Research on the Interactive Relationship between the Spatial Evolution of Handicraft Production and the State Form in the Pre-Qin Capital[1]

Zhang Yidan
Northwest University; China United Northwest Institute for Engineering Design & Research Co, Ltd

Abstract

The period from pre-Qin to Han Dynasty in ancient China was an important stage of the transformation from "kingdom" to "empire". The research on the productive space that served and supplied the power subjects in the capital cities of ancient China with the theocratic system was a part of the previous capital research which was less noticed. Meanwhile, the research value of the handicraft workshop space in the economic archaeology has not been taken into account. In this study, 16 major capital cities with relatively abundant archaeological data from the Three Dynasties to the Qin and Han Dynasties were selected, and the layout, location, attributes and spatial form of the handicraft workshops in these cities were compared and summarized by using the published archaeological reports and other materials related to handicraft workshops through the classification and time-sharing analyses of the relic information. It was found that, as time passed, the evolution of the handicraft workshops space in the pre-Qin capital city showed several features, such as the marginalization of the spatial location, the hierarchization of the industrial categories, and the scalization of production areas. The handicraft production space expanded to the outer region of the capital city, which was gradually far away from the palace area space over time. Craft production space area was gradually scaled up, with the emergence of a centralized handicraft production area. There were hierarchical differences in handicraft industry categories, manifesting the spatial distribution differences between ceremonial and practical handicraft locations. During the Three Dynasties, the demand for the spatial production of ceremonial articles represented by bronzes was higher than the practical demand, and after the Spring and Autumn Period and the Warring States Period, the demand for practicality gradually began to increase over that for ceremonial products. The change of the state form was a decisive factor in the spatial layout of handicraft production. In the early capital cities, the important government-run handicraft production space was part of the "state apparatus" and belonged to the power space. The military ideology and the way of war were the secondary most important factors affecting the spatial layout of the production, especially in the Spring and Autumn and Warring States Periods. Generally speaking, the status of productive space is declining with the enhancement of state power.

Keywords
Capital city; Handicraft production space; State form; Interactive relationship

How to cite
Zhang Yidan, "Research on the Interactive Relationship between the Spatial Evolution of Handicraft Production and the State Form in the Pre-Qin Capital". In Ian Morley and Hendrik Tieben (eds.), *International Planning History Society Proceedings*, 20th IPHS Conference, "The (High Density) Metropolis and Region in Planning History," Hong Kong, 2 - 5 July, 2024, TU Delft Open, 2024.

DOI: 10.7480/iphs.2024.1.7651

INTRODUCTION

The greatest achievement of mankind has always been the city she created, and the city displayed and released the desire of human creativity [1]. The core role in the creation of the ancient Chinese capital city was the subject of theocracy, and such a feature was particularly strong in the early Chinese capital city. In ancient Chinese capital city, the related industrial space system that provided production, supply and services for the theocratic space system was also enormous.The study of ancient capital planning depends on the results of archaeological excavations, while the previous archaeological excavations usually focused on the palace and temple areas first. The study on the industrial space was much less than that of "theocratic space". The evolution of this part of the space can reflect the change of the planning concept of the capital city from another perspective. The study of ancient capitals should be based on the spatial study to "see people through things", and the specific analysis of space should be upgraded to an in- depth observation of "people" and the evolution of civilization in their era.

OVERVIEW OF THE SPATIAL EVOLUTION OF HANDICRAFT PRODUCTION

The handicraft industry in ancient China originated from primitive society. The Jade Age brought about a new understanding of copper, tin, gold, silver and other metal ores[2], and the discovery of copper undoubtedly had an unprecedented impact on the handcraft industry.

The Bronze Age is archaeologically a stage in the development of human culture marked by the use of bronzes, one of which is characterized by the important position of bronzes in people's production and life [3].Soon after the beginning of the Eastern Zhou Dynasty, the emergence of ironware had a profound impact on Chinese culture and society. Bronze tools began to first overlap with the use of iron. As pig iron was relatively cheaper, it was suitable for manufacturing large quantities of iron tools[4]. After the Spring and Autumn Period and the Warring States Period, the demand for trade increased, and the government-run handicraft industry that appeared at the same time as iron smelting also included coinage, etc.[5]. At this moment, coinage was independent from the copper casting handicraft industry [6].

