

Zoning Study of the Pottery Workshop in the Northern Area of Liujiazhuang

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Abstract: Guided by the principles of settlement archaeology, this paper divides the pottery workshop into seven functional zones based on their attributes, and further explores issues such as their chronology, social morphology, and the circulation and application of ceramic products. The results indicate that, based on the presence of this area, the concentrated distribution of kilns, and the clustering of tools and facilities related to pottery production, this region can be identified as a large-scale pottery workshop zone. The functions of each sub-area are associated with three major activities: production, residence, and burial. Each sub-area functions not only as a production unit but also as a social unit.

Keywords: Pottery workshop in the northern area of Liujiazhuang, Zoning, Social morphology, Circulation and application of products.

1. Introduction

The Liujiazhuang North site is located in the southern part of the Yin Ruins, approximately 1,000 meters south of the Yin Ruins palace and ancestral temple area. Since the commencement of archaeological work at the Liujiazhuang North site, a series of investigations, surveys, and excavations have been conducted, leading to the identification and clearance of a large number of Shang Dynasty features, including house foundations, storage pits, ash pits, roads, burials, and pottery kilns. Among these, various remains and artifacts related to pottery production directly indicate the presence of a pottery workshop zone in the area. Based on the results of multiple excavations, the pottery workshop zones can be generally connected, and all zones are likely to belong to the same pottery workshop. Through the excavation of this workshop site, the chronology, layout, and cultural content of the pottery workshop have been largely clarified, thereby providing more specific data for the study of handicraft production at the Yin Ruins.

Overview of the Layout of the Pottery Workshop at Liujiazhuang North Site

The pottery workshop area at Liujiazhuang North is located in the northern part of Liujiazhuang Village, south of the Yinxu site, and on the southern side of the Anlin Railway. Centered on the Liujiazhuang North site, the area spans approximately 300 meters from north to south and 200 meters from east to west, covering an area of about 60,000 square meters.

The Excavation Process of the Pottery Workshop at Liujiazhuang North

In 1990, the Anyang Work Team of the Institute of Archaeology, Chinese Academy of Social Sciences, excavated a large number of defective pottery products and a small number of pottery-making tools in the area south of the former Anyang Cultural Relics Repository and Angang Avenue. In 2008, the same team cleared ten Shang Dynasty pottery kilns at Liujiazhuang North (north sidewalk of Angang Avenue), unearthing a substantial quantity of deformed pottery, with the *dou* (stemmed bowl) being the most common vessel type, along with some pottery tools. In the same year, another pottery kiln was cleared at

Liujiazhuang North (Fanglin Street). In 2010, thirteen pottery kilns were cleared at Liujiazhuang North (south sidewalk of Angang Avenue). Between 2010 and 2011, an additional seven Shang Dynasty pottery kilns were cleared at Liujiazhuang North, yielding a large number of deformed pottery vessels and some pottery-making tools near the kilns, with the *dou* being the most prevalent vessel type, followed by the *gui* (tripod vessel)[1].

In summary, over several years, more than thirty pottery kilns have been cleared at this site, producing a significant quantity of deformed pottery and some pottery-making tools. Additionally, related features from the Yinxu period have been discovered, including roads, ditches, rammed-earth foundations, sacrificial pits, wells, storage pits, large ash pits, and medium to small-sized tombs, accompanied by a large number of artifacts.

2. Workshop Zoning

The functional zoning of handicraft workshops reflects advancements in productivity and the degree of specialization. The division of workshops should consider the layout and structure of the workshop, the various production facilities and their interrelationships, as well as the spatial distribution of different types of artifacts and their mutual connections. This includes the relationships among work areas (such as kiln distribution zones), raw material and product storage areas, waste disposal areas, and craftsmen's living quarters, along with the characteristics of the associated artifacts. From the late Shang period onward, the conscious planning of workshop spaces became increasingly evident. This period initially saw the preliminary differentiation of production processes and functions within the site, with the internal spatial division of production functional zones within workshops—and even the emergence of specialized workshops dedicated to specific product types—indicating a gradual enhancement in the degree of specialization in handicraft production.

