the temple offering the oblation to the ancestors of emperor should be in the left, and the court should be in the front of king palace, and the commercial market and the dwelling for common people should be in the north of the king palace. And there were three gates on each side of capital city, there were three path from each gate to the inner part of the city, and the center of them was especially used for the emperor, and other two path were used for the officials and common people. And the idea of the layout of capital city in <Kao Gong Ji> was drawn in map by later book <Henan Zhi> (《河南志》 the book about the history and geography of Henan province)⁴. Some scholars considered that the King City in Luo Yang built in the beginning of western Zhou Dynasty was planned by Zhou Gong according to the idea model in <Kao Gong Ji>.

Although based on having done archaeological researches, there was not any evidence to prove that the King City in Luo Yang in Western Zhou Dynasty was planned according to the idea in <Kao Gong Ji> (《考工记》). However the examples of the settlements and cities displaying the structure of central axis had existed already before <Kao Gong Ji> was finished.

Some researchers pointed out that the Jiang Zhai site (a settlement site) in Lintong, Shanxi province in New Stone Age in the time of Yang Shao Culture and the sites of some later cities in Xia and Shang Dynasties display the evidence of structure of central axis in some extent. But well preserved and more clear and earliest structure of central axis is the San Xing Dui site in the north of Cheng Du city, Sichuan province.

San Xing Dui (three star mounds) site is located in the northern end of Cheng Du plain. It is a site of ancient city. There are survived some fragments of the west, south and east walls of the ancient city now. There is a river in its north. This ancient city displays a irregular square shape. Its acreage is about 3 km². There are four higher clay mounds in the inner of this site and they were arranged along the central axis of the city. And this central axis deflects little to the south-west. There were found many excellent cultural relics along the central axis. Near the mound in the most south-western end of the central

4 《元河南志》，《永乐大典》卷9561引，《考古学报》，1959年2期。

axis there were found two earth holes in which were found a lot of bronze masks and bronze head portraits in peculiar sculpt, and bronze portraits, bronze animal face portraits, the sculptures of bronze animal sculpt in a great quantity and in different sculpt, and a “bronze God tree,” a golden staff and a lot of ivories. According to these relics, this ancient city existed from the later Shang Dynasty to the earlier Zhou dynasty about from 1200 to 800 BC. And near the two mounds in the center of the ancient city, there were found excellent jade articles used for sacrificing. And on the mound in the north-eastern end of central axis there were found many unprocessed Jadeites as the original materials for carving, and some individuals of them are heft over than 1 ton. According to these material jade found near the two mounds in the center part of central axis, this mound could be considered as the location of processing jade. And the two mounds in the center of the ancient city could be the location of palace (archaeologist are searching the evidence of palace existed here). This ancient city is considered as the capital of ancient Shu kingdom controlling today’s Sichuan province. The culture of ancient Shu kingdom had its own characteristics and was different from the culture of Xia and Shang dynasties in the basin of Yellow River, however it had close relationship with the culture of Xia and Shang dynasties and was deeply influenced by later.

Above-mentioned example of San Xing Dui site having the structure of central axis indicates that the idea of the structure of central axis had existed already before <Kao Gong Ji> was finished. But there are some differences between the structure of central axis of San Xing Dui site and the model in <Kao Gong Ji>. These differences mean that the idea of the structure of central axis in <Kao Gong Ji> must have undergone continuous development. From Xia and Shang Dynasties, especially in Zhou Dynasty, some rules of the idea of the structure of central axis had been put out. And these rules might have established the base for gestating of the idea in <Kao Gong Ji>. And in the time of Chun Qiu, the thought “to set up the center for establishing the rules of morality” in the book <Guan Zi> (《管子》) fully affirm the value and importance of the idea of central axis in forming of ceremony and morality: “the politics is to establish the morality. Its responsibility is to establish the gradation of everything. The saint advocates the morals and set up the center for establishing morality and furthermore for controlling the country.” And also in other words: “the propriety is to establish the rules of people action. The wisdom could create the propriety, and could not establish the rules of people action without propriety.” (<Guan Zi · Wu Zheng>, 《管子 · 五正》) So we could conjecture that ancient wisdom advocated the structure of central axis not only for the idea of the layout, but also for deep value of culture and morals, i.e. the idea of the structure of central axis as the embodiment of Confucianism, namely to establish the emperor as the center of whole

country and to take this idea as the thought of legitimacy for the criterion of people's thought and action.

The etiquette's system in Zhou Dynasty was abolished in a great extent in the period of fighting kingdoms and especially in Qin Dynasty. And the idea of the structure of central axis as a part of Confucianism also befell the same fate as the etiquette's system. Only in middle age of Han Dynasty when the emperor Wu was in his seat, "only Confucianism was respected, and all of other thought genre were rejected." And the Confucianism took the dominant position, so the thought of the structure of central axis obtained developing and formed systematic and perfect idea at last, and was reflected in the paper <Kao Gong Ji>. The author will discuss the developing of the idea of the structure of central axis by analyzing the layout of the capital Xian Yang in Qin Dynasty and the capital Chang An in Han Dynasty in next section.

2. The structure of the central axis of the historical Chinese capitals and its changes-from gestating to maturing

2.1 The capitals in Qin and Han dynasties gestated the idea of structure of central axis

Although the actual structure of central axis was clearly displayed in San Xing Dui site built in 1200 BC, but the ceremonies in Xia and Shang and especially Zhou dynasty were abolished in "the period of Fighting Kingdoms" and especially in Qin dynasty. It was said that the ceremonies established in Xia, Shang and Zhou dynasties were greatly abolished by Qin dynasty⁵. So some thoughts of the structure of central axis established in constructing the cities in Xia, Shang and Zhou dynasties and in 《管子·五正》 had been retrograded. And in other hand the capital Xian Yang in Qin dynasty and the capital Chang An in Han dynasty were not constructed by prior unify planning, but constructed gradually and successively. So these two cities had not the structure of central axis.

Some researches consider that The capital Xian Yang in Qin dynasty and the capital Chang An in Han dynasty already displayed the structure of central axis. But the author could not agree with this opinion.

The capital Xian Yang in Qin dynasty was consisted of two parts. Its main part was located in the north of Wei River consisted of the group of many palaces. And the another part was located in the south of Wei River and consisted of A Fang Gong and other palaces. The group of the palaces in the north of Wei River were built in different time. And the group of the palaces in the south of Wei River were also built in different time

5 宋林希逸撰《虞斋考工记解》，《四库全书》本。

and later than those in the north. The first palace in the south of Wei River was built in 27th year the first emperor Qin Shi Huang in his emperor seat and called as Xin Palace and renamed later as Pole Temple “emblemizing the Haven Pole” and “constructed the road from Pole Temple to Li Mount, and also constructed Gan Quan (Sweet Spring) Front Palace, and constructed a road to the group of palaces in the north of Wei River.” And in 35th year Qin Shi Huang in his emperor seat “constructed the Chao Palace group (the Court Palace group) in the huge garden Shang Lin Yuan in the south of Wei River, the first of this palace group was the front palace and called A Fang Gong.”(《史记》卷六《秦始皇本纪》) But the A Fang Gong did not finished till the perdition of Qin dynasty. So the capital Xian Yang was not constructed by prior unify planning. Because it is not clear that the layout of the capital Xian Yang in Qin dynasty was, and according to present research on the site of ancient Xian Yang by archaeologist, it could not say that the capital Xian Yang displayed clear structure of central axis.

Some scholars consider that the words recorded by Si Ma Qian in his famous writing <Shi Ji> Vol.6 <the record of Qin Shi Huang> “From A Fang Gong (A Fang Palace) to south to the top of Southern Mount. And there was double road from A Fang Palace to the north to Xian Yang across Wei River for symbolizing the road connecting the southern pole and northern pole on Haven.” (自阿房宫 “殿下直至南山之巅以为阙。为复道，自阿房渡渭，属之咸阳，以象天极阁道---”) means that there was a central axis of the capital Xian Yang. This opinion deserve be doubted. The author considers that there were two lines in the record by <Shi Ji>, one was from A Fang Gong to South Mount, and the another was from A Fang to the group of palaces in the north of Wei River, and these two lines were not arranged in the same straight line. So these two lines should not simply consider as the line of central axis. In fact, the records in <Shi Ji> 《史记》 “there was a road in the direction from the A Fang Palace to the south to the top of Southern Mount. And there was double road from A Fang Palace to the north to Xian Yang across Wei River for symbolizing the road connecting the southern pole and northern pole on Haven.” It is clear that this arrangement of these roads should be belonged to the idea of geomancy, and had no any relationship with the idea in <Kao Gong Ji> 《考工记》).

The capital city Chang An in Han dynasty was a huge city in its scale and it was also built successively. The first building was Wei Yang Gong built in 199a BC. The north gate of Wei Yang Gong was the main gate, and there was not any gate in its south side. The person who had some important things to report to the emperor must come through the north gate to the court to see the emperor. (《汉书·高祖本纪》颜师古注) It is clear that the dominate thought for this planning was the idea of geomancy, and had no any relationship with the idea in <Kao Gong Ji>. And the whole Chang An city began to

construct in 192a BC (third year Hui Emperor in his seat), and finished the construction in 189a BC (sixth year Hui Emperor (《汉书·吕太后本纪》)。

The walls on the south and north sides of Chang An city were not a straight line in irregular. It was said by a ancient book <San Fu Jiu Shi> (《三辅旧事》) that the shape of the city was “similar to the Northern Ursa.” But this comparison was entirely a eisegesis. The planer for constructing the Chang An city might not design according to the shape of “Northern Ursa,” but might design the outline of the city by considering the natural environment, especially the river. According to the record in <Shui Jing Zhu> (《水经注》), a famous ancient Chinese geographical book, there was a river along the northern outside called Xue River. It is seem to be more persuasive that the plane outline of Chang An city in Han dynasty was related with this river.