In this study, 16 major capital cities with relatively sufficient archaeological data from the Three Dynasties to the Qin and Han Dynasties were selected for classification and time-sharing analyses, and the layout, location, attributes, and spatial forms of handicraft workshops in the capital cities were compared and summarized. Including Taosi[7,8,9],Erlitou[10,11,12,13,61],Zhengzhou Shang Dynasty City[14,15,16], Yin Ruins in Anyang[17,18,19,20], Zhouyuan[21,22,23,24,25], Yongcheng[26,27,28,12,9], Jinan City of Chu State[30],The city site of Lu State[31,32],Lingshou City of Zhongshan State[33,34,35,36],Handan of Zhao State[37],[38],Xintian Ancient City of Jin State[39],Xiadu of Yan State[40,41,42],Linzi City of Qi State[43],[44],The city site of Zheng and Han States[45,46,62], Xianyang of Qin State[47,48,49],Chang'an of Western Han Dynasty[50,51,52,63].

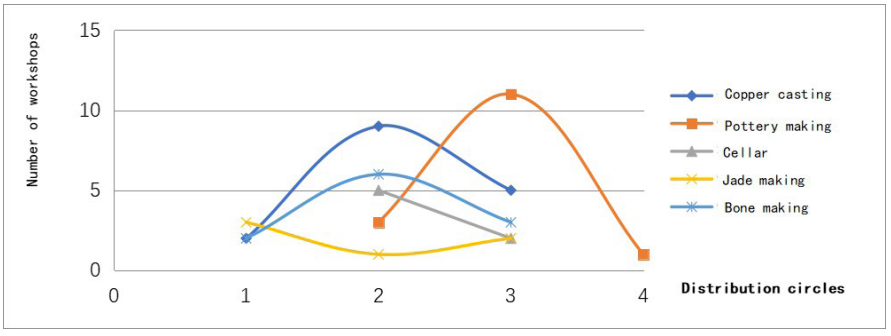

Fig. 1. Distribution curves of handicraft workshops in different circles of the capital city during the Three Dynasties period. (Source of images: the author's own production based on statistics)

The capital cities were classified into four circles according to their spatial distance relationship with the palace area or the imperial city. Circle 1 was within the palace area, Circle 2 was within a closer distance outside the palace area, Circle 3 was farther away from the palace area but within the city walls, and Circle 4 was outside the capital city or outside the city walls. (The subsequent illustrations are marked with numerical serial numbers, and the name of each workshop in the table is abbreviated with the tools it produced).

It should be noted that since the archaeological excavation of the ruins of ancient capital cities cannot be equated with the evolution of the capital city in the real historical process, the current data results cannot support precise spatial measurement, but rather reflect the spatial characteristics and evolutionary trends.

EVOLUTIONARY CHARACTERISTICS OF HANDICRAFT PRODUCTION SPACE

MARGINALIZATION OF THE SPATIAL LOCATION OF HANDICRAFTS PRODUCTION: "OUTER ROTATION" WITH THE PASSAGE OF TIME AND GRADUALLY DISTANCING ITSELF FROM THE SPATIAL RELATIONSHIP OF THE PALACE AREA

The handicraft space should have been set up with planning intentions from the site of Taosi. Copper casting workshops in early capitals often coincided with city walls and palaces (such as Zhengzhou Mall), and some copper casting sites in the palace areas were built earlier than the ancestral temples (Yin Ruins), indicating that the early handicraft production space had a high position.

From Xia and Shang Dynasties to the Western Zhou Dynasty, the workshop with the largest number of inner Circles1 in the palace area was the jade casting workshop, followed by the copper casting workshop.

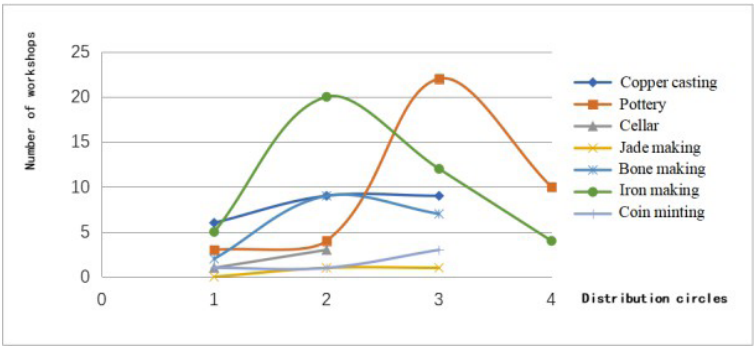

Fig. 2. Distribution curves of handicraft workshops in different circles in the capital cities during the Spring and Autumn Period and the Warring States Period. (Image source: The author made them based on the statistics)

The largest number of the workshops in Circle 2 was also copper casting workshops, followed by bone making workshops. At this time, pottery and cellars were not yet present in the inner circles of the palace area. At this stage, Circle 2 outside the palace area was the circle with the highest total number of workshop distribution, followed by Circle 3 far from the palace area and Circle 1 inside the palace area, while Circle 4 outside the city wall.

