A Brief Report on the Excavation of Palatial Compound F1 at the Huanbei Shang City in Anyang, Henan

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Keywords: Anyang        Huanbei Shang City        Middle Shang        palatial compound

The “palatial sector” of the Huanbei 洹北 Shang City (hereafter abbreviated as the Huanbei site) was discovered in 2001. Within the eastern portion of the “palatial sector” approximately 30 platform foundations of pounded earth have been located (Zhongguo 2003). With the permission of China’s State Bureau of Cultural Relics Administration, the Anyang Work Station of the Institute of Archaeology at the Chinese Academy of Social Sciences (abbreviated as CASS) carried out an excavation of the palatial compound F1 (2001HBSCF1)\(^1\), a rectangular enclosure, from the October of 2001 through the August of 2002. About 8,000 sq m were exposed; and the excavation covered two thirds of the whole compound, including the whole west platform, and two thirds of both north and south platforms\(^2\). The east end of the compound extends into the airport field where no excavation has been allowed.

This paper presents a brief report on this excavation.

I. Location and Stratigraphy

The palatial compound F1 is located in southeastern part of the “palatial sector” (Work Zone VIII-2\(^1\)). An airport protection ditch that runs from north to south on the west side of the Anyang Aviation School’s runway cuts through the east side of the compound remain, dividing it into two sections. The excavated portion is limited to the area west of the ditch (Fig. 1).

The stratigraphic profile of the excavated area contains seven distinguishable units (i.e. stratigraphic levels)\(^3\). From top to bottom, they are (Fig. 2):

1: modern plowed and disturbed soil, 0.5–0.9 m thick.

2: late historic disturbed soil, friable, 0.1–0.2 m thick, containing porcelain fragments, metal nails, \textit{et al}.

3: yellowish brown soil, 0–0.3 m thick, containing large amounts of burnt earth fragments with an average diameter of about 2 cm, and a few of ceramic shards dating to the Middle Shang and Warring States periods; possibly formed on the collapse deposit of buildings during the Warring States period.

4: burnt earth, 0–0.1 m thick, made of subangular burnt earth fragments, mostly 3–4 cm in diameter, containing ceramic shards of Middle Shang; possibly the weathered zone of collapse deposit of buildings.

5: burnt earth, 0–0.7 m thick, made of large sized burnt earth fragments that were collapse deposit of walls and roofs, and likely undisturbed after the building collapse, containing a few Middle Shang ceramic shards (Fig. 3).

6: dark gray soil, 0–0.1 m thick, superimposed directly by large sized burnt earth fragments of level 5, possibly formed during the occupation of F1, friable and loosely packed, containing a fair amount of small charcoal fragments, some Middle Shang ceramic shards (see Fig. 3) and bone fragments.

7: very dark gray soil (clay and silt clay), about 0.2 m thick, homogeneous and no artifact, only found near the outside edge of the platform foundations, possibly accumulated during the digging of foundation-trench for F1.

Beneath level 7 is very dark gray clay (sterile soil)\(^4\).

Level 3 is dated to the Warring States period; and levels 4 to 7 are of Middle Shang. Level 7 might represent the construction period of F1 of which the foundation-trench was dug into the deposit of sterile soil. Therefore, the compound F1 was constructed and used during certain time period of Middle Shang (see the discussion below).
II. Layout and Structure of the Compound

The compound remain F1 is a rectangular enclosure consisting of elevated platforms on the perimeters and the courtyard enclosed in the middle. The overall area of the compound is about 1.6 hectares, 173 m long from the east to the west and 85–91.5 m wide from the north to the south. The longitudinal axis of the compound is 13 degrees south of true east, oriented transversely to the general orientation of the walled city (13 degrees east of true north) (see Figs. 1 and 4).

The structures within this excavated compound include the gatehouses with two gateways on the south, the elevated main hall on the north, the gallery west of the main hall, the west side hall, and the long galleries on both sides of the gatehouses. It is likely that the east side hall is located in the unexcavated east part of the compound.