According to the facts got by archaeological investigating in the site of ancient Chang An city and the map of ancient Chang An city drawn by archaeologist⁶, there was a wide street extending in north-south direction in Chang An city in Han dynasty. Some researchers considered that this street should be considered as the line of the central axis of Chang An city in Han dynasty. But the author considers that this street should not be considered as the line of the central axis by following reason. The capital city Chang An in Han dynasty was not constructed according to prior unify planning, so whether its outline contour or its inner layout were irregular shape. And its layout was far from the idea of the capital layout in <Kao Gong Ji>. Why the structure of central axis was not planned for Chang An city, it might be related with two factors. One was restricted by natural environment. The reason that its northern wall did not extend in a straight line might be related with Xue River. Another was that the paper <Kao Gong Ji> was finished in Han dynasty by Confucian, and this thought was materialized for Confucianism. However while the Chang An city was constructing in the beginning of Han dynasty, the Confucianism could not take the controlling position. Only in the time of Han Wu emperor in his seat, the Confucianism took its controlling position at last, “to dethrone all of others schools, and only Confucian was respected” was put out in the time of Han Wu emperor in his seat.

Although Chang An city was not symmetric, and its wide street in south-north direction could not be considered as the line of central axis, but this street was approximately located in the center of Chang An city, so the author considers that it could be called as “quasi” or “para” line of central axis. The layout of Chang An city in Han dynasty indicated the idea of the structure of central axis had not matured.

6 《新中国考古发现与研究》，文物出版社，1984年，394页

However there are some points to be pay attention. One is that there were three gates on every side of Chang An city, so there were 12 gates around the whole city. The another is there were 8 streets in Chang An city, and every one of them was consisted of three paths which were paralleled each other, and the central path was used for the emperor. These designs were tallied with some rules in <Kao Gong Ji> that “匠人营国，方九里，旁三门。国中九经、九纬，经涂九轨。” The author considers that these commonness of Chang An city with the rules in <Kao Gong Ji> could explain that the rules in <Kao Gong Ji> were summarized according to the layout of Chang An city in Han dynasty.

The author considers that the capital Xian Yang in Qin dynasty and the capital city Chang An in Han dynasty gestated the idea of the structure of central axis in <Kao Gong Ji>.

2.2 Analysis of the character of the layout on the structure of central axis for the capital city Ye in Cao Wei Dynasty

The layout of the capital city Ye in Cao Wei Dynasty has been considered of great significance that it began the history of the structure of central axis of the capital cities in China. The city Ye in Cao Wei Dynasty was built in 204 AD, later it had continuously been the capital in later Zhao, Ran Wei and former Yan from 204 to 370 year AD. Later a new city next the southern side of the old city was built and called Southern Ye City, and the old city was called Northern Ye city. The Southern Ye city had been the capital in Eastern Wei and Northern Qi Dynasty in the period of Northern Dynasties and the Northern Ye city also had been used in this period and both of them were abandoned in 580 year AD. This paper will discuss mainly the structure of central axis of Northern Ye city, because the archaeologist had some investigation here.

According to archaeological investigation⁷, Northern Ye city was regular oblong in its plan with longer east-west direction and shorter south-north direction. There were three “city gates” on its southern side, the gate in the center was called Zhong Yang Men (中阳门), the western gate was called Feng Yang Men (凤阳门), the eastern gate was called Guang Yang Men (广阳门). There were two gates on its northern side, one was called Guang De Men (广德门) in the center position of the northern city wall. The another gate in the northern side was called Jiu Men (廐门), and its position have not been found. There was only one city gate respectively on its eastern and western side. The eastern city gate was called Jian Chun Men (建春门) and the western city gate was called

7 中国社会科学院考古研究所、河北省文物研究所，河北临漳邺北城遗址勘探发掘简报，考古，1990年7期，595-600页

Jin Ming Men (金明门) and located in the center position of the eastern and western city wall respectively. The Northern Ye city was separated two parts, i.e. the southern and northern part by a wide street extending in east-west direction. This wide street extended from Jian Chun Men (建春门) in the east to Jin Ming Men (金明门) in the west. And the northern part was larger than the southern part. There were two wide streets extending in south-north direction in the northern part. And along the central axis of the northern part there were a group of big buildings foundations, they might be the group of palace foundations. In the eastern side of the palace group there was Qi Li (戚里), and in the western side of palace group there was a big garden. In the western side of the garden there were three famous high platforms, i.e. Tong Jue Tai (铜爵台, later renamed as Tong Que Tai, 铜雀台 means bronze bird platform), Jin Hu Tai (金虎台 means gold tiger platform) and Bing Jing Tai (冰井台 means ice well platform or the platform where there was a well for storage of ice). The official buildings and common people dwelling buildings were located in the southern part. There were three wide streets paralleling each other, and the street in the center of them extended from the Zhong Yang Men (中阳门) in the center of southern city wall to the main palace of the palace group in the center of the northern part, and this street and the main palace together formed the structure of central axis.

The structure of central axis of Northern Ye city in its layout showed a character that the group of palace or king palace was located in the northern end of the central axis, and the southern segment of central axis was the main street extending in south-north direction. This layout of central axis was different from the model in <Kao Gong Ji> that the king palace should be in the center of the city.

Why was the palace group or the king palace located in the northern end of the central axis in Northern Ye city?

The author considers that in the time of Cao Wei Dynasty the idea in <Kao Gong Ji> arranging the king palace in the center of the city was accepted already. This conclusion could be proved by the layout of ancient Lou Lan city.

The time when the famous ancient city Lou Lan was constructed might be little later than the Northern Ye city, however their constructing also could be considered approximately in the same time. Ancient city Lou Lan clearly shows the character of the structure of central axis, especially clearly shows that the high administration organ building was located in the center of the city. This character shows that the people at that time already had the concept that the high military and administration organ should be located in the center of the city. And this character of the layout is important to understand the thought of planning for constructing Northern Ye city.

Ancient Lou Lan city was a important position on ancient Silk Road. It is located in

the east end of Tarim Basin and near northwest end of ancient Lop Lake which was called Puchang sea or Salt Marsh (today here is called Ruo-Qiang) which was called Puchang sea or Salt Marsh (today here is called Ruo-Qiang) in ancient time. Here was the capital of Lou- Lan Kingdom in former Han Dynasty, later the capital of Lou-Lan kingdom was moved to Shan-Shan where was in the south-west of ancient Lop lake, and the name of the kingdom was changed to Shan-Shan kingdom, the position of former capital of Lou-Lan kingdom became to the seat of highest administration and military organ for controlling the "West Regions" in Cao Wei and Jin Dynasties. Lou Lan city was built by this organ in earlier stage of third century and lived by people till the middle age of 4 century. So the characteristic of this city was deeply influenced by the culture of Yellow River Basin or Han culture. It was a irregular square shape. The length of its longest side is 330m, and the length of the shortest was 270m. There are some fragments of the city walls and some fragments of the highest administration and military office buildings and Buddhist pagoda (stupa) and some remains of dwelling house. The buildings used by highest administration and military office was recognized by a lot of official documents found nearby. In the south of highest administration and military office buildings there was a dwelling house recognized as a hotel according to finding a letter in Sogdian language nearby (the Sogdian lived in Central Asia and was famous in trading between East and West). The highest administration and military office buildings and Buddhist pagoda (Stupa) were located on the central line or central axis extending in northeast-southwest direction. This direction was related with the prevailing strong wind in northeast-southwest direction in whole year.

The structure of central axis in ancient Lou Lan city mainly was displayed by official buildings of highest military and administration organ, religious building and hotel arranged along the central line, and the official buildings were located in the center of the axis.

Now let us turn to discuss the structure of central axis in Northern Ye city again.

According to the analysis above, the author considers that in Northern Ye city the arrangement of palace group in the northern end of the central axis might have no relationship with the idea of planning, might have some relationship with the environment.

The rise and development of Ye city should be related with Zhang River. According to the record of the book <Ye Zhong Ji> (the record on Ye city), Zhang River flowed along the western and northern sides of Northern Ye city. And the constructing of garden for capital city had been given especially recognition almost by all of the dynasties in Chinese history, and usually the palace group or the king palace were near the garden. However the garden was commonly related with water area such as river or lake. And the

arrangement of the garden in the north-west of Northern Ye city made it to obtain water supply from Zhang River easily. So that the arrangement of the palace group in the northern end of the central axis should be related with Zhang River is reasonable explain.

2.3 the structure of central axis of the capitals from Chang An in Sui and Tang dynasties to Bian Liang in Northern Song Dynasty

The capital city Chang An in Sui and Tang Dynasties was a huge city and had very regular layout and very clear structure of central axis. The topic on the layout and central axis of Chang An city have been touched by many scholars. The author tries to summarize some characters on the layout and central axis.

a. The whole city displayed a structure in three square lantern rings. The most big square ring was the outer ring and called “big city” or “outer city.” The middle square ring and the smallest ring were in the inner of the “big city.” The middle square ring was called “Emperor city” close to the middle part of the northern wall of “big city.” The “Emperor city” was divided into two parts: its northern part was the smallest square ring called “Palace city” or “king palace,” and in its southern part there were the official buildings of the ministry, the temple for sacrificing the ancestors of the emperor and “She Ji” (the temple for sacrificing the land God grain God who protect the country from natural disasters). And the northern wall of three square rings was overlapped each other.

b. The central axis of Chang An city was mainly displayed by the wide street Zhu Que extending from Cheng Tian Men (承天门, was the northern gate of “Emperor city”) to the south through the Zhu Que Men (朱雀门) to Ming De Men (明德门) in center of the southern city wall of the “big city.” The “palace city” or “king palace” was located in the northern end of the central axis.

c. There were two commercial centers in the south of “Emperor city” near the eastern and western city walls respectively.

The character of the structure of the central axis was similar to the capital city Northern Ye city in Cao Wei Dynasty. The “king palace” or “palace city” of both of them were arranged in the northern end of the central axis. So they were not planned according to the idea in <Kao Gong Ji> that the king palace should be in the center of the capital city.

Why the “king palace” or “palace city” of Chang An city in Sui And Tang Dynasty was arranged in the northern end of the central axis?