Compared with the Three Dynasties period, there were more kinds of handicraft workshops in the Spring and Autumn Period and the Warring States Period, such as pottery making, iron casting and coin casting workshops, and bronze cellars. The large st number of workshops in Circle 1 of the palace area was still bronze casting, followed by iron casting. (But this data was affected by Linzi City of Qi state, because only iron casting workshops of Linzi City among the Eastern Zhou capitals was within the palace area. There were also relics of copper casting in the palace area in the city sites of Zheng and Han states, while the cellar of Yongcheng in the capital of Qin State was also in Circle 1). In Circle 2, the largest number of workshops have changed from copper casting to iron casting, and the number of jade making workshops was decreased. It is worth noting that the curvature of the distribution curve of copper casting workshops became smaller in the Spring and Autumn and Warring States Periods, and the quantitative distribution in Circle 2 and Circle 3 was close to each other, suggesting that a number of copper casting workshops were migrated into Circle 3. In this period, the total number of workshops in Circle 3 was the largest, followed by Circle 2 and Circle 1, and only iron casting and pottery workshops appeared outside city wall.

During the period of Empire, bronze and iron casting workshops were withdrawn from the interior of the palace area, but appeared in Circle 2 and Circle 3. There were almost no handicraft workshops within the palace area, and only temporary pottery workshops once appeared within the palace area of Chang'an in Han Dynasty. They were abandoned after being used, and the arsenal was within the palace area. The distribution curve of the pottery workshop was similar to those of the previous two periods, with the largest distribution in the Circle 3 far away from the palace area. At this time, the workshops for making jade and bones disappeared.

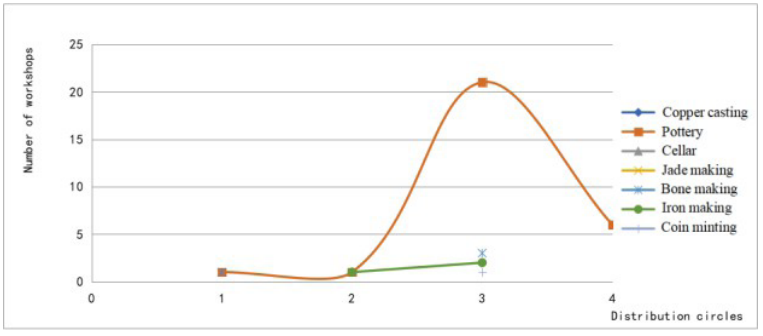

Fig. 3. Distribution curves of handicraft workshops in different circles in the capital during the Qin and Han Dynasties. (Image source: The author made them based on statistics)

It can be seen from the curve diagrams of the distribution of workshops in the above three periods that with the passage of time, the circle with the largest total number of workshops has moved from Circle 2 close to the palace area to Circle 3 far away from the palace area.

The handicraft production space gradually rotated outward from the initial position of placing the most important workshops in the palace area and adjacent to the palace area.

By the time of the Empire, the handicraft industry space was highly confined to a specific space with the finalization of the government-run market, and gradually became distant from the space of the palace area, and was progressively isolated.

SPECIALIZATION OF HANDICRAFT PRODUCTION SPACE: THE EMERGENCE OF LARGE-SCALE HANDICRAFT PRODUCTION AREAS

With the increase of handicraft categories, the handicraft industry space gradually tended to be large-scale and specialized, and the prototype of “the specialized handicraft production area” appeared in Yuntang of the Western Zhou Dynasty. During the Spring and Autumn and Warring States Periods, many countries began to set up a separate area for specialized handicraft production, such as the pottery and metal smelting production areas in Chu State, which were located on the north and east sides of the palace area respectively. In these cities, such as the city sites of Zheng and Han States, the ancient city of Lingshou in Zhongshan State, Handan City in Zhao State, and the Houma Capital City of Jin State, many different types of handicrafts were centrally arranged in the specialized areas. There were also the scattered handicraft workshops in several capitals, such as Yongcheng in Qin State, Xiadu in Yan State and Linzi in Qi State.