1. Main hall and its attached structures

In the middle of the north platform is the elevated
main hall of which the excavated portion is 85 m wide and 14.4 m deep. The remained portion of its platform is about 0.6 m higher than the original ground (see Figs. 2 and 5).

Nine walled chambers can be clearly identified on the main hall (only excavated portion), judging from traces of wall footings. They are bordered by galleries of about 3 m wide on all four sides as shown by rows of postholes at intervals of 3 m. These walled chambers have similar sizes, about 7.6–8.4 m wide by 4.9–5.4 m deep. The chamber walls were framed with coupled interior wooden posts, and built with adobe bricks (or also possibly earth pounded within board molds), based on the wall footings as well as the collapse deposits surrounding the main hall. The entrance of each chamber faces the south, and has one staircase leading to the courtyard (Fig. 5). The distance between two staircases is about 6.6 m, and each staircase is about 2–2.2 m, slightly narrower than the interval between two gallery columns in front of each walled chamber. In general, the stairway extends to a length of about 3 m. It might have been constructed by firstly laying down two beams of 0.2 m in diameter on the sloped ramp, and then placing three to four beams transversely to the ramp to form wooden steps. Very close to both sides of the staircase are often seen postholes left by small wooden columns that might have been used to support a possible canopy structure above the stairway originally. From the east side of both the third and fourth staircases from the west end of the main hall respectively was found one complete ceramic vessel that was shallow cord-marked bowl with rounded base and narrow orifice.

Aside from the front staircases, staircases were also found in the rear of walled chambers 1 and 6.

A gateway of 3 m wide (labeled as gateway 4) between chambers 8 and 9 divides the main hall into east and west sections. Due to concerns with the site preservation, this gateway was only partially excavated.

To the west end of the main wall was built a two-slope (gable) roofed gallery, 30 m long and 9.5 m wide. The footings of wooden-framed wall with coupled interior posts were found along the central axis of the platform, in alignment with the south wall of chambers on the main hall; and single rows of postholes were seen inside 3.5 m (on the south) and outside 2.6 m (on the north) from the wall in the center. This two-slope roofed gallery is divided into western and eastern sections by a north-south gateway (gateway 3) located 5 m from the main hall’s west end. There is one south-facing staircase in the middle of the western section. The gateway 3 is 9

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Fig. 3 Ceramic vessels unearthed from levels 5 and 6 in the courtyard of the compound F1

1, 2. curved-rim deep-belly basins (T0901 ③:1, T0206 ③:5) 3, 4. big-mouth zun-vessels (T1209B ③:2, T1208 ③:1) 5. deep-belly round-bottom basin (T0410 ③:3) 6-8. pots (T0801 ③:1, T1209B ③:1, T0404 ③:1) 9, 10. high-neck round-belly pots (T0512 ③:2, 1) 11. basin (T0804 ③:1) 12-14. shallow-belly round-bottom basins (T0512C ③:1, T0410 ③:1, 2)
Fig. 4 Aerial view of the palatial compound F1, facing north

Fig. 5 The main hall and its staircases, facing west
m long by 3.2 m wide, flanked by a row of postholes on both sides. In the middle of the gateway is a wooden saddle of 2.8 m long. The platform of the main hall is clearly higher than the courtyard surface as well as that of the gallery west of the gateway, which indicates the greater importance of the main hall in the designing of the compound.

2. West side hall

The platform of west side hall is 85.6 m long north-south by 13.6 m wide east-west. Its northern end extends about 1.8 m beyond the north edge of the gallery west of the main hall. A 1–1.5 m wide wall extends beyond both west and south walls at the southwest corner.

The west side hall was extensively damaged by roads of Ming and Qing dynasties, kilns and associated soil pits of later periods. Unlike the main hall and galleries on the north platform, the west side hall shows no trace of postholes. A large amount of collapsed adobe bricks were found around the west platform, suggesting that walls made of adobe bricks were likely erected on the west hall. Along the western edge is a 1.8 m wide pounded earth footing of the wall foundation-trench, and it turns east at the southwest corner and joins with the wooden-framed wall of south gallery.