The author considers that the arrangement of the “palace city” of Chang An city in Sui and Tang Dynasty in the northern end of the central axis also should be related

mainly to natural environment, might be related to the two natural factors: relief and river. The “palace city” of Chang An in Sui and Tang Dynasty was located on Long Shou Yuan (龙首原, means “dragon head high land”), for the topography have been high here, so the arrangement of the palace city on this high land could stood out its majesty. And in the north of the “Palace City” there was a low land and near Wei River, so a big garden was constructed on this low land, and the “king palace” was next to the garden. It is clearly that the explaining of the arrangement of “King Palace” in the northern end of the central axis in the view of natural environment is reasonable.

In Japan, there were several ancient capitals in which the “palace city” or “king palace” also were arranged in the northern end of the central axis, for example, in ancient capital Kyoto. The author considers that this arrangement in Japan was not simply imitated or copied the layout of Chang An city in Tang Dynasty. It might also be related to natural environment.

The layout and the character of the structure of central axis in the capital Bian Liang city in Northern Song Dynasty were much different from Chang An city in Tang Dynasty.

The capital Bian Liang city in Northern Song Dynasty was a regular square shape (without considering its four corners) and a structure in three lantern rings. The outer ring was “big city” or “outer city”, the inner ring was “palace city” or “Da Nei (大内).” The middle ring was called “Li Cheng” or “Nei Cheng (内城)” or “Jing Cheng (京城)”

Comparing with Chang An city in Tang Dynasty, a outstanding difference of Bian Liang city was that the “palace city” (Da Nei 大内) was located in the middle part of whole city, and the three lantern rings did not overlap each other. Both of the center of “palace city” and the center of “outer city” also did not overlap each other. The center of “palace city” was located in little north of the center of “outer city.”

The capital Bian Liang city in Northern Song Dynasty displayed clear structure of central axis. The central axis was displayed by a very wide street extending from Xuan De Men (宣德门, the southern gate of the “palace city”) to the south through Zhu Que Men (the southern gate of “Nei Cheng” (内城) to Nan Xun Men (南薰门, the southern gate of “outer city”). This wide street also was called “Emperor Road” and with the width at about 200 paces. And there were Qian Bu Lang (thousand paces porches) along the both side of this wide street. All of these buildings made the central axis more outstanding.

The arrangement of the king palace or “palace city” in the middle of Bian Liang city was accorded with the model in <Kao Gong Ji> that “king palace should be in the center”. But its layout in many aspects did not accord with the model in <Kao Gong Ji> that

“the court should be located in the front, the market should be in the back, the temple for sacrificing the ancestor of the emperor should be located in the left, and the temple for sacrificing the land God and grain God should be located in the right.” For example, the market center in Bian Liang city was not in the center as the location in <Kao Gong Ji> should be in the north of the “Palace City,” its main commercial center was in the southern part of the city. And the temple for sacrificing the ancestor of the emperor and the temple for sacrificing the land God and grain God were not near the both side of the “Palace City,” but comparative far distance.

However there were some similar in the layout between Bian Liang city in Northern Song Dynasty and Chang An city in Tang Dynasty. For example, its “palace city” or “king palace” was located in the north of the center of the “big city.” This character of layout was close to Chang An city in Tang Dynasty, but far from later Da Du in Yuan Dynasty and Beijing city in Ming and Qing Dynasties.

The facts above mentioned shows clearly that the characters of the layout of Bian Liang city in Northern Song Dynasty was different from Cang An city in Sui and Tang Dynasties in many respects in one hand, and in another hand there were some close characters in the layout between Bian Liang city in Northern Song Dynasty and Chang An city in Sui and Tang Dynasties. So the layout of Bian Liang city could be considered as a medial type between two types of the layouts earlier Chang An city in Sui and Tang Dynasty and later Da Du city in Yuan Dynasty and Beijing City in Ming and Qing Dynasties.

The arrangement of the “Palace City” or “king palace” in the middle of the “Big City” in Northern Song Dynasty according to the idea in <Kao Gong Ji> should be owed to that the city Bian Liang was located on a expansive and flat plain, there was not any limitation of the relief around. So the layout of the city could be extended to all of the directions without any limitation. Then the Yellow River flowed in the north far from Bian Liang city, from the north-west of today’s Zheng Zhou to north-east through today’s Xin Xiang, Ji county, Jun county (Hua Zhou in Song Dynasty), and disembogued into the Bo Sea near today’s Tian Jin city for a long time. And the Yellow River made its influence to Bian Liang city a little in that time.

The layouts of both cities of Chang An city in Sui and Tang Dynasties and Bian Liang city in Northern Song Dynasty did not accord with the model in <Kao Gong Ji> in many respects in one hand, but displayed gradually close to the model or idea in <Kao Gong Ji> from Chang An city in Sui and Tang Dynasties and to Bian Liang city in Northern Song Dynasty in another hand. The author considers that the layouts and the characters of the structure of central axis from the capital Cao Wei Northern Ye city

through Chang An city in Sui Tang Dynasties to Bian Liang city had been changing and closed to the model in <Kao Gong Ji>. These changes might indicate that the planner for city construction followed and represented the model in <Kao Gong Ji> in a gradually developing and maturing process. Below the changes of the layouts of the capitals Da Du in Yuan Dynasty and Beijing in Ming and Qing Dynasties will show gradually developing and maturing process in following and representing the model or idea in <Kao Gong Ji>.

2.4 the changes of the layouts from Da Du city in Yuan Dynasty to Beijing city in Ming and Qing Dynasty-the idea reached maturation

The changes of the layouts from the capital Da Du city in Yuan Dynasty to Beijing city in Ming Qing Dynasties had been well expounded by Prof. Hou Renzhi. The author points out that the changes of the layouts of these capitals harmonizing with natural environment made the structure of central axis more outstanding and the layout of Beijing city in Ming and Qing Dynasties more close to the idea or model in <Kao Gong Ji>, but the development of economic in Ming and Qing Dynasties changed the structure of central axis and the layout of Beijing city.

2.4.1 The structure of central axis of Da Du city in Yuan Dynasty

After defeating Jin dynasty, the Mongolian Hubilei Han established Yuan dynasty and moved the political center from Mongolia plateau to the capital of Jin dynasty.

Leaving aside the capital city constructed by Jin Dynasty, and in its northeast suburbs, a new and big majestic and splendid capital city was constructed. This capital city was called Da Du (meaning big capital).

There was a natural river called Gao Liang River flowing from west to east along the northern suburbs and into a group of lakes in the northeast of suburbs of the capital in Jin Dynasty. The river and lakes formed beautiful scenery. And this beautiful place was enclosed in the middle part of Da Du city near the king palace. So the king palace could easily get water supply. However this using of river and lakes made deeply influence to the layout and the structure of the central axis of Da Du city in Yuan Dynasty.

Gao Liang river and the lakes had existed in early historic time. They located in a very broad river bed along which a very wide river in very old ancient time--ancient Yong Ding river in early and middle Holocene flowing and then changed its course and formed Gao Liang river and the lakes in this wide river bed. These lakes were recorded already in the writings of Tang Dynasty and called "sea." The first lake in northern end of the group was called Ji Shui Tan (积水潭, the pond for storing up

water). In the south of this lake, there were some other lakes called “northern sea” or “western sea” and Tai ye Chi (太液池, the pool containing valuable water). The names of these lakes were called till in Ming dynasty. And in Qing dynasty, only the name “western sea” wasn’t used anymore and other names still continue to be used.

(“海子之名，见于唐季-----北人凡水之积者，辄目为海。积水潭汪洋如海，因名。东西亘一里余，南北半之。西山诸水，从高梁桥流入北水关汇此，亦名莲花池。水流皇城内五龙亭前，名北海子，又呼西海子，辽时谓之瑶屿。[辽地理志：南京析津府燕山中瑶屿。]金曰琼华岛 [金地理志：西园有瑶光台，又有瑶华岛] 元曰积水潭 [元地理志：海子在皇城之北，万寿山之阴，旧名积水潭，西北诸泉之水汇于此。] 元时运船直至此 [元名臣事略：至元三十年，车驾还自上都，过积水潭，见舳舻蔽水，天颜为之开怿，特赐都水监郭公钱一万二千五百缗，仍以旧职兼提调通惠河漕事。] ---而积水潭、太液池、西海子之目，明则相沿不改 [明实录：天顺四年九月，新作西苑，苑中旧有太液池。旧闻考：明季相沿名海子，亦名积水潭，---今则并无西海子之名。”]⁸

The location of Da Du city built in the time of The emperor Hu Bi Lei Han in Yuan Dynasty. Its center was in little north of the center of later Beijing city in Ming dynasty. The northern wall of Da Du city was about 2.5Km in the north of the northern wall of Beijing city In Ming dynasty. And the southern wall of Da Du city in Yuan dynasty was about 1 Km in north of the southern wall of Beijing city in Ming Dynasty. The southern wall of Da Du city in Yuan dynasty was located at the position of today Chang An Avenue (street).

The location and layout of Da Du city was designed for enclosing the lakes (Ji Shui Tan and others) in the center of the whole city. This layout could be clearly recognized by the map of Da of shipping along the Great Canal from south-east of China in Yuan Dynasty. So this lake had important role in the form of city and the structure of central axis.

The structure of Da Du city displayed three rings in square shape. Every one was enclosed by wall. The outer ring or “outer city” was called “big city,” the innermost ring was called “king palace,” and the ring between them was called “emperor city.” The walls of outer city formed regular square shape, and the positions of the gates of outer city were symmetry, and the streets were also symmetry, only nearby the lake Ji Shui Tan the streets were arranged irregular.

The “emperor city” was consisted of three parts. Its western part was the lake Tai Ye Chi (太液池, the pool containing valuable water), its eastern part was the “king palace.” The outline of the “emperor city” was also in square shape, but its central axis line was in the west of the central axis line of outer city. This layout was a result in co-

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ordinating with natural environment. The “king palace” was located in the eastern part of “emperor city.” And the central axis line of “king palace” was superposition with the central axis line of outer city.

Da Du city in Yuan dynasty displayed clear structure of central axis. Its central axis consisted of three parts. One was a group of buildings in “king palace” arranged along the central axis line. Another was a shorter broad street in the south of “king palace” extending from the southern gate of “king palace” to the gate Li Zheng Door on the wall of outer city. And the third was a longer broad street in the north of “king palace” occupied over the half of the whole central axis line. The “king palace” was located in the southern part of whole city and near the southern wall of outer city.