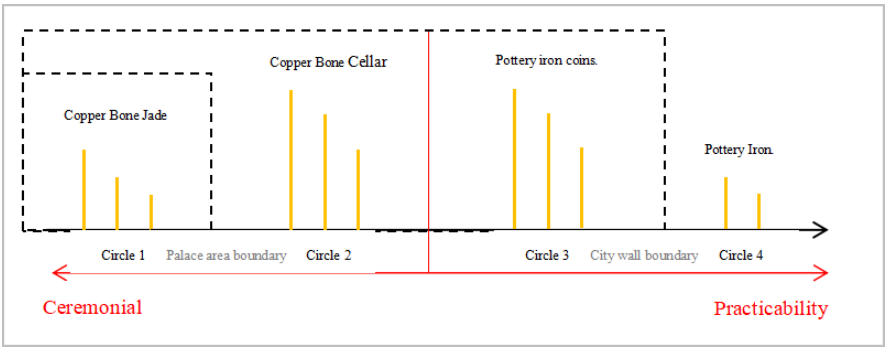

Fig. 4. Statistical schematic diagram of the frequency of handicraft types in each circle of the capital from the Three Dynasties to the Qin and Han Dynasties. (Image source: The author made them based on statistics)

THE HIERARCHY OF HANDICRAFT PRODUCTION SPACE: THE SPATIAL DISTRIBUTION DIFFERENCE BETWEEN CEREMONIAL AND PRACTICAL HANDICRAFT LOCATIONS

According to the statistics of the frequency of different kinds of handicraft workshops in the capital city and each circle in each period, the three kinds of handicrafts with the highest frequency in each circle were shown in Fig. 4. Handicrafts could be divided into two categories: ceremonial handicrafts and practical handicrafts. Copper casting and jade making could be classified as ceremonial handicrafts. Although bronze was also used in the production of weapons, its proportion was less than that of bronze ceremonial (containment) ware. Coin minting, iron making, pottery and bone making could be classified as practical handicrafts, among which bone making workshops were more considered to serve copper casting in the early days. In addition, the raw materials for making bones were divided into animal bones and human bones, and the workshops using human bones as materials were for the service of the power class. It could be seen that the ceremonial workshops and those serving the ceremonial handicrafts were distributed closer to the palace area, and appeared more in Circle 1 and Circle 2; Practical handicraft workshops were more often located far from the palace area or outside the city, appearing more often in Circle 3 and Circle 4. During the Three Dynasties period, the ceremonial demand was higher than the practical demand, and after the Spring and Autumn Period and the Warring States Period, the practical demand began to gradually exceed the ceremonial demand.

The spatial location of metal production, represented by copper, occupied the most important position in the Bronze Age. With the end of the Bronze Age, the importance of this spatial location gradually declined in the layout of the capital, and the pottery and stone workshops were dispersed to the surrounding settlements very early, indicating that handicrafts of different nature had a hierarchical tendency in spatial distribution from the very beginning.

On the whole, during the period from the Third Dynasties to the Qin and Han Dynasties, copper-casting workshops were distributed certainly close to the palace area, and their frequency

was the highest within the palace area and near Circle 2 in the palace area. Copper casting workshops and bone making workshops often appeared together, and the curves of their distribution in the four circles were close to each other, which might be more convenient to obtain and manage the bone tools in the process of copper casting production. Before the Spring and Autumn Period, the jade workshops were closer to the palace area, especially in Zhouyuan Site in the Western Zhou Dynasty. The nearest workshop outside the Young Phoenix Palace area was a jade-making workshop. The iron casting workshops was mainly distributed in Circle 3. Except for Linzi of Qi State, almost no iron smelting workshops were arranged inside the palace area, and most of them were outside the palace area, or set up separately in the handicraft industry gathering area. This distribution was similar to that of copper casting workshops in the same period. However, compared with the status of the copper casting workshops relative to the palace area in the early stage, the spatial status of the iron-smelting workshop was declining. Pottery workshops were the most widely distributed in all four circles. The government-run pottery workshops were often distributed near the palace area for convenience, but the number of circles with the most distribution of pottery workshops is Circle 3.

IV THE INTERACTIVE RELATIONSHIP BETWEEN THE SPACE OF HANDICRAFT PRODUCTION AND THE CHANGE OF STATE FORM

THE CHANGE OF STATE FORM WAS THE DETERMINING FACTOR IN THE SPATIAL DISTRIBUTION OF HANDICRAFT PRODUCTION

(1) The space for bronze production in the Kingdom period triggered the early urban planning

The ancient capital cities were premised on the formation and existence of states (including kingdoms and empires) or dynasties [52], and the Central Plains, where the earliest bronzes appeared, was the first region in the East Asian continent to see the emergence of a wide area of royal power. It can be said that the emergence and production technology of bronze ritual vessels were synchronized with the earliest "China" [53], and the concept of "Chinese Bronze Age" was almost interchangeable with the ancient Chinese civilization [54].