From the perspective of the layout of handicraft production, numerous features within the Liujiazhuang North Site may constitute components of a pottery workshop. These include ash pits containing discarded defective pottery, elongated rammed-earth building foundations, large-scale courtyard-

style rammed-earth structures, densely distributed wells, diverse sacrificial features, and even over 1,000 small and medium-sized burials. In fact, the vast majority of remains within the excavated area are directly or indirectly associated with pottery production. Based on the study of the distribution of features excavated at the Liujiazhuang North Site, this paper divides the workshop site into seven sub-areas, using the three roads forming an "I-shaped" layout as boundaries. Specifically, the area southwest of the north-south road (west main road, L15 in Figure 2) west of the east-west road (L16 in Figure 2) constitutes one sub-area. To the north of the east-

west road (near the sidewalk north of Angang Avenue) lies another sub-area, while two sub-areas are located to its south. To the east of the east-west road, the area east of the north-south road (east main road, L17 in Figure 2) is divided into three sub-areas. Based on functional classification, the area north of the east-west road is adjacent to the pottery kilns (ten Shang-period kilns were excavated in 2008 near the sidewalk north of Angang Avenue). This area contains distributions of defective pottery and pottery-making tools, and is therefore primarily designated as the production zone [2].

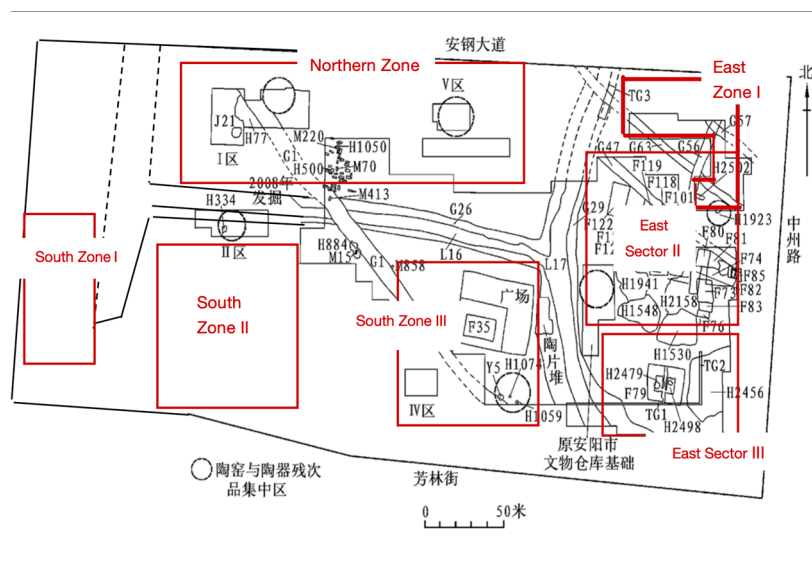


Figure 1. Schematic diagram of the pottery workshop zoning in the northern area of Liujiazhuang

(1) Northern Zone

Located north of the east-west road, near the northern sidewalk of Angang Avenue, the Northern Zone comprises remains of kilns, water wells, ash pits, burial clusters, as well as ceramic wasters and remnants of pottery-making tools. Among these, Well J21 is a carefully constructed water well, equipped with dedicated steps to facilitate access for drawing water. Based on the pottery recovered from the well bottom, its date is attributed to the second phase of the Yinxu Culture. Pit H77 is a human sacrificial pit that yielded a large quantity of pottery sherds, animal bones, and other artifacts; most notably, a bronze seal, a pottery owl-bodied human-faced figurine, and a relatively high number of proto-porcelain and hard pottery fragments were unearthed. The artifacts suggest that H77 dates to the second phase of the Yinxu Culture. The burial clusters within this zone are relatively concentrated in the southeastern part and exhibit highly consistent characteristics: the majority of graves are oriented east-west, contain no pottery funerary objects, and feature deliberately broken bronze ritual vessels, as exemplified by burials M70, M220, and M413. The remains and artifacts in this area primarily date to the second phase of the Yinxu Culture, corresponding to the early period of the pottery workshop at Liujiazhuang North. Furthermore, a connection exists among H77, M70, and M413, which may represent interrelated features of the same clan and be associated with pottery production. Based on the chronology of these features, it can be inferred that the Northern Zone represents the early pottery production area of the workshop.