The eastern edge of the west side hall is 68 m long with three staircases. Each staircase is 3 m long and 2–2.3 m wide, but does not have the wooden steps as found on those in front of the main hall. Since the west platform is lower than the north platform, the stairways here are relatively less steep. Corner postholes are found on two sides of both north and central staircases, possibly indicating the presence of canopy over the stairways originally.

3. South gallery and gatehouses

The south gallery is connected to the southern edge of the west side hall. Different from the gallery west of the main hall, the south gallery of about 3.0 m wide, interrupted by gatehouses in the middle, was single-slope roofed; and it was created by outside wooden-framed wall with coupled interior posts (on the south) and a row of columns inside (on the north), judging from the wall footings and postholes found on the south platform. Postholes for a single row of columns inside are at intervals of 2.75 m. The wooden-framed wall on the south platform is indicated by a row of rectangular footings with coupled postholes inside. The west section of the south gallery is 65 m long, while the one east of the gatehouses is only partially excavated because it extends into the airport field. It should be noted that postholes, for either gallery columns or interior wall posts, from galleries and gatehouses on the south platform are all aligned along the same axes, indicating precise and careful architectural planning and designing.

Three gatehouses lie slightly east of the central north-south axis on the south platform, about 38.5 m long east-west by 11 m wide north-south, and it is 0.6 m higher than the surrounding courtyard ground level, and 0.4 m higher than the south gallery. Three gatehouses are separated by two passages (gateway 1 on the west and gateway 2 on the east) that run from south to north. The west and east gatehouses are the same size, 11 m north-south by 10.5 m east-west; the center gatehouse has the same depth (11 m north-south) but a narrower width (only 10 m east-west). Along both north and south edges of all three gatehouses were found a row of postholes for columns that were mostly square-shaped and some round-shaped. Wooden impressions left by square-shaped posts were also found at the same intervals along two edges of both gateways. Based on the footings left on the platform surface, inside of all three gatehouses was separated
The gateways are the best-preserved portion of the gatehouse system. For the need of site preservation, gateway 1 was not excavated. The structure of the gateways is discussed only for gateway 2 that was partially excavated. The gateway remains include two sidewalls, square-shaped pilasters, round-shaped interior posts, gate saddle, and four staircases. The gateway 2 is 11.4 m long, and 4 m wide near the south entrance and 3.1 m wide at the saddle (Fig. 7). The saddle was originally placed in the center of the gateway, but later destroyed by a fire leaving only its trench on the ground. The gateway was constricted on the south near both ends of the saddle, which might be designed to help stabilize the frame of the gate in the center. The gateway’s sidewalls were framed with squared interior posts; and two staircases were built on each side of the gateway for ascending to gatehouses. The gateway’s floor is about 0.54 m lower than the platform of gatehouses. This floor was smoothened and hardened, while the sidewalls were finished with several coats of lime, creating a smooth and fine surface.

III. Sacrificial Remains Associated with the Compound

Some 40 sacrificial remains have been located on the platforms of pounded earth as well as inside the courtyard. They are labeled as 2002HBSCF1NJK1-14 (hereafter abbreviated as NJK1-14) for those associated with the main hall, 2002HBSCF1WJK1-7 (WJK1-7) for those associated with the west side hall, and 2002HBSCF1SJK1-25 (SJK1-25) for those associated with south galleries and gatehouses.

Sacrificial remains associated with the main hall were generally distributed near staircases and at the center of the walled chambers. There are two types of remains found near staircases: (1) scattered animal bone fragments (mostly sheep bones), distributed in the front of the staircase, which might be used in meat sacrifices; (2) small sacrificial pits, usually located near east corner between the staircase and the platform (except staircases 1, 6, and 8). These small sacrificial pits are overlain by the deposit of stratigraphic level 6, but they were cut into or embedded in the pounded earth of foundation-trenches, strongly suggesting that they were closely associated with the construction of the main hall. Usually a single person was buried in each pit, while four of the pits were additionally furnished with jade handle-shaped ornaments (Fig. 8). Two of the walled chambers (1 and 3) on the main hall have dog sacrificial pits located in the center of the room (NJK11, NJK13). The dog pits are about 0.5 m long, 0.3 m wide, and embedded in the platform foundation. It is very likely that other chambers, which have not been excavated beyond the platform surface, have similar type of dog pits.