Mr. Zhang Guangzhi once proposed that "Urban planning in China started at the same time as the Bronze Age, and it was a necessary feature of the society in the Bronze Age [55]". So can it be further deduced that the bronze production space in the early capital cities "triggered" the ancient urban planning? Compared with other kinds of handicraft spaces, the important government-run handicraft space represented by the bronze production had a strong "exclusivity" and was a parallel unit of the "theocratic space".

Taosi site, as the original capital of "China", belonged to the civilization of the city state [56]. Subsequently, in the Erlitou period, the bronze workshops were spatially located with the turquoise workshops at one end of the main axis of the palace area, with the sacrificial area at the other end, which had a high spatial status. The spatial layout required for the production

of bronzes was put in an important location on the periphery of the capital palace area, and this capital planning concept continued until the end of the Bronze Age. The production of bronzes mobilized the political power intentions of the early capital city planners, and the release and expression of power was carried out on the production space of the capital city.

As the kingdom was replaced by the empires and the state apparatus became more powerful, reflecting the transformation from consanguineous politics to geopolitics, one of the most prominent changes in the space of the capital city was the decline in the status of the ancestral temples. The mode of mixing the layout of production space with the palace area and the city of Xianyang in Qin Dynasty basically maintained the characteristics of the Warring States period, and this urban layout where officials and citizens mingled reflected the cultural "lag" of the capital architecture at that time [57].

Since Chang'an in the Western Han Dynasty, the production space, like the ancestral temple space, was arranged outside the space far away from the great dynasty, so that the production space was further specialized and marginalized.

MILITARY IDEOLOGY WAS THE SECONDARY IMPORTANT FACTOR AFFECTING THE LAYOUT OF PRODUCTION SPACE

Macro-military strategy had an extremely strong force on the city wall system, thus having a direct impact on the industrial spatial layout. Some scholars have described the defense facilities of China's capital cities during this period as the mainstream of "the metropolis without a city" [58]. After careful analysis of the capitals of Shang Dynasty and Western Zhou Dynasty, it was found that that there were many differences. Although the latest archaeological findings showed that there was a closed city wall in the late Zhou Dynasty, the coverage area of the city walls was far less than the whole area of the Zhouyuan site, which was a kind of self- confident and ideal military ideology with political overtones [59]. Under the influence of the idea of "building walls to defend the people" in the Western Zhou Dynasty, the production space was opened.

During the Spring and Autumn period, with the development of wars, countries continued to strengthen their defense systems in the capital city, and it could be observed that the city walls often stood side by side or the capitals were completely independent. The production space was divided, except for some important government-run handicraft workshops within or close to the palace area, and the rest of the handicraft workshops were often arranged in the independent areas, which was supposed to be related to the high military tension.

THE ENHANCEMENT OF STATE POWER TRIGGERED THE DECLINE AND CONTRACTION OF PRODUCTION SPACE.

State power refers to the power and ability of the state to dominate and control the whole society [73]. There was a process of gradual growth of the state power in ancient China [60].The power composition and operation of the capital determined the organization of the capital's

residential life, and further projected into the spatial pattern of the city. In the periods of Xia and Shang Dynasties, the production space of the early capital city was more manifested in the absolute possession of the production space, especially the space of government-run handicraft workshops of the important categories, such as copper casting and jade making. When the Western Zhou Dynasty entered the new kingdom stage, the reorganization of social order led to the enhancement of the state power. The production space of the capital city of the Western Zhou Dynasty accommodated multiple social groups, showing the macro dominance of space under the system of "industry and commerce eating government". In the Spring and Autumn and Warring States period, the diversification of urban forms and the collapse of the ritual system, as well as the high sensitivity of the military situation had a direct impact on the location of the production space. However, at this time, the control of state power over industrial and commercial economic resources, especially private handicrafts, was limited, and the control of state power over the production space was more manifested in the government-run handicraft space, and reflected the pluralistic characteristics in different capital cities. After entering the imperial period, the handicraft management system in Qin Dynasty was directly transitioned from "industry and commerce eating government" to a powerful government-run system. The state power had already annexed the society at this time, showing a strong dominance over the production space. The production space showed more characteristics in the service of the state power, and was no longer an important part of the "state apparatus" in the early capital city.

Throughout the period from the Kingdom period to the Imperial period, the role of production space was changed from possession to domination, and at the same time, its role was also changed from a "state apparatus" to a "state service vessel". Although the distance between the production space and the theocratic space became larger and the independence of the space was increased, the overall control of the state power over the space never disappeared, and it was not always out of the control of the state power.

The important government-run workshops in Chang'an of the Western Han Dynasty, such as coin minting and iron casting, were all located in the most important western market.