The structure of the central axis of Da Du city in Yuan dynasty was displayed main by two broad streets in the north and south of “king Palace” extending in south-north direction and the group of palace building in the palace city along the central axis. It is clearly that the wide street in the north of “King Palace” was very important in the structure of the central axis of the city.

The layout that “king palace” of Da Du city in Yuan dynasty was arranged in the south of the central axis might be the result of the lake Ji Shui Tan occupying the center of whole city. So the “king palace” had to be arranged in the south of the big city. And the wide street in the north of “king palace” was broken into two broad streets. Its northern part was called “Gu Lou (a building containing a big drum) Street,” and its south part was called “Di An Men Street” (“land safe gate” street) This arrangement was also related with the lake Ji Shui Tan occupying the center of the city (see the map of Da Du city in Yuan Dynasty).

Especially a center cabinet building was arranged in the Gu Lou big street, and this position was the center of whole city. This design was the first in the capital city in historical time of china. And this building made the center position and the structure of the central axis of the capital city Da Du more outstanding.

Because the lake Ji Shui Tan in the north of “king palace” was the terminal end of Great Canal in Yuan Dynasty, and all of the ship which came from the delta of Yangze River anchored in this lake, so the businessmen came to here, and Gu Lou big street near to this lake became the center of commerce of Da Du city in Yuan Dynasty.

The “king palace” of Da Du city in Yuan Dynasty was located in the south of central axis. This arrangement was a great change comparing with Chang An city in Sui and Tang dynasties and Bian Liang city in northern Song dynasty in city layout. As above-mentioned that there was a commercial center of Gu Lou big street in the north of “king palace” in Yuan dynasty, this layout conformed to the model of “the king

(imperial) court should be in front, and the market should be in behind” in <Zhou Li • Kao Gong Ji>. And although the Imperial Ancestral Temple (太庙, the temple for sacrificing the ancestor of the emperor) was in the left (east) of the Imperial court and in its right (west) there was the Temple for sacrificing the land God and grain God (社稷), but these two temples were far from the “king palace” and close to the east and west wall of the city respectively.

2.4.2. The structure of the central axis of Beijing city in Ming dynasty

After Yuan dynasty was defeated by Ming dynasty, the name “Da Du” city was changed to Beiping (北平). Then the emperor Yong le took the throne and moved the capital from Naging to Beiping, and changed the name Beiping to Beijing. In fourth year of Yong Le (AD1406) he started to construct Beijing city and finished in eighteenth year of Yong Le (AD 1420). This Beijing city in the earlier stage of Ming dynasty had a structure in three rings. The innermost ring was called “king palace” or “forbidden city”(紫禁城) and had the perimeter in 6 Chinese li (one li equal about a half Km). The outer ring was called “big city” or “capital city” and had the perimeter in 45 li and 9 gates. The middle ring was called “emperor city” and had the perimeter in 18 li. The Beijing city built in the time of Yong Le emperor on his seat had a square shape, and the city gates and the street were symmetry.

The location, the layout and the structure of the central axis of Beijing city in Ming dynasty displayed great changes comparing with the Da Du city in Yuan dynasty.

Comparing with Da Du city In Yuan dynasty, the Beijing city in Ming dynasty was moved to south in whole in a little distance. But the moving of every part was different. The northern wall of Ming Beijing city was moved to south in longer distance than other parts and the southern wall of Ming Beijing city was moved shorter than the northern wall. And the “king palace” (the Forbidden City) in Ming dynasty was also moved to south in some distance comparing with the “king palace” in Yuan dynasty (see the map of Beijing city in the earlier stage of Ming dynasty).

Why the location of Beijing city in Ming dynasty was moved to south. I think it was related with two causes. One was the rare population in the northern part of Da Du city in Yuan dynast. Another was to supply water to the northern city wall easy and to make the water of Gao Liang River flowing through the whole city from the north to south of Beijing city.

In Yuan dynasty, Gao Liang River flowed into Da Du city at the center of western wall of the outer city. And the location of the northern wall of the city was higher than Gao Liang River, so it was more difficult to supply water to the northern part of Da Du

city. To move the northern wall to south in Ming dynasty could resolve the problem of water supply to the northern part of the city.

The moving of the location of Ming Beijing city made deeply influence to the layout and the structure of central axis of the city.

The structure of central axis of Ming Beijing city displayed more outstanding. Very important part of the central axis was located in the "Emperor city." And the "king palace"(forbidden city) in the "Emperor city" was the most splendid part of the central axis of Ming Beijing city. There was a group of buildings was arranged along the central axis. They were "Wu Men (Noon Door)," "Huang Ji Dian (Emperor Extreme Hall)," "Zhong Ji Dian (Middle Extreme Hall)," "Jian Ji Dain (Construct Extreme Hall)," "Qian Qing Gong," "Jiao Tai Dian," "Kun Ning Gong"(Women Safety Palace), "Qin An Dian"(Emperor Safety Hall), "Yu Hua Yuan"(Emperor Flower Garden) and the northern gate of "forbidden City" called "Xuan Wu Men" from the south to south. This group of buildings and additional "Cheng Tian Men" in the south of "forbidden City" and "Jing Shan" was consisted the more important part of the structure of the central axis of Ming Beijing city. This part also was the most important landscape of the central axis of Ming Beijing city. From "Forbidden city" to south, there were successively arranged along th central axis: "Duan Men," "Cheng Tian Men," "Da Ming Men" and "Zheng Yang Men." The "Cheng Tian Men" was reconstructed in the beginning of Ming dynasty and later its name was changed to "Tian An men"(天安门). The name "Da Ming Men" was changed to "Da Qing Men" in Qing dynasty. "Zheng Yang Men" is called "Qian Men"(Front Door) in recent time. "Zheng Yang Men" was located the south end of the central axis of the beginning of the earlier stage in Ming dynasty. And between "Cheng Tian Men" and "Da Ming Men" there was a broad street in "T" shape and called "Tian Jie" (Haven Street). This street was called by professor Hou Renzhi as "Emperor Court square." At the both sides of "Tian Jie"(Haven Street) there were located the group buildings of the highest organizations of central government and military. And the Imperial Ancestral Temple and the Temple for sacrificing the land God and grain God (社稷) were close to the eastern side and western side of "Cheng Tian Men" respectively.

In the north of "Jing Shan", there were "Di An Men Street and Gu Lou Street" forming the northern part of the central axis. At the northern end of the central axis there were two buildings: the "Gu Lou"(the building containing a very big drum) and "Zhong Lou"(the building containing a very big bell). The "Gu Lou Street" wasn't the first position among the commercial centers in Beijing city, however its commercial position was still important.

In brief, the structure of central axis of Beijing city in the earlier stage of Ming

dynasty was very close to the idea in <Zhou Li oKao Gong Ji> that the king (imperial) court to be ahead, and the market to be behind, Ancestral Temple(太庙) to be in the left of the Imperial court, and in its right there was the Temple for sacrificing the land God and grain God (社稷) for sacrificing the land God and grain God (社稷).

2.4.3 The development of economic and the central axis extending of Beijing city in Ming dynasty

In the later stage of Ming dynasty, the position of commercial center shifted. And this shifting introduced the layout changing and central axis extending to the south and breaking the idea in <Zhou Li oKao Gong Ji> that “the king (imperial) court to be ahead, and the market to be behind.” The causes introducing these changes were the shifting of the terminal anchoring place of the shipping along great Canal and development of the economy in Ming dynasty.

The relation of the lake Ji Shui Tan with great canal was cut off and this lake wasn't the terminal anchoring place of shipping along Great Canal and was gradually deposited and reduced in depth and area.

["自徐公武宁改筑北平城后，运河、海子，截而为二，[咏归录：城内积土日高，虽有舟楫，桥梁不能度。]"⁹ (徐武公为明代初期大将军徐达)]

The changes of the lake Ji Shui Tan introduced nearby Gu Lou Street declining in its commercial position. And this street wasn't the first commercial center as it had been in Yuan dynasty, even if it also was the one of important commercial centers of Beijing city in Ming dynasty.

Another important commercial center appeared in the east of “king palace” in Ming dynasty. This new commercial center was “Deng Shi Da Jie” (Lamp market or the street for selling the lamps made by various color papers). This street is located in the north of today's Wang Fu Jing Street. “Deng Shi Da Jie” was very flourishing commerce in Ming dynasty. Especially in the Chinese January, various lamps were exhibited and sold here. And many people came here seeing and buying the lamps. There were various shops of silks and clothes, restaurants, teahouses and pothouses, and the shops of rare treasures.

Another commercial center was located in the “Qi Pan Jie” (chessboard street) in the south of “Emperor city.” This street was broad and extending in east-west direction. The position of this street was very important. In its north through “Da Ming Men” (Great Ming Dynasty Door) there was the “Haven Street” (“the king court square” was called by professor Hou Renzhi) being close to the “forbidden city.” “When grand cere-

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mony for audience to the emperor was hold, the troops came here beforehand for guarding. And there were many flags. Here the grand occasion was like the Moon moved in Haven Street. Although there were many broad square, but this street was most broad.”¹⁰ “The both sides of Qi Pan Jie were occupied by the official buildings of many ministries. The craftsmen, the businessmen, the people, the soldiers and so on came here from everywhere. And here the people was so many that they crowded each other and made deafening sound.”¹¹

In Ming dynasty, the water pass was set up at Chong Wen Men for tax revenue of the ship coming here along Great Canal from the south-east of China. The Chong Wen Men was a gate located in the east part of the southern wall of Beijing city. So the district around Chong Wen Men was gradually flourishing in commerce. And the pass for tax also set up at other gates (in Yuan dynasty, the place of tax revenue was set up inner the city) “In Yuan dynasty, there were set up 73 places for tax revenue inner the city. There were pig and ship market, cow and donkey market, horse market, fruit market, coal and wood market inner Da Du city in Yuan Dynasty.”¹² However there was no any place for tax revenue in the city. So the districts near the gates of city walls were the area for businessmen coming to.