Sacrificial remains associated with the west side hall are found near the front of three staircases facing the courtyard. Similar to the findings near the front of the main hall’s staircases, they are all fragmented animal bones, pig for the north staircase, sheep for the center staircase, and large mammal bones (unknown species) for the south staircase. In addition, seven sacrificial pits of various sizes were found in the courtyard along the edge of the west side hall. These pits are similar to the “void pits” found near the gatehouses on the south platform.

The most abundant sacrificial materials were found near the gatehouses, and at least twenty some sacrificial remains were located there. Owing to the limited extent of excavation on both north and south sides of the east portion of gatehouses, it is very likely that those uncovered here only represent part of the entire sacrificial remains. These sacrificial remains include: (1) one rectangular human sacrificial pit (SJK14); and (2) many square or irregular shaped “void pits” that might be for special sacrificial practices. Both types of pits are found...
in the courtyard within 1–5 m to either the front (outside the courtyard) or the back (inside the courtyard) of the gatehouses. They are superimposed by surface deposit (stratigraphic level 6) of the courtyard, but cut into the deposit of foundation-trenches; therefore, these sacrificial remains were buried during the construction of platform foundations. SJK14 is a rectangular sacrificial pit located near the northwest corner of gateway 2 inside the courtyard. The pit contains half a cut human skull with visible marks left by a yue-axe.

IV. Building Materials and Techniques of Pounding Construction

The platform foundations of F1 are composed of two types of pounded earth: (1) very dark gray clay and silty clay in the foundation-trench; and (2) yellow silt or clay silt above the foundation-trench (see Fig. 2). The pounded layers of the former are relatively thin, about 8–9 cm; while those of the latter are thicker, averaging 12–15 cm. Both layers of pounded earth were made by means of the use of small wooden pestles that were bundled together, leaving pounding impressions of 4–5 cm in diameter.

The dimension of such platform foundation structure varies in different parts of the compound. The depth of the foundation-trench is about 1 m in the main hall, 0.8 m in the west gallery of the north platform, 1.2 m in the west side hall, 0.5 m in the south gallery, and 0.4 m in the gatehouses; while the thickness of the yellowish pounding earth above the foundation-trench is 0.8 m in the main hall, 0.6 m in the west gallery of the north platform, 0.6 m in the west side hall, 0.2 m in the south gallery, and 0.7 m in the gatehouses.

Based on the excavation results, it may be inferred that the construction of the platform foundation had the following steps: (1) digging the foundation-trench; (2) laying down and pounding the earth in the foundation trench; (3) constructing the platform by pounding earth layer by layer; (4) building the staircases, and completing the ground work on the platform.

The examination of stratigraphic relations reveals that the foundation-trench for the main hall and west gallery of the north platform were built earlier than those for both west and south platforms; but the upper platforms were pounded with yellowish soil at the same time for all the structures in different sections of the compound.

Collapse deposits of the building around F1 include five types: (1) lime-coated mud-plaster made of clay mixed with straws; (2) adobe brick (an unbroken one measures 27 cm long, 18 cm wide, and 6 cm thick); (3) pounded earth, often with pounding impressions well preserved despite not being found frequently; (4) thin reed-framed mud-plaster, highly fired, occasionally with visible impressions of the cords and wooden bindings of reed bundles; (5) semi-cylinder shaped mud-plaster, like a beam cut half, with visible impressions of small pestles on its bottom surface as well as the front end. The first three types were likely used for walls, while the other two were probably for roofs.