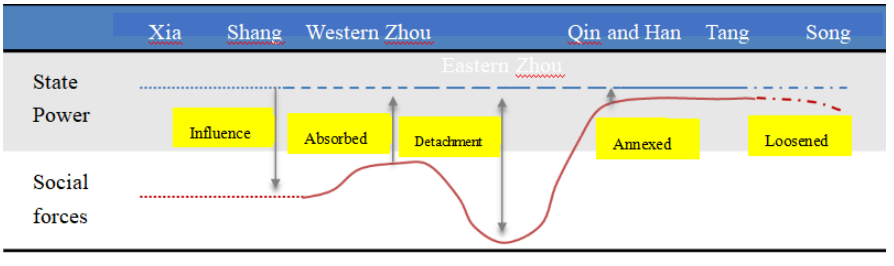

Fig. 5. Schematic diagram of spatial location evolution of important government-run handicraft workshops in different circles of the capital city. (Chart source: author-made)

From the perspective of the relationship between space and power, the spatial location was related to the strength of the state power, and the openness of the handicraft production space showed a reverse effect on the power strength. In the stages of Western Zhou and Qin-Han Dynasties when social power was absorbed or annexed by the state power, the more confident the military ideology and defense strategy became, the more open the layout of the city wall system was. The important handicraft space was also in a distributed layout, not in the closed space of defense facilities, and the more alienated from the palace area. In the stage when the state power was far from or separated from the social power, such as Xia and Shang Dynasties and the Spring and Autumn Period and the Warring States Period, it was the closed layout stage of the city wall system. The important handicraft space was in a closed layout, mostly within the control of defense facilities, such as city walls and trenches, and it was closer to the palace area.

ENDNOTES

1. [US] Joel Sturgeon. Global Urban History [M]. Beijing: Social Sciences Literature Edition :4-5
2. Ye Shuxian. The Gold of Troy and the Jade in Shimao: the Historical Message in Iliad and Biography of Zhou Emperor Mu [J]. Chinese Comparative Literature. 2014 (3) : 1-5
3. Baidu Encyclopedia [EB/OL], http://baike.baidu.com/link?url=6eWCsr0nF3KE1gGT1N9xx-jwIMYO43c6-QghHz_hM_- xaAwnBUWLbh5GKaFFlayY3feOzM8sJV-1DHmu9_FZ_FibE r2IFFkMJd35lPFg-pCqi
4. Huang Zhanyue. Iron artifacts unearthed in the Warring States and Han Dynasties in recent years [J]. Acta Archaeologica Sinica.1957 (03) : 93-108
5. Lu Defu. Management patterns of official and private handicraft industry in the Warring States Period [D]. Shanghai: Fudan University.2011
6. Tian Changwu, et al. Economic History of Feudal Society in China: Volume I [M]. Jinan: Qilu Publishing House, Beijing: Wenjin Publishing House, 1996:151
7. Niu Shishan. Preliminary Study on the Layout and Planning of the Pottery City Site, Three Generations of Archaeology (5) [M], Beijing: Science Press: 51-60
8. Shanxi Institute of Archaeology. Brief report on excavation of pottery kiln at Tao Temple Site [J]. Cultural Relics Quarterly,1999 (06) : 3-11
9. CAI Ming. Study on Micromarks of stone tools unearthed at the Site of Tao Si -- Also on the subsistence form of Tao Si culture [D]. Xi 'an: Northwest University,2008:41
10. Zhang Guoshuo. Study on Yucheng system in Xia and Shang Dynasties. Zhengzhou: Zhengzhou University [D],2000
11. ZHU Junxiao, LI Qinglin, WANG Changsui, XU Hong. A preliminary study on the provenance of potteries from Erlitou Site [J]. Fudan Journal (Natural Science Edition). 2004(8): 581-603
12. LI Jiuchang. On the spatial structure of the capital of Erlitou Site in Yanshi [J]. Collection of Essays on Chinese Historical Geography: 2007(10):49-60
13. Lian Haiping, Tan Derui, Zheng Guang. Research on copper casting technology at Erlitou Site [J]. Acta Archaeologica Sinica,2011(4):561-563
14. Li Lingfu. The origin of ancient Chinese capitals and the layout of Xia and Shang capitals [J]. Journal of Taiyuan University,2001(08):53-60
15. LIU Yanfeng, Wu Qian, Xue Bing. A new investigation of the city layout and the trend of the outline wall of Zhengzhou in Shang dynasty [J]. Journal of Zhengzhou University (Philosophy and Social Sciences Edition),2010(05):164-169
16. Han Xianghua. On the times of the pottery workshop of the Shang city in Zhengzhou [J]. Cultural Relics of Central China,2009 (06) : 39-45
17. Li Yipi. Study on the change of Yin capital layout in Anyang [D]. Zhengzhou: Zhengzhou University,2006
18. Zhu Guanghua. Yuanbei Mall and Yin Ruins in Xiaotun [J]. Archaeology and Cultural Relics,2006(02):31-35
19. WANG Hao. Study on urban planning and layout of Xia-Shang Region [D]. Zhengzhou: Zhengzhou University,2014