Another important factor introducing the moving of commercial centers was the rapid development of economic (handicraft) in the delta of Yangzi River and in Jiangsu and Zhejiang provinces in south-east of China. And this development made the development of commercial economic. So a lot of the businessmen came from the south of Yangzi River to Beijing for trading. These men stayed at the places around the southern outsides of the three gates at the southern wall of Beijing city: Zheng Yang Men, Chong Wen Men and Xuan Wu Men. So the commerce of these places was developed.

In the time of the Emperor Jia Jing in his seat in Ming Dynasty, the population in outsides of Beijing city rapidly increased : “the population living in outsides was double of the population living in the city.”¹³ And some one estimated that the population living in the outsides of Beijing City was “several hundred thousand family”¹⁴ Most of these increased population lived in the southern outside of Zheng Yang Men, Chong Wen Men and Xuan Wu Men. So the new city walls were built for protecting the people living in the southern outside of the city from Mongolian invading and plundering in Jia Jing 32th

10 《燕都游览志》

11 《长安客话》

12 《光绪顺天府志》卷十一

13 《明世宗实录》卷三六四，嘉靖二十九年八月。

14 《明世宗实录》卷三九五，嘉靖三十二年三月

year (1553 a AD). This new city walls formed new district of Beijing city in the shape “凸.” The new part enclosed by the new city walls was often called “outer city” and also called “southern city” by the people living in Beijing for long time today.

The new walls of outer city enclosed two important temples in the new district of Beijing city. They were Tian Tan (天坛, the temple (a group of buildings) for offering to Haven) and Xian Nong Tan (先农坛, the temple for offering to the God protecting agriculture). In the new district of the city, a new long street was formed and called Qian Men Big Street (前门大街) extending from “Zheng Yang Men” (正阳门, 又被称为 Qian Men, 前门) to the south to Yong Ding Men (永定门) in the middle of new southern wall and was a straight and long and broad street and became a most important commercial center of Beijing city till today. The “Tian Tan” (天坛) and “Xian Nong Tan” (先农坛) were located on its both sides. This street extended the central axis to the south (see the map of Beijing city in the later stage of Ming dynasty and Qing dynasty).

However in Qing Dynasty, the shape and layout of Beijing city were not changed anymore. The “Forbidden City” was not changed anymore too. In “Forbidden City,” it was only changed the names of some palaces, Halls and Gates, such as the name of “Cheng Tian men” was turned into “Tian An Men,” “Huang Ji Dain” into “Tai He Dian,” “Zhong Ji Dian” into “Zhong He Dian,” “Jian Ji Dian” into “Bao He Dian,” “Da Ming Men” into “Da Qing men,” “Xuan Wu Men” into “Shen Wu men.” And in Qing dynasty, there wasn’t anymore changing of the central axis formed in the later stage of Ming dynasty.

But the development of commerce of Beijing city in Qing dynasty made the commercial position of the south of “Zheng Yang Men,” “Xuan Wu Men” and “Chong Wen Men” further strengthened and made this district became a important cultural center in Beijing city.

In Qing dynasty, there were many various “market” in the outside or the south of “Zheng Yang Men” (today Qian Men). Here was the major place for selling some valuables such as pearl and jade article and silk clothes and so on: “In Beijing, there were many markets opened everyday. In the outside (the south) of Zheng Yang Men, there were silver market, jewelers market, jade article market. In the east of the outside of Zheng Yang Men” there were cloth market, meat market, fruit market. And in the other places of the city there were some other markets: “in the south of Dong Si Pai Lou (eastern fourth decorated archway) there was the rice market, and there were pig market, sheep market and horse market in the west of Dong Si Pai Lou.” (<Guang Xu Shun Tian Fu Zhi> Vol.18<Capital • custom>) “In Da Shan Lan, Jeweller market, The Western River Shore and Liu Li Chang (the place producing colored glaze) (all of these four

places were in the outside or the south of Zheng Yang Men) there were silver shops, silk cloth shops, and tea shops, shoes shops, medicine shops, the shops selling foreign goods. All of these shops in the south of Zheng Yang Men were richly splendid ornamented buildings in gold color and made the person being dazzling, as for the pothouses and restaurants here lighted the lamps and candles overnight. There everywhere was the noise of the finger-guessing game, and every night was like festival. There was so flourishing in the south of Zheng Yang Men that could not compare with here.”(<Guang Xu Shun Tian Fu Zhi> Vol.18< Capital · custom >)

[“京师市，各时日，在正阳门外者曰银市、曰珠宝市、曰玉器市；在正阳门东者曰估衣市、曰肉市、曰果子市。”京城其他的市场则有“在东四牌楼南者曰米市，在东四牌楼西者曰猪市、曰羊市、曰马市---”《〈光绪顺天府志〉卷十八《京师·风俗》》“如大栅栏、珠宝市、西河沿、琉璃厂之银楼、缎号，以及茶叶铺、靴铺、药铺、洋货铺，皆雕梁画栋，金碧辉煌，令人目迷五色。至酒楼饭馆、张灯列烛，猜拳行令，夜夜元宵，非他处所及也。”^{15]}

In Qing dynasty, the district near the south outside of Zheng Yang Men gradually became the most important center of business in Beijing city for old and rare books, calligraphy and painting, and antique. Especially in the time of the Emperor Qiang Long being on the throne, “Si Ku Guan” was established to edit the famous collection of the books <Si Ku Quan Shu> (《四库全书》), and a lot of scholars were put together here to edit this collection. They often came to the district around “Liu Li Chang” to collect the old and rare books for collating. So the district around “Liu Li Chang” gradually became the most concentrating place for selling the old and rare books.

[“今京师书肆皆在正阳门外西河沿，余惟琉璃窑厂间有之而不多见。灯市初在灵宫，稍列书摊，自移于正阳门大街之南，则无书矣。每朔望及下浣五日，百货集慈仁寺，书摊只五六，往间有秘本，二十年来绝无之。自乾隆间均移于琉璃厂。”^{15]}

There was another fact for indicating the important position of the “outer city” in the south of Three Doors (Zheng Yang Men, Chong Wen Men And Xuan Wu Men, 正阳门、崇文门和宣武门，又称前三门) in Qing dynasty. There were over a hundred “Hui Guan” (guilds) in the south of Zheng Yang Men. “Hui Guan” was the hotel for the businessmen and the person to participate the examination to get a position in the government coming from everywhere of the country. A lot of “Hui Guan” appearing in the outer side of Zheng Yang Men in Qing dynasty indicated that the position of “Outer City” or “Southern City” was very important in commerce and culture and was important role in changing the distribution of function regions of Beijing city in Qing Dynasty.

In brief, in the time of later Ming and Qing Dynasties with the development of the

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economic, the position of the “Outer city” or “Southern City” to be strengthened and to become the most important commercial center introduced extending of the central axis line, and broken the layout of “the king (imperial) court to be ahead, and the market to be behind” in the earlier stage of Ming dynasty.

3. the structure of central axis in other local cities in Ming and Qing dynasties

In the time of Ming dynasty, the majority of the cities in china was reconstructed including the political centers of various grade administration regions: provinces, regions, districts and counties. Some of them was reconstructed on the base of old city and had some inheritance of the cities built in the time of pre--Ming Dynasties. And some of them had various creativity of displaying the idea of the structure of central axis in particular natural environment or human condition. The author will take Da Tong city, Shang Qiu city, Chen Zhou city, Ping Yao city, WuXi city, Cheng Du city as the examples in following.

3.1 The structure of the central axis of Cheng Du City in Ming and Qing Dynasties--two central axis system intersecting each other

There were two central axis system intersecting each other in Cheng Du city in Ming and Qing Dynasty. This city layout has been particular. Their forming was related with natural environment in one hand, and with traditional idea in another hand. And this character of the structure of central axis has deeply influenced today's layout of Cheng Du city.

The location of Cheng Du city has not been changed since more than 3000a when earliest city appeared here. So the layout of Cheng Du city is deeply impressed historical brand.

Cheng Du had been the political, economic and cultural center in south-western regions of ----- China in ancient time. It was important political center on Cheng Du plain in the later Shang Dynasty and Zhou Dynasty. And it was the political center in the time of Chun Qiu and Fighting Kingdom. In 316a BC, Qin kingdom occupied Shu kingdom and turned Shu kingdom into Shu Jun (a administration region of Qin Kingdom) and built a city here in the perimeter 12 Li (One Chinese Li equals about half Km).

Cheng Du was called Yi Zhou in Han Dynasty and was famous for its prosperity. And there was a opinion in ancient time that the first was the capital city Chang An, and the second was the city Yi Zhou in ancient China in Han Dynasty. In Tang Dynasty, in the time when An Lushan and Shi Siming revolted against Tang Dynasty, large population came to Cheng Du from Yello River Basin for escaping from this calamity and facilitated the development of the economic in Cheng Du city. And there was a opinion that

among the cities in all over the country Yang Zhou was the first, Cheng Du was the second. In Ming Dynasty, the first emperor Zhu Yuanzhang gave one of his sons a title "Shu King." And the official building of "Shu king" was built in the middle of Cheng Du city and the layout and the character of central axis of Cheng Du city were greatly changed.

In the time of Ming and Qing Dynasties, Cheng Du city was the administration centers of Sichuan province, Cheng Du Fu (成都府, a administration region lower than the grade of province) and Cheng Du county and Hua Yang county. It was very rare in Chinese historical cities that so many grades of administration center were located in the same city.

Cheng Du city has located on the plain to be deposited mainly by the river Min Jiang. So the river has deeply influenced on the development and layout of Cheng Adu city.

In ancient time the flood was very frequent. A ancient site belonging to the time of later Shang Dynasty was discovered in the west suburb of Cheng Du city. The author observed on the locale some facts that there was very thick sediment formed by river deposition showing that here occurred floods or the changes of river course introducing the site buried. Another example is the site found in Shi Er Qiao of Cheng Du. In this site a group of some large wood buildings belonging to the time of Western Zhou Dynasty were buried by the silt deposited by the flood.^{16 17}

There were many legends and stories concerning fighting with the floods, for example the legend concerning the Great Yu (禹) controlled the floods. There were the temple for worshipping Great Yu and River God. And there were some rhinoceros sculpted in stone standing by the river flowing along the southern outside of Cheng Du city for "pressing down the floods."