V. Conclusions

Most chief structures of the compound F1 are directly beneath the modern plowed zone; but the collapsed burnt earth around the buildings and the floor surface of the courtyard are overlain by a Shang cultural deposit (level 4) from which most ceramic vessels (such as large-mouth zun-vessel, round-bottom guan-pot) are of Phase II of the Middle Shang period (or early phase of the Huanbei Huayuanzhuang 花园庄 period) (Zhongguo 2004; Tang 1999; Tang 2001), and some (such as feet of li-tripod) of Phase III of the Middle Shang (or late phase of the Huanbei Huayuanzhuang period). The collapse deposit of F1 is mainly large angular blocks of burnt earth (level 5), including complete pieces of adobe brick, burnt reed-framed mud-plaster, and wall surface fragments of lime-coated mud-plaster. A very few small ceramic shards probably date this level to the Middle Shang as well. The cultural layer likely contemporaneous with the use of F1’s structures is level 6 composed of the deposit that formed upon the original surface inside and outside the courtyard. This deposit is very dark gray clay, containing more than 100 pieces of ceramic shards most of which are dated to Phase II of the Middle Shang, and some to early Phase III of the Middle Shang. The cultural layer cut by the platform foundation is level 7 that is composed of very dark gray clay with slight reddish tones containing no artifact. It is found only near the outside edge of the platform foundation, probably formed in the beginning of digging the foundation-trench. Underneath this level is sterile soil. In sum, the compound F1 was abandoned during the period of Phase III of the Middle Shang. But its beginning date remains uncertain, and it could be as early as Phase II of the Middle Shang.

The compound F1 is the largest single building of the Shang period ever discovered. The clearly visible footings of building walls and posts have been rarely found in other known Shang sites. The well-preserved staircases, gateways, and various collapse deposits of walls and
roofs could help reconstruct a Shang palace of grand size. Therefore, this compound not only represents an important finding for studying the history of Chinese architecture, but also help improve our understanding of three groups of poorly preserved foundations found in the palace-temple complex at Xiaotun 小屯 during the 1920s and 1930s. More importantly, the row of walled chambers on the main hall as well as the courtyard of one hectare may shed new lights on the social organization and the administrative system of the Shang society. Further discussion on these issues will require a comparison with other architectural remains of various scales from different places.

References Cited


Endnotes

1. The term “palace” is used here in a broad sense. The “palace” could be administrative (governmental), or religious, or residential. Although the exact nature of this compound remains unclear, there is not much doubt that it qualifies as a “palace” in terms of its massive size and the arrangement of its structures.

2. The total area of the rectangular enclosure F1 is about 15,570 sq m (173 m east-west by 90 m north-south). Since most of the courtyard was not excavated, the total excavated area is less than half of the total area of the whole compound.

3. For the division of the walled area at the Huanbei site into different work zones see Reference 3.

4. These seven stratigraphic units do not include the platform foundation deposit that is composed of two distinctive layers: one in the foundation-trench, and another above.

5. The sterile soil 生土 here is different from that found in the area near Xiaotun where the sterile soil is usually reddish brown clay and silt clay developed on the loess deposit. The very dark gray clay here is a horizon of the buried alluvial soil.

6. The east end of the rectangular enclosure is determined by coring. The north-south width of the compound varies, its maximum (about 91.5 m) between the main hall on the north and the gatehouses on the south, and its minimum (about 85 m) near the west end of the enclosure.

7. The excavated area of the compound is very likely just part of a complete courtyard complex 四合院式建筑 that is oriented 13 degrees east of true north, and the chief buildings have their longitudinal axes perpendicular to the general orientation of the whole complex.

8. If the same distance is assumed from the main hall to both edges of the rectangular enclosure, the main hall measures about 92 m wide and 14.4 m deep.

9. The courtyard has a total area of 1 hectare, about 148 m wide east-west by 68 m deep north-south.

Note: The original report was published in Kaogu 2003.5: 17~23 with 5 figures and 3 plates, written by Tang Jigen, Yue Hongbin 岳洪斌, He Yuling 何毓灵, and Yue Zhanwei 岳占伟. The present version is prepared and English-translated by Ms. Denise Fong and revised by Jing Zhichun 荆志淳.