20. Meng Xianwu, Li Guichang, Li Yang. Handicraft workshops under state control in the ruins of Yin Ruins [J]. Yin Du Journal,2014(12):13-20
21. The archeology of Zhouyuan Site reveals the appearance and social characteristics of Zhouyuan settlements -- the "immigrant city" of Chengdu, Juyi City [N]. Guangming Daily, 2014-1-14 (007)
22. Sun Ming. Also on the production and flow of bronze ritual vessels of Zhou Dynasty [J]. Journal of Puyang Vocational and Technical College.2012(02):51-55
23. Zhang Yongshan. The development of ceramic handicraft industry in the Western Zhou Dynasty [J]. Studies in Chinese History.1997(3):43-53
24. Shaanxi Zhouyuan Archaeological Team. Brief report on the trial excavation of the site of bone-making workshop in the West Zhou of Fufengtang [J]. Cultural Relics,1980(04):27-38
25. Zhou Yuan Archaeological team. A brief report on the excavation of Fenghu No. 3 in Zhouyuan Ruins in 2014 [J]. Journal of the National Museum of China.2015(7):6-25
26. Yongcheng Archaeological Team of Shaanxi Province. Brief report of drilling test in Yongcheng, Qin Dynasty [J]. Archaeology and Cultural Relics, 1985(2): 7-20
27. SHANG Zhiru, ZHAO Congcang, Discussion on the layout and structure of Yongcheng in Qin Dynasty [M]. Archaeological Research. Xi 'an: Sanqin Publishing House,1993
28. Liang Yun. Some Questions about Yongcheng Archaeology [J]. Journal of Shaanxi Provincial History Museum. 2001(8)
29. Yongcheng Archaeological Team of Shaanxi Province. Brief report on the excavation of Lingyin Site in Fengxiang, Shaanxi [J]. Cultural Relics.1978(3):43-47
30. Hubei Provincial Museum. Investigation and excavation of the Southern City of the Chu Capital [J]. Acta Archaeologica Sinica,1982(3): 325-349; 1982(4): 477-508
31. Zhang Xuehai. Discussion on the age and basic pattern of Qufu Lu City [J]. Cultural Relics,1982(12): 13-16
32. XU Hong. Re-study of the ancient City of Lu State in Qufu [J]. Three Generations Archaeology.2004(9):286-289
33. Hebei Cultural Relics Research Institute. Lingshou City of the State of Zhongshan in the Warring States - Report of archaeological excavations from 1975 to 1993 [M]. Beijing: Cultural Relics Press,2005
34. Wuzhuang. A Preliminary study on Guoling and Shou City in Zhongshan [D]. Zhengzhou: Zhengzhou University.2010
35. Hebei Cultural Relics Research Institute. Brief report on the excavation of the fourth and fifth sites of Guoling Shoucheng, Zhongshan [J] Cultural Relics Spring and Autumn,1989(Inaugural issue No.):52-69
36. Hebei Cultural Relics Research Institute. Lingshou City in the State of Zhongshan in the Warring States -- Report of archaeological excavations from 1975 to 1993 [R]. Cultural relics in Beijing Press,2005
37. Handan Municipal Museum of Cultural Relics. Survey of ancient sites in the urban area of Handan, Hebei [J]. Archaeology, 1980(2):142-146
38. ; Hebei Province cultural relics management office, etc. Investigation Report of Zhao Handan's ancient City [A], Archaeology Collection (4) [C]. Beijing: Science Press, 1984:162-195
39. Houma Workstation, Shanxi Institute of Archaeology. Jindu Xintian [M]. Taiyuan: Shanliang People's Publishing House; Xu Hong. Research on Pre-Qin urban archaeology. Beijing: Beijing Yanshan Publishing House, 2000:87
40. Hebei Cultural Relics Research Institute. Yan Xiadu [M]. Cultural Relics Publishing House, 1996
41. XU Hong. Archaeological investigation on the construction process of Yanxiadu [J]. Archaeology.1999(4):60-65
42. LI Xiaodong. Investigation and trial excavation of the ancient city of Yanxia in Yi County, Hebei [J]. Journal of Archaeology. 1965(01)
43. Shandong Cultural Relics Administration Office. Brief report on the trial excavation of the ancient city of Linzi, Shandong [J]. Archaeology,1961(6); Qun Li. Summary of Exploration of the Ancient City of Qi in Linzi [J]. Cultural Relics, 1972(5)
44. Xu Hong. Research on Pre-Qin urban archaeology. Beijing: Yanshan Publishing House, 2000:100
45. Wang Kai. Archaeological research on the handicraft remains of Zheng Han's ancient city. Zhengzhou: Zhengzhou University [D],2010(8)
46. CAI Quanfa. The ancient city of Zheng Han and the main harvest of Zheng Cultural archaeology [G]. A group of males compete for the treasures of national cultural relics for two weeks. Elephant Press.2003(4):208
47. Wang Xueli. Xianyang, Qin [M]. Xi 'an: Shaanxi People's Publishing House,1985
48. Liu Qing-Zhu. On the layout, shape and Related Problems of Xianyang City in Qin Dynasty [J]. Wen Bo.1990(5)
49. Chen Li. Analysis on the nature of metal cellars in Xianyang, Qin [J]. Archaeology and Cultural Rel-