In 250a BC Li Bing, the highest officer in Shu Jun (a administration region in Qin Dynasty approximately equal today's Sichuan province) led people to construct the famous water control engineering Du Jiang Yan (都江堰) and divided the river Min Jiang into two branches and forced them to Cheng Du city. The river Min Jiang was controlled, The flood was greatly decreased. However the flood still happened often recorded in historical books and writings.

In 876a AD (Tang Dynasty), a new outer city wall of Cheng Du city was constructed and the area of the city was expanded to a perimeter 25 Li, and constructed a

16 四川省文管会等, 成都十二桥商代建筑遗址第一期发掘简报, 《文物》1987年12期。

17 宋治民, 早期蜀文化分期的再探讨, 《考古》1990年第六期。

weir to force two branches of the river Min Jiang which had flowed through the city and forced them flowing along the southern and northern outside of the city respectively and to the confluence in the south-east of the outside of city. The branch flowing along the southern outside was called Nei Jiang (Inner River), and the branch flowing along the northern outside was called Wai Jiang (Outer River) (《元丰九域志》). And the branch along the southern outside was also called Da Jiang (Big River), Wen Jiang (汶江), Liu Jiang (流江). This branch was famous for washing the brocade in historical time, so it was called Jin Jiang (锦江, Brocade River).

For being of these two branches, the location of Cheng Du city have not changed anymore in historical time, the changes only in its area. The city built in 316a BC was in perimeter 12 Li, and in Tang Dynasty its area was expanded to a perimeter at 25 Li (one Chinese Li about equal half Km). In the time of Kang Xi Emperor in Qing Dynasty, the outer city wall was reconstructed in the perimeter at 22 Li and in irregular square shape in the extension in east-west direction at 9.3 Li and south-north direction at 7.7 Li with four gates.

Except these two branches, there were many lakes ponds around the city. For example, there were Long Di Chi (龙隄池), Wan Sui Chi (万岁池) in the northern outside of the city, and Qian Qiu Chi (千秋池) in the eastern outside of the city, and Liu Chi (柳池) in the western out side of the city, and Tian Jing Chi (天井池) in the north-western outside of the city and so on. And there were some low mount and hills. These rivers and lakes and low mount and hills made influence on the morphology and layout of ancient Cheng Du city.

The layout of the streets did not extend in just south-north direction. One group of the streets extended in a little deflecting south-west direction, and the another group of the streets extended in northwest-southeast direction. This character of the layout was arranged for adapting to the two branches of the river Min Jiang along the southern and northern outsides of the city. This conclusion could be proved by the records in the book <Shu Zhong Guan Ji> (《蜀中广记》, 明曹学佺撰) citing from more old book <Gu Jin Ji Ji> (《古今集记》): “In the beginning, ---the city was built according to the river courses and the stretch of the mounts and hills around. So the direction of the city deflected a little from the just south.”

There was another river deeply influencing on the layout of Cheng Du city in historical time. This river was called Jin Shui He (金水河, golden water river). According to the record of the book <Cheng Du Tong Lan> (《成都通览》) (宣统元年, 傅崇渠纂), Jin Shui He was dug in Tang Dynasty and flew through the inner of the city. Prior Ming Dynasty, this river was called Jin river (禁河). In Ming Dynasty the “Shu Wang Fu” (the

buildings of Shu King) was built in the north of this river, and it was renamed “Jin Shui He” (Golden Water River). It flew into at the south-west of the city and through the south part of the city then flew out of the city at its south-east corner. This river could be shipped, so it was the main traffic and transport passage inner the city. In three Dynasties of Yuan, Ming and Qing, with the deposition of mud and sand it was dredged up for many times. Except Jin Shui He there were some smaller river or canal. According to the record in two versions of <Cheng Du Fu Zhi> (《成都府志》) written in the time of Tian Qi of Ming Dynasty and Kang Xi of Qing Dynasty, there were about 30 bridges inner the city. So there must be many rivers and canals in the city. And Cheng Du city could be considered a city of displaying water culture. Jin Shui River flew through the city from north-west to south-east direction and divided the city into two parts. There was the main part of the city in the north-east side of this river and approximately two-thirds of the city area. And the part in south-west of the river was one third of the city area. A majority of the building groups were arranged and the main streets were extended in northwest-southeast direction approximately consistent with the extending direction of the river course.

The rivers also influenced the distribution of commercial centers inner and outside of Cheng Du city.

The most important commercial center “Yan Shi Kou” (盐市口, salt market center) inner the city in the time of Ming and Qing Dynasties was not located in the geometrical center of the city, but in the south-east of the city on the bank of Jin Shui River and in the south-eastern outside corner of the buildings of “Shu King.” This place also is the most important commercial center of Cheng Du city too.

Because the rivers flowing along the southern and northern outside and the river flowing through the inner of the city met at the conflux in the southern outside of the city near the outside of eastern gate, so the ships from lower and upper branches anchored here, and the place outside of the eastern gate became the most important commercial center of the city. According to the record in the book <Cheng Du Tong Lan> (《成都通览》, 宣统元年, 傅崇渠纂), in the end of Qing Dynasty, there were 47 streets and alleys in the outside of eastern gate, 8 streets and alleys in the outside of southern gate, 19 streets and alleys in the outside of northern gate, 4 street and alleys in the outside of western gate. In the outside of eastern gate there were such main streets and alleys as Zhu Shi (pearl and jewel market) street, Hui Hui (回回, Muslim) alley, Shui Jin (ferry) street, Da Matou (large dock), Yan Matou (salt dock), Chai Ma Tou (firewood dock) and so on. In the outside of southern gate there were such main streets and alleys as Nan Qiao Zheng Jie (South bridge just street), Jiang Xi (wash and starch) street, Ran Dian (dyeing indigo)

street. These names of the streets in the outside of southern gate might be relate to that the river flowing along the southern outside of the city was famous for its washing the silk and brocade in historical time. In the outside of northern gate there were such main streets and alleys as Cheng Huang Miao (the temple for worshipping the god protecting the city), Dou Fu (bean curd) street, Cao Fang (herb buildings) alley, Hou He Bian (behind river side), Xia He Ba (lower river side) alley. By these names of streets and alleys it could be identified that the outside of eastern gate was the important commercial center of Cheng Du. Here there were the street for selling mainly pear and jewel, some special docks such for salt, firewood and large dock for loading and unloading many sorts of cargoes. In the outside of eastern gate the name “Hui Hui (Muslim) alley” was called for dwelling Muslim who might migrate here for commercial business.

Although the rivers and others natural factors made many influences on the layout of Cheng Du city, but this city also stiffly displayed the character of structure of central axis.

There was a Central axis in Cheng Du city prior Ming Dynasty. It extended in northeast-southwest direction and connecting the southern and northern gates through the whole city. It also extended straightly to ahead to south-west to the Bridge Wan Li (万里桥) on the big river along the southern outside of the city. The reason that this central axis extended in the northeast-southwest direction was the result that the layout of this city was arranged according to the rule “acclimatizing the courses of the rivers and the stretch of mounts and hills.”

However the layout and the structure of central axis were greatly changed in the beginning of Ming Dynasty for the first emperor Zhu Yuanzhang gave one of his sons a title “Shu King.” And the “Shu King” built a large group of buildings in the most important location, viz. the middle of Cheng Du city by right of his especial power. This buildings group was enclosed by city walls and was called “Shu King Fu” (Shu King Buildings) and also called “emperor city,” and called the “inner city” later. There was a canal surrounding it. “Shu King Fu” was so large area to 540 Mu and in regular rectangle shape extending in south-north direction in its long axis. “Shu King Fu” occupied the middle part of Cheng Du city and broke the central axis of the city prior Ming Dynasty and made it into two segments that the north-eastern segment was longer than the south-western one. However “Shu King Fu” possessed a central axis displayed by a wide street in just north-south direction. This street extended to just south to the south wall of Cheng Du city. But this street didn’t extend to the north out of “Shu King Fu.” This new central axis extending in just north-south direction intersected with the old central axis in the south of “Shu King Fu.” Later as the development of the central axis of “Shu King

Fu” or “emperor city” or “inner city” and became the center of the development in the southern part of Cheng Du city, the southern segment of the old central axis was gradually replaced and tended to disappear. Today the main wide street in the southern part of Cheng Du city-southern people’s road has been formed on the base of the central axis of the “emperor city.”

These two central axes formed early or late in historical time also clearly display in the layout of Cheng Du city today. Today’s streets of Cheng Du city show two systems. One group of the streets is related to the old central axis formed prior Ming Dynasty, they extends or in northwest-southeast direction, or in northeast-southwest direction. And another group of the streets is related with the new central axis formed in Ming Dynasty and extends or in just north-south direction, or in just east-west direction. The later group of the streets only distributes in the south part of Cheng Du city, for the new central axis formed in Ming Dynasty only extended from “Shu King Fu” to the south direction.

3.2 The structure of central axis of Da Tong city in Ming and Qing dynasties

The city Da Tong was located on the zone where the agriculture and nomad were intersected in historical time, and the agricultural nation fight frequently with the nomad for occupying this zone. There was the capital Ping Cheng in the earlier stage of Northern Wei Dynasty. The famous Da Tong Yun Gang Grottoes was excavated in Northern Wei dynasty near the city. Here also was the Western Capital of Liao Dynasty. Up to the present here also reserved the temples built in Liao and Jin Dynasties. In Ming Dynasty, the Great Wall was constructed along this zone of agriculture and nomad intersecting. Da Tong was important city along the Great Wall. In Hong Wu fifth year (AD 1372) on the base of old city of Liao, Jin and Yuan Dynasties a new city was reconstructed. For strengthening frontier defense, the first emperor Zhu Yuan Zhang in Ming Dynasty gave the title “Dai King” to one of his sons and sent him to live in Da Tong city. In the time of the emperor Yong Le being on the throne, here was set up a general who supervised longer part of Great Wall. Here frequently happened the wars against the invading and plundering of Mongolian cavalry in Ming Dynasty. In the middle and later age of Ming Dynasty, Shanxi Xing Du Si (山西行都司, a regional administration and military organ) was set up here and dominated two Lu (路) --eastern and western Lu and 15 Wei (卫) and Suo (所). The amount of Garrison troops was 0.13 million at its maximum. In Ming and Qing Dynasties, Da Tong was the administration center of Da Tong Fu (大同府, (a administration region under the province) and Da Tong county (大同县).