(2) South Zone I

Located southwest of the western arterial road, based on the 2008 excavations at the northern area of Liujiazhuang, the

primary features in this zone include wells, ash pits, and foundation bases. Most of the foundation bases in this area are superimposed or truncated by ash pits and wells. The wooden well casing of J31 yielded clay pottery and bronze artifacts. Based on these findings, J31 has been dated to the late phase of the third period of the Yinxu culture. Nearby, H326, located adjacent to F22, is a small bronze artifact hoarding pit dated to the later part of the fourth period of the Yinxu culture. The wells may have been associated with ritual activities, as evidenced by the placement of bronze vessels and pottery jars within them, while the bronze hoarding pit could be linked to the conflicts during the late Yinxu period. Based on the chronological distribution of these features, South Zone I represents the late-phase activity area of the pottery workshop.

(3) South Zone II

Situated on the western side of the southern segment of the east-west road, South Zone II includes two features: the pottery kiln Y1 and the ash pit H334. The fill of H334 yielded pottery sherds and animal bones; identifiable vessel forms among the pottery include li tripods, jars, and basins. Based on the pottery typology, H334 dates to the third phase of the Yinxu culture. The pottery kiln Y1 is located in close proximity to H334 and shares the same chronology; thus, it is inferred that H334 may be associated with pottery production. Considering the spatial distribution and chronological data of these features, South Zone II likely served as the mid-phase pottery production area of the workshop.

(4) South Zone III

Located on the eastern side of the southern segment of the eastern arterial road, west of the north-south road L17, South Zone III includes the foundation base F35, the pottery kiln Y5, and the ash pits H1074 and H1059. To the east of F35, a pile

of pottery sherds was discovered. Based on the distribution of these features, South Zone III represents an area combining pottery production and habitation. Due to the scarcity of artifacts unearthed from the kilns, insufficient evidence precludes their precise dating; hence, the chronology of features in this zone remains undetermined.

(5) East Zone I

Located in the northern area east of the north-south road L17. East Zone I includes multiple ditches and the ash pits H1932 and H2502. Among them, ditches G47, G57, and G63 are generally aligned with G1, spaced approximately ten meters apart, and share similar stratigraphic relationships, fill compositions, and recovered artifacts. Based on stratigraphy and artifact analysis, these three ditches are contemporary with G1. Furthermore, G47 and G63 also truncate the north-south road L17 and the silt deposits within its roadside ditches. Regarding the dating of G1, considering the usage and abandonment chronology of the road system, G1 may date to the early Western Zhou period. Based on the distribution and chronological data of features, East Zone I belongs to the late Yinxu period and early Western Zhou, serving as a late-phase activity area of the pottery workshop. It is possible that due to the influence of contemporaneous conflicts, many features were disturbed, resulting in a paucity of artifacts.

(6) East Sector II

Located in the north-central area east of the eastern arterial road, near the former Anyang City cultural relics warehouse, East Sector II comprises pottery kilns, ash pits, and clustered house foundations. Among these, two relatively concentrated groups of elongated rammed-earth foundations (one group consisting of F101, F102, F117–F122, and the other comprising F74, F80–F82) are seldom found in other areas of the Yinxu site. Moreover, given the proximity of this house foundation cluster to the pottery kilns, it is speculated to be associated with pottery production and may have served as a residential area for artisans. Based on the distribution of features and chronological information, East Sector II represents an integrated area of production and habitation during the early phase of the pottery workshop.

(7) East Sector III

Situated in the southern area east of the eastern arterial road, East Sector III includes house foundations and ash pits. Among them, F79 is located southeast of L17, with its northern, eastern, and entire courtyard relatively well-preserved, while its western and southwestern portions are disturbed by later-period pits. F79 is a square courtyard-style structure oriented north-south, comprising a main hall in the north, eastern and western side halls, a southern corridor, eastern and western courtyards, a central passageway, and drainage facilities. In the north-central part of the courtyard lies an irregular storage pit, H2498, which contains large pieces of burnt clay, wall plaster, and a small number of pottery shards. From the bottom of the pit, four artifacts were recovered, including a bronze zun, a jia, and a pottery lei. Based on the pottery unearthed from the F79 courtyard and the bronze artifacts from H2498, the date of F79 can be determined as belonging to the late phase of the fourth period of the Yinxu culture.