ics.1998(5): 94-96
50. Henan Institute of Archaeology. Report of archaeological excavations in Zhengzhou City from 1953 to 1985. Beijing: Cultural Relics Publishing House,2001,:307, 384, 461
51. The archaeological discovery of Zhouyuan for the first time confirmed that the area of Zhoucheng is nearly 900,000 squar e meters. Xinhua net [EB/OL]. http://news.ifeng.com/history/zhongguoxiandaishi/detail_2014_01/12/32943383_1.shtml.2016.6
52. Liu Qingzhu. A Study of the changes in social form reflected from archaeological discovery in the layout and form of ancient Chinese sites [J], Acta Archaeologica Sinica 2006(3):282
53. Xu Hong. Before the Chinese early time with China. http://www.kaogu.cn/cn/xueshuyanjiu/yanjiuxinlun/wenmingtanyuanyanji/2016/0330/53447.html, 2016.3
54. Zhang Guangzhi. Bronze Age of China [M]. Beijing: Sanlian Bookstore: 1999
55. Zhang Guangzhi. Several Characteristics of three generations of society, Six lectures on Archaeology [M]. Beijing: Cultural Relics Publishing House,1986:126
56. He Nu. Theoretical and Practical Exploration of Capital archaeology: An Analysis of the early urbanization process in China from the archaeological analysis of Tao Si City Site and Erlitou City Site [J]. 3rd Dynasty Archaeology (3) : 3-60
57. Liu Qingzhu, A study on the changes of social forms reflected in the archaeological findings of the layout and shape of ancient Chinese capital sites [J], Acta Archaeologica Sinica, 2006(3):282
58. Xu Hong. On the Form of ancient capitals of Small Countries in the First phase [J]. Cultural Relics, 2013 (10) : 61-71
59. Cui Yi. A preliminary study on the defense system of capital in the Spring and Autumn Period and the Warring States Period [D]. Xi ‘an: Northwest University,2014
60. Li Juncheng. A historical analysis of the main social inhabitants and the operation of State power in ancient China [D]. Kunming: Yunnan University,2011
61. Zhao Haitao. On City Layout of Erlitou Site and New Discoveries of Handicraft Archaeology [J]. Huaxia Archaeology, 2022(06) : 62-67.
62. Xu Longguo. The harvest, progress and thinking of the archaeology of Chang ‘an City in Han Dynasty [J]. Cultural Relics of Southern China,2022(02):11-27.
63. Fan Hot Spring. Important archaeological discoveries and research of Zheng Han Ancient City in recent years [J]. Chinese Archaeology,2019(04):64-77+108.

NOTES ON CONTRIBUTORS

Zhang Yidan, Lecturer, School of Cultural Heritage, Northwest University; National Postdoctoral Research Workstation, China United Northwest Institute for Engineering Design & Reserarch Co,Ltd . Email: dedan@126.com, (Xi’an, Shaanxi 710069), mainly engaged in the research on cultural heritage conservation, urban history, and regional planning.

ACKNOWLEDGEMENTS

This article is sponsored by the Key Laboratory of Education Department of Shaanxi Province (19JS068)
The Prosperity Plan of Northwest University “Research on the Evolution of Urban Spatial Patterns in Ancient Chinese Capitals” Sponsored by China-Central Asia “the Belt and Road” Joint Laboratory on Human and Environment Research, Key Laboratory of Cultural Heritage Research and Conservation.