According to the record of <Da Ming Yi Tong Zhi> (《大明一统志》, a geographical book on every administration region of whole country written in Ming Dynasty), Da

Tong city in Ming Dynasty was located in the west of the capital Ping Cheng in Northern Wei Dynasty about 3 Km. There were two river flowing along eastern and southern sides of Da Tong city respectively. the river flowing along its eastern side was called Yu river (御河), and also called Ru Hun river (如浑河). And the river flowing along its southern side was the branch of Yu River. These two rivers met in the southeast of Da Tong city. There was mountain land in the west of Da Tong city.

Da Tong city was consisted of a group of “walled cities” including a main city and three smaller “walled cities.” The three smaller cities were located in the north, east and south of the main city respectively and abutted on the northern, eastern and southern gates. The main city was expanded and reconstructed in Hong Wu 5th year (AD 1372a) in the beginning of Ming Dynasty on the base of the city in Liao Jin and Yuan Dynasties. The city wall was established the base by stone, and the both sides of city wall were wrapped by fired-brick. Its perimeter was about 6.5 Km. The height of the wall was 14m. There were four gates of the main city. The main city Da Tong in Ming dynasty had some inheritance. In the time of the emperor Jing Tai being on the throne (AD 1450~1456), in the north was constructed a small city. Its perimeter was about 3 Km and three city gates. The height of its wall was over 12m. And in the time of the emperor Tian Shun being on the throne (AD 1457~1464), in the east and in the south of the big city, there were constructed two small city called as the eastern small city and southern small city. Each of them had the perimeter about 2.5Km, and had very deep trench in the depth 4.5m to around the city wall, and had three gates respectively. There wasn't a small city in the west of the main city, this layout might relate with the mountain land in the west of the city.

The structure of the central axis of the main city in Ming Dynasty displayed some characters. It was a regular square shape. It had two main streets: one extending in south-north direction, and another in east-west direction. Both of these streets were across each other at right angles, the location of the intersecting of these two streets was in the center of the city. There were four Pai Lou (牌楼, decorated archway). And the two small city in the south and in the north of the main city had itself main street extending in south-north and in the position of extending line of central axis of big city (see the map of Da Tong city in Ming and Qing dynasty). The relationship of these two small cities with the big city in layout and in the central axis, greatly stressed the structure of the central axis of the main city. The structure of the central axis of Da Tong city was unique in historical cities of china.

In Qing Dynasty, the city was remedied for many times, but the layout and the structure of the central axis still continued in Qing dynasty.

In the beginning of 20 Cent the railway from Beijing to Feng Zhen in the north of Da Tong city was constructed. Da Tong was a important city on this railway line. And a railway station was built in the north of the city on the extending line of the central axis of the city. So this railway station extended the central axis.

Today the four Pai Lou in the center of the city in Ming and Qing Dynasty had been dismantled away already. And the street in south-north direction was widen and extended and became the main commercial street of Da tong metropolitan.

3.3 The structure of central axis of Shang Qiu city surround by lake in Ming and Qing dynasty

The city Shang Qiu is located in the southeast of Henan province. It has a long history. There are many ancient remains around this city. In its south there is “Wei Zi” tomb who was the descendant of Shang Dynasty and was conferred the surname as “Song” in the beginning of Zhou dynasty. And the family name “Song” originated from this “Song.”

In historical time, Shang Qiu has been the political center in the south-east of He Nan province, a very important position. In Tang Dynasty, here was the political center of “Song Zhou” (宋州, a administration region). In Northern Song dynasty, here was “Southern capital” and was the political center of Ying Tian Fu (应天府, a very important administration region near the capital Bian Liang city(today’s Kai Feng city). In Yuan, Ming and Qing Dynasties here had been the political center of “Gui De Fu” (归德府). In the time of Tang and Song Dynasties, the city was very big. However since the end of Northern Song Dynasty, this city was flooded by Yellow river for many times. So in Ming Dynasty its location was moved to south in a little distance and its dimensions was much smaller than in Tang and Northern Song dynasty. The city was reconstructed in Ming Dynasty, and its walls, the people dwellings and the street constructed in Ming dynasty still have been reserved fairly good now.

The city in Ming dynasty was surrounded by water of a big lake. There were two rings of city walls. The inner city walls had the perimeter in 3.6 Km, and the outer city walls had the perimeter in 9 Km. There has been a continuous big lake between the two rings of the city walls. And there have been several separated lakes outside of the outer city wall. The main street of the Ming city was extended about in south-north direction, but in a little deviating to the south-western direction and made up the central axis of the city. Its length was about 1 Km. Standing on the northern gate the southern gate could be seen through the main street. And there wasn’t a straight wide street through the whole city in east-west direction..

3.4 The structure of central axis of Chen Zhou city surrounded by a lake in Ming and Qing Dynasty

Today Huai Yang County city in south east of Henan province has very long history. In the time of western Zhou and Chun-Qiu, here was the capital of Chen kingdom. In famous <poet collection> (《诗经》) some poets described the folk custom of the capital city of Chen kingdom in the time of Chun-Qiu. In the later stage of Chun-Qiu, Chen kingdom was perished by Chukingdom. And in the time of the Warring States (战国时期, or fighting kingdoms) (475-221 B.C.) the king Qing Xiang Wang of Chu kingdom moved his capital from Ying (郢, located in today's Jiang Ling in Hubei province near Yangze River) to here, and the Chu kingdom was called "Eastern Chu." In the beginning of Han Dynasty, the first emperor Gao Zu (Liu Bang) in the eleventh year of him being on the throne (196 B.C.), here was set up Huai Yang kingdom. Later with replacing of the Dynasties, here was the political center of the region where was called Chen Zhou. And here had been a important city of the southeast of Henan province in historical time. The old city of Chen Zhou had been located on a small island surrounded by a large lake at least from the time of Chun-Qiu or about 800a BC. For this reason, the location and extension of this city haven't been changed anymore in historical time. This old city wall was reconstructed and strengthened and wrapped with fired-brick in Ming dynasty. The perimeter of the city was about 3.5 Km (乾隆《陈州府志》卷五《建置》). However here still retained some remains in the time Chun-Qiu, Tang and Song Dynasties. The layout of Chen Zhou city built in Ming Dynasty probably had some inherit in the layout.

The location of this ancient city hasn't been changed anymore at least since the time of Chun Qiu about 800a BC.

There were inner and outer city walls around Chen Zhou city built in Ming Dynasty. There have been four separated lakes between these two city walls. And there has been a wide continuous lake around the outside of the outer city wall.

As this city has been existed since about 800a BC and only was partially reconstructed in different historical time, the reconstruction of the city in Ming Dynasty also was partially, so the layout of the city in Ming and Qing Dynasties hadn't been arranged according to a uniform planning. The distribution of official buildings, the temples and other building built in Ming and Qing Dynasties and more old buildings was hard to be found clear rule. Although this city has so complicated and long history, there was a long and straight backbone street extending nearly in north-southern direction deflecting a little to west in the morphology of the layout of the city. This street divided the city into approximately two equal parts. This street also has been the commercial center and it also has been only clear central axis in the layout of the city. This central axis had existed

already prior Ming Dynasty and has been most outstanding character in inheriting historical culture. Especially it should be put out that this backbone street has extended to northern and southern direction through the lake surrounding the city. And there have been two small man-made islands locating in the southern and northern lake of the city and on the extended line of the backbone street. This backbone street just has extended by these two small islands through the lake in the south and north of the city to the lands on southern and northern sides of the lake. It is clear that these two small islands in the southern and northern lake of the city and the backbone street extending to southern and northern directions and through the lake have formed long extended central axis, greatly strengthened the structure of central axis of this ancient city.

However there hasn't been a main street through the whole city in eastern-western direction. This character in layout might make the central axis more outstanding.

This character of the structure of central axis has been retained through Qing Dynasty till today.

3.5 A unique structure of central axis—Ping Yao County City in Ming and Qing dynasty

Ping Yao County City is famous for being listed as world cultural heritage by UNESCO. The county Ping Yao is located in the south of Tai Yuan city in the middle of Shanxi province. Ping Yao County has long history. Here was set up a county in Han dynasty. Later in long historical time, it had been important county in the middle of Shan Xi province. Especially in Qing Dynasty, Ping Yao County City occupied a important position in finance and in the history of commerce in China in Qing Dynasty. The “Piao Hao” (Ticket Number) almost monopolized the remittance business in silver almost over the whole china. The “Piao Hao” was a quasi-bank engaging in remittance business. The “Piao Hao” in Ping Yao county city had a net covering greater part of China. And the businessmen of Ping Yao County City went abroad for business.

With the development of commerce and trade of Ping Yao County City, there were many rich businessmen in this city. And the people living here was rich, the economy was flourishing. The dwelling houses for common people were constructed excellently, and had refined outward appearance and magnificent decoration.

Ping Yao City was reconstructed in Ming dynasty and has been preserved fairly good up to present, including the city walls and the buildings on the city walls, the shops and people dwelling house built in Ming dynasty. There are 3797 groups of people dwelling house with enclosed yard constructed in Ming dynasty. And in this city there also were preserved official buildings and streets constructed in Ming and Qing dynasty. Ping

Yao county city is the best reserved county-grade city and was received in the list of world cultural heritage by UNESCO.

The city is the shape roughly in square. Its general direction is about to the south but a little deflecting to east. Its walls in three sides, the western, northern and eastern walls extend in straight line forming right angels. And its southern wall is winding relating with a natural river flowing along outer side of southern wall. The every side of the city has a length approximate in 1.5 Km. This length was followed the stipulation that the perimeter of county-grade city should be in three Chinese li (approximate equal 1.5 Km).