From the spatial distribution of house foundations in East Sector II and East Sector III, it is evident that, demarcated by the east-west road, early-phase house foundations are predominantly located to the north, while later-phase ones are mainly situated to the south. Furthermore, in terms of the nature of the house foundations, early-phase structures were

generally built for ordinary pottery artisans to facilitate pottery production. Based on the distribution of features and chronological information, East Sector III represents the residential area of the pottery workshop during its later phase. Judging from the architectural form and remains of this courtyard-style house, its occupant is likely to have been a figure of authority or a clan leader. A more detailed discussion of the occupant's identity will be provided later in this paper, based on the associated artifacts.

3. Discussion

(1) Chronology of the Workshop

The excavators, based on the periodization of pottery, concluded that the pottery workshop in the northern area of Liujiazhuang had a relatively long period of use, beginning in the first phase of the Yinxu Culture and continuing at least into the third phase. However, relying solely on pottery chronology as the benchmark detaches various types of features—particularly those with longer temporal spans, such as house foundations and roads—from their broader archaeological context.

Taking the road system as an example, in 2008, the Anyang Work Team of the Institute of Archaeology, Chinese Academy of Social Sciences, discovered roads in the western and northern parts of the excavation area [3]. The entire road system consisted of a western main road, an east-west connecting road, and an eastern main road. In 2008, the western main road, the western portion of the east-west connecting road, and part of the eastern main road were excavated, while the alignment of the road system was also surveyed through drilling, providing a preliminary understanding of its chronology and distribution. During the 2010–2011 excavations, the remaining eastern segment of the east-west connecting road and most of the eastern main road within the excavation area were uncovered [4]. These two phases of excavation enabled a clearer understanding of the distribution, structure, use, and abandonment of the entire road system. In particular, by considering the distribution of surrounding cultural features, the role of the road system in organizing the area—and even the broader Yinxu region—became more evident. Based on stratigraphic relationships from both excavations, the road system was in use at least from the second phase of the Yinxu Culture and continued until the late fourth phase.

Regarding house foundations, the excavation team found that rammed-earth house foundations were widely distributed across the excavation area, ranging from the late first phase to the late fourth phase of the Yinxu Culture. However, most were heavily damaged, and few well-preserved examples from earlier periods were identified. Several better-preserved structures, such as F35 and F79, date to the late fourth phase of the Yinxu Culture.

Considering the latest periods of use for both the roads and the house foundations, both persisted until the late fourth phase of the Yinxu Culture. As these two types of features are closely associated with the pottery workshop, it is likely that the workshop continued in use at least until the late fourth phase of the Yinxu Culture.

(2) Workshop Social Morphology

The seven zones of the pottery workshop in the northern region of Liujiazhuang function both as production units and social units. Each of these zones is, to varying degrees, associated with the three major functions of production, habitation, and burial. Through an examination of these

functions, we can conduct an in-depth investigation into the social morphology of the workshop, including, for example, its model of artisan production management.

In the eastern part of the workshop area, east of the main eastern road, lies a relatively distinct residential district. Two rectangular rammed-earth foundations located near the kilns are concentrated in this area, suggesting a familial or clan-based organization and are presumed to have served as living quarters for artisans within the clan. In the southern section, a large courtyard-style rammed-earth structure and the ash pits nearby have yielded discarded pottery fragments as well as bronze objects, further indicating that this area is associated with the pottery workshop.

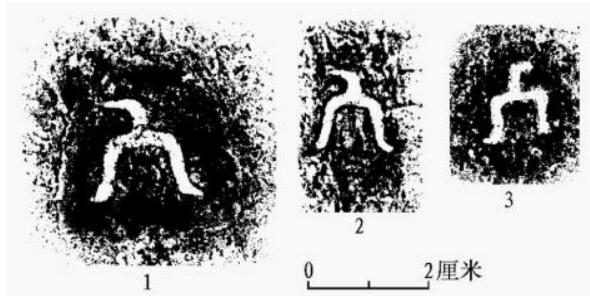


Figure 2. Rubbings of Inscriptions on Bronze Artifacts Unearthed from M70

In the northwestern part of the workshop area, within the small burial cluster of the northern sector, three of the six bronze artifacts unearthed from M70 bear an inscription of the character "𠂇".