Although the Ping Yao county city displays the character of the structure of the central axis, but the form of its central axis and the layout of its streets is peculiar and different with the traditional form of historical cities in china. There wasn't a straight street through the city in south-north direction as many other Chinese historical cities, but there is a straight street in east-western direction through the whole city and it is the main traffic road of the city. This street extending in eastern-western direction was located in the north of the center. It divides the city into two parts. The southern part is the two-third of the city. The official buildings in Ming and Qing dynasties were located in the southern part. The reason that there was only through street extending in eastern-western direction might be related with the river along the outside of southern wall. This river could influenced the layout of the city. These two part of the city have a main backbone street extending in northern-southern direction apiece. But these two streets weren't arranged in same straight line. They were broken and called southern big street and northern big street respectively. The southern big street was extended to the southern city gate, and the northern big street was extended to the northern city gate. The northern gate and the southern gate weren't arranged in a straight line.

Although there wasn't a through straight backbone street extending in northern-southern direction, but the layout also displays the character of the structure of the central axis. The structure of central axis was mainly displayed by southern big street. The old shops in Ming and Qing Dynasties in the city were mainly located in southern big street. There were 78 old shops in Ming and Qing Dynasties. The quasi-bank shops having very important position in the history of the finance and commerce and trade in Qing Dynasty such as the "Piao Hao" ("Piao Hao" was a quasi-bank engaging in remittance business in silver.) monopolizing the remittance business in silver almost over the whole china were located the southern big street. The south big street was the commercial center of Ping Yao city in Ming and Qing Dynasty. The regional function in the both side of this street was symmetry: there were the official buildings in western side of this street, and there were many religious temples in the eastern side of this street. There also was a high

building in three floors symbolizing the geometrical center of the city across on the southern big street. This building might strengthen the character of the structure of central axis. The southern big street is through a hole under this building. The chronology of this building built couldn't be indicated. According to the record on the inscription, this building was reconstructed in 1688 AD (Kang Xi 27th in Qing Dynasty), and later remedied in many times. This kind of building spanning the main street has been very rare in China (see the map of Ping Yao city and the photo of the building spanning the street).

In addition the official buildings were located on the line of northern big street extending. According to the map of the city in the book Kang Xi <Ping Yao Xian Zhi> (康熙《平遥县志》, a geographical writing on Ping Yao county) the official buildings were outstood as prominent position on the central axis. So the northern street and official buildings could be considered another central axis line paralleling to another central axis line--southern big street.

The type of the structure of the central axis in Ping Yao city has been unique in Chinese historical cities.

3.6 The structure of central axis of Wu Xi city in Yuan, Ming and Qing dynasties — the river course had been the central axis

Wu Xi city is located in the northeast of the lake Tai Hu on the delta of Yangzi River. It has long history. Wu Xi County was set up in 202 BC (Gao Zu fifth year in Western Han Dynasty). In later two thousands years, Wu Xi has continuously been the administration grade of "county." The position of the city Wu Xi hasn't been moved. The city was reconstructed for many times, but its layout and the structure of central axis had some inheritances.

According to Qian Long <Wu Xi Xian Zhi> (乾隆《无锡县志》, a geographical writing on Wu Xi county) in Zhi Zheng (至正) 13th year (1353) in Yuan Dynasty the area of the city was expanded, and the wall of Wu Xi city was reconstructed, and the city wall was wrapped by fired-brick and stone on the its both sides. The city wall was at a high to 6 m. The contour of the city was nearly a rhombus in a length about 1.5 Km. There was a canal in deep 6 m and broad 21 m along the outside of the walls. And four gates and three water gates of former city were retained and three gates were abandoned. Later the wall of the city was reconstructed, but the extension of the city wasn't changed anymore. The city wall was demolished in 1949a, and along the location of city wall a road around the city was constructed.

The morphology and central axis of Wu Xi city in Ming and Qing Dynasty were peculiar. Its contour was nearly a rhombus. Great Canal flew through the rhombus from

northern corner of the rhombus to its southern corner. There some short canals were distributed about in symmetry in the both sides of the Great Canal. There was northern water gate and southern water gate where the Great Canal through northern wall and southern wall respectively. It is clear that the Great Canal was a symmetrical axis of the plane layout of the city. This character was represented by the ideal maps of city drawn in the time of Ming and Qing Dynasties. On the map of the city in the writing <Wu Xi Xian Zhi> (《无锡县志》) written in Hong Zhi (弘治) 7th year (1494 AD) the contour of Wu Xi city was represented ideally as a regular circular shape, and the Great Canal was through the center in north-southern direction and formed the diameter of this circular contour. On the map of the city in the writing <Wu Xi Xian Zhi> written in Kang Xi 28th year (1689 AD) the contour of Wu Xi city was represented as nearly circular shape, and the Great Canal also was represented through the center of the circular shape. It is clear that the Great Canal through the city was considered as the geometrical central axis of the city.

According the two versions <Wu Xi Xian Zhi> (《无锡县志》) written in the time of Qian Long and Jia Qing emperors, the commercial center of Wu Xi city was located on the both sides of Great Canal through the city. There were three commercial centers: the large market, the middle market and the southern market. All of these three commercial centers were located along the Geat Canal. The large market was located in the northern segment of the Great canal. The middle market was located in a little south of the middle of the Great Canal. The southern market was located in the southern end of the great Canal. There were many kilns for making the pottery along the Great Canal in the time of Ming and Qing Dynasties. Wu Xi city was famous for “rice market” in the time of Ming and Qing Dynasties too. The “rice market” was located in the northern end of the Great Canal.

The important temples in Wu Xi city in the time of Ming and Qing Dynasties were located along the great Canal too. For example the most important temples Nan Chan Si (南禅寺) and Bei Chan Si (北禅寺) were located near the Great Canal. There was a small island in the middle of the water course of the northern end of the Great Canal. This small island was called Huang Bu Dun (黄埠墩). And from ancient time there has been a temple to be worshiped by the ships coming and going.

In a word, the Great canal was the geometrical central axis as well as the center of commerce and culture.

According to <Wu Xi Xian Zhi> written in the time of the emperor Qian Long, in 1726a AD (Yong Zheng 4th year), Wu Xi county was divided into two counties: Wu Xi county and Jin Kui (金匮) county. The official organs of these two counties were set in the east and the west of the Great Canal in the city of Wu Xi respectively. And there also

was a temple for protecting the city in the east and west of the Great Canal apiece in symmetrical distribution. The two counties divided didn't make obvious negative influence on the layout, but strengthen the character of the structure of central axis in some extent.

The design of taking the Great Canal as the central axis of the city has been unique in china.

4. The Conclusions

In china, although there have been many historical cities without the structure of the central axis by limiting of some natural factors (river, relief and so on) and human factors (mainly culture), however many Chinese historical cities tried to follow the idea of the structure of the central axis in very different natural and human conditions.

The thought of the structure of the central axis appeared in ancient time in China. However the model of the layout of the capital in <Kao Gong Ji> might be perfected finally in Western Han Dynasty. The capital Xian Yang in Qin Dynasty and the capital Chang An in Western Han Dynasty hadn't the structure of central axis, but gestated the model in <Kao Gong Ji> and made it reaching perfect. The arrangement of the "King Palace" in the northern end of the central axis in the capital Ye city in Cao Wei Dynasty and the Chang An city in Sui and Tang Dynasties should be related to natural environment. The changes of the structure of central axis in the layout of the capital Da Du in Yuan Dynasty and Beijing city in Ming and Qing Dynasties should be related mainly to the natural environment and was the results for better harmonizing with natural environment. But the extending of the central axis of Beijing city in later Ming Dynasty and Qing Dynasty was related to the social and economic factors.

The layout of local administration center in different grade had tried to follow the traditional idea on the structure of central axis in one hand, and to adapt to and harmonize the natural environment. The adaptation and harmony made the structure of central axis representing diversity.

The structure of the central axis has been important component of Chinese traditional culture and also has been a important form in representing Chinese cultural tradition.

With the difference of natural and human (economic, military and culture) conditions, the structure of the central axis had been represented varied. Many historical cities in their layout had tried to follow the traditional idea in the structure of the central axis in one hand, and had some adaptations to the changes of natural and human conditions for displaying the traditional idea of the structure of the central axis in another hand. These adaptations had greatly enriched the form and the content of the structure of the

central axis.

The structure of the central axis has been very important for city construction today in china. In recent years, the structure of the central axis and many ancient buildings had been destroyed in many historical cities, but now more and more scholars and government officer are recognizing that the structure of the central axis should be preserved and they are trying to use this idea in their protecting the historical cities and in planning of city construction.

[Abstract]

The structure of the central axis had been an important character of many Chinese cities in historical time. The idea of the structure of the central axis was formed and developed during the Sha and the Shang Dynasties. Although the capital Xian Yang in the Qin Dynasty and Chang An in the Western Han Dynasty did not have the central axis structure, the layout of Xian Yang And Chang An had on effect on the formation and perfection of the layout of the capital in <Kao gong Ji>. The arrangement of the “King Palace” at the northern end of the central axis mainly related to the natural environment. The changes in the structure of the central axis in Da Du city in Yuan Dynasty and Beijing city in Ming and Qing dynasties were also influenced by the natural environment. They were the result of creating a better harmony with the nature. The extension and the development of the structure of the central axis in later Ming Dynasty and Qing is connected with social and economic factors. However the incarnation of the idea or model of the capital layout of <Kao Gong Ji> in the real planning of these cities from Chang An in Sui and Tang Dynasties to Beijing city in Ming and Qing Dynasties demonstrates that there has been a continuing development, maturation and perfection of this process. In addition to the layout of the cities, local administration centers have also, to a lessen extend, tried to follow the idea or model of the structure of the central axis in <Kao Gong Ji>. The changes or differences in the natural environment and human conditions have also resulted in a diversification of the morphology of the central axis.

Keywords: Chinese historical cities, the structure of central axis, morphology of central axis, the layout of city, morphology of city