The bronze *jue* vessel from the nearby M413 and the bronze *ding* vessel from M448 also bear the same inscription. Additionally, a bronze seal inscribed with "𠂇" was recovered from the adjacent H77. Taken together

with bronze artifacts bearing the "𠂇" inscription discovered in other areas of the Yinxu site, this suggests that

the 𠂇 clan was associated with craft production and may have been a lineage engaged in (artisanal or manufacturing activities). The consistency of the inscriptions found in M70, M413, and other burials with that from H77, as well as their spatial proximity and contemporaneity, indicates a certain degree of interrelation, which also serves as a basis for demarcating the northern sector. Moreover, the presence of a gu (goblet) and jue vessel set among the bronzes unearthed from M70 suggests that this was a lower-ranking noble burial, and the occupant may have been the lineage head or a high-ranking member of the 𠂇 clan [5].

The over 1,000 tombs from the Yinxu period excavated between 2010 and 2011 also exhibit familial tendencies, such as relatively concentrated distribution and largely similar burial customs. Moreover, despite the large number of tombs, those of higher rank are quite rare. An analysis of archaeological data suggests that, based on years of Yinxu excavation records, the Yin people had a tradition of "burial by clan." Furthermore, many tombs containing concentrated assemblages of various production tools or pottery have been identified by certain scholars as burial grounds for artisan craftsmen [6]. Accordingly, it can be inferred that these tombs may represent family cemeteries of pottery artisans from that period. Among them, the few tombs of higher rank likely

belonged to clan leaders, who did not personally engage in production but served as organizers and managers responsible to the Shang king. Additionally, the pottery workshop site is located adjacent to the southern part of the Yinxu palace and ancestral temple area, occupying an extremely important position—sufficient to indicate the significant attention it received from the Shang royal court [7].

(3) Product Circulation and Application

Studies on the circulation and application of products constitute a fundamental aspect of handicraft archaeology, and the foundation of such research lies in the archaeological investigation of workshop sites. Excavations at workshop sites yield material evidence, including the products themselves and the tools directly associated with their production. These findings enable the accurate identification of a workshop's products, their types, and characteristics. Based on the geographical distribution of these products as revealed through archaeological discoveries, it becomes possible to examine their circulation and usage patterns [8].

The pottery produced at the Liujiazhuang North site pottery workshop is predominantly gray clay ware, with vessels for food storage and serving constituting the majority of types, including dou (stemmed bowls), gui (tripods), yu (bowls), bu (jars), bo (bowls), pen (basins), zeng (steamers), and vessel lids. A small number of cooking vessels, such as small clay li (tripods) and zeng (steamers), are also present. In terms of quantity, dou vessels are the most abundant, followed by gui vessels, while sand-tempered li and yan (steamers) are entirely absent. This indicates that the workshop primarily specialized in producing vessels for food storage and serving, meeting the daily dietary needs of the local inhabitants. Furthermore, this workshop, together with the Miaopu North site bronze-casting workshop to the east and the Tiesan Road bone-working workshop, constituted the "handicraft industrial zone" south of the palace and temple area at Yinxu. Consequently, it is hypothesized that the pottery produced here may have been directly used in auxiliary processes of bronze-casting and bone-working crafts [9].

4. Conclusion

Based on the archaeological discoveries at the Liujiazhuang North site pottery workshop and employing a chronological framework, this study delineates the functional zones of the site, which include pottery kilns, tools related to clay preparation, and various other facilities. The research demonstrates that the Liujiazhuang North site pottery workshop can be divided into seven sub-areas, demarcated by roads. While these sub-areas exhibit interconnections, they also display certain differences, with multiple sub-areas reflecting a subsistence pattern combining pottery production and residential habitation.

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