The Neolithic Site at Yangguanzhai, Gaoling, Shaanxi

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I. Geographic Location and Excavation

The Gaoling County is located in the hinterlands of Guanzhong Plain of Shaanxi Province, to the north of Xi’an City. The County was established during the Qin Dynasty. The west-east running Jing and Wei Rivers cut through the southern half of the county and confluence to the northeast of Jingweipu Village, Majiawan Township. They dissect the county into three natural zones which are North of Jingwei, South of Wei and the Jing-Wei Triangle. The latter is a delta formed by the alluviation of Jing and Wei Rivers over time. The Yangling Mausoleum Town of Emperor Jing and Empress Wang of the Western Han Dynasty situates on this sizeable delta.

The Neolithic site at Yangguanzhai situates on a primary terrace about 4km northwest of the current “Jing-Wei Confluence,” and about 1km north of Jing River. Its elevation is about 498.5m above sea level. The site is bounded by Han Village to the north, Lei Village to the south, the western edge of Yangguanzhai Village to the west, and finally Xuwu Village to the east. The occupation extends about 800m from north to south and about 1000m from east to west, covering an extensive area of about 80 ha.

The site was revealed in May 2004 during the construction of the Second East-West Avenue of Jing-Wei Industrial Park. The discovery triggered a long-term and continuous archaeological effort by the Shaanxi Provincial Institute of Archaeology. To date, the excavation of Yangguanzhai covers 1.8 ha. Among the rich findings are 49 dwelling foundations, 896 ash pits, 9 ditch (moat) sections, 26 pottery kilns, 33 urn burials, 45 pit burials, five wells, and more than 7000 intact or restorable artifacts of various kinds (Figures 1–6).

The excavation area is partitioned by the Second East-West Avenue into the south and north areas. The uncovered materials indicate that the deposition of the north area comprise mainly remains of Miaodigou Culture; wherein, that of the south area comprise mainly remains of Banpo IV Culture.

Figure 1. Painted Pottery Basin (H776:29, Miaodigou Culture) Figure 2. Painted Pottery Bo-bowl (T1534H2 ⑤:6, Miaodigou Culture)
II. Remains of Miaodigou Culture

The remains of Miaodigou Culture are primarily distributed in the north area and the northern part of the south area. The most significant finding of the Miaodigou Culture deposition is the discovery of a circumferential moat of the north area settlement. Preliminary coring indicates that the moat has a roughly isosceles trapezoid plan. Its symmetrical axis is approximately in a due north-south orientation, and its circumference is about 1945m; enclosing an area of 24.5 ha. The moat is about 6 to 9m wide and 2 to 4m deep, with the widest section measures up to 13m (Figures 7 and 8).

A gate structure situates in the western part of the circumferential moat. The structure comprises of an entryway, a “gate room”, and a sewage facility (Figure 9). The 2.7m wide entryway is made of sterile deposition, indicating that it was a planned structure before the digging of the moat, with the purpose of facilitating the traffic between the enclosed settlement and the outside. The sewage facility, a small ditch of 0.55m wide and 0.5m deep, originates in the settlement and empties into
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the moat. The “gate room” is a badly damaged oval-shaped surface structure that only the occupation floor and a hearth are preserved for observation. Layers of intact or restorable pottery vessels, and bone and stone artifacts were yielded from the moat deposition on both sides of the west gate (original proveniences are H776 and G8-2).

H776: In fact, this is a short section of the circumferential moat. Constrained by the scale of excavation at the time, the unit was given provenience of an ash pit. The “pit”, situates 2.1m below the current ground surface, opens beneath Stratum 3 of square T0523 and other units. The south end of the feature is the gateway. The east and west walls are basically parallel to each other and the moat becomes increasingly narrow from top to bottom. Measured at the south end of the feature, the width at the top is 13m, the width at the base is 6.1m, and the depth is 4m. Depositions of the moat are stratified into seven levels.

Stratum 1: Dark grey soil of soft grains and loose texture with fair amount of inclusions made up of small stones, red-baked earthen nodules, calcite nodules, and animal bones. The layer yielded 45 unbroken or restorable artifacts. The pottery assemblage comprises of painted basins, pointed-bottom bottles, jars, bo-bowls, vessels lids, basins, bowls, fu-cauldrons, cups, knives, spindle whorls and bracelets. Moreover, it also yielded a few stone bolas.

Stratum 2: Grey soil of soft grains and loose texture with small amount of inclusions made up of small stones, yellow earthen nodules, daub nodules, charcoal fragments, and animal bones. The layer yielded 70 intact or restorable artifacts. The pottery assemblage comprises of painted basins, flat bottom vases, jars, bo-bowls, basins, yu-basins, fu-cauldrons, cups, knives, spindle whorls and bracelets. The stone assemblage comprises of knives, querns, whetstones, rings, bolas, etc.

Stratum 3: Grey soil of medium hard grains and loose texture with large amount of inclusions made up of red-baked earthen lumps, small stones, ashes, daub nodules, and fragments of animal bones and shells. The layer
yielded 122 intact or restorable artifacts. The pottery assemblage comprises of painted basins, flat bottom vases, jars, bo-bowls, basins, urns, stoves, fu-cauldrons, vessel lids, vessel stands, funnels, cups, knives, spindle whorls, and bracelets. The stone assemblage comprises of knives, querns, bolas and bracelets. Finally, the bone assemblage comprises of hairpins and awls.

Stratum 4: Greenish grey soil of medium hard grains and compact texture with small amount of inclusions made up of small stones, yellow earthen nodules, daub nodules, and ashes. The layer yielded 44 intact or restorable artifacts. The pottery assemblage comprises of bottles, vases, jars, bo-bowls, basins, vessel stands, cups, knives, round discs and bracelets. This layer also yielded specimens of stone bolas and bone hairpins.

Stratum 5: Light yellow soil of medium hard grains and compact texture with inclusions of ashes, red-baked earthen nodules, yellow earthen nodules, and small amount of silt. The layer yielded 48 intact or restorable artifacts. The pottery assemblage comprises of painted basins, painted bo-bowls, pointed-bottom bottles, flat bottom vases, jars, bo-bowls, basins, stoves, vessel lids, funnels, cups, spindle whorls, disc, balls, and bracelets. The stone assemblage comprises of axes, bracelets, bolas, and knives.

Stratum 6: Yellowish brown soil of hard grains and compact texture with large amount of inclusions made up of silt and charcoal fragments. The layer yielded 28 intact or restorable artifacts. The pottery assemblage includes jars, bo-bowls, stoves, vessel lids, cups, knives, round discs and bracelets. The stone assemblage comprises of pestles, querns, bolas and discs. A few bone awls were also yielded.

Stratum 7: This stratum comprises mainly of hard light yellow silt of compact texture. Only small amount of potsherds were yielded.

G8-2: A small section of the moat next to the gateway. The moat opens beneath stratum 3 of grid T0520 and other units. The mouth of the moat is about 1.5m below the current ground surface. It ends with the gateway in the north. The east and west walls are basically parallel to each other. The moat is wider on the mouth and becomes increasingly narrow to the base. The mouth measures 13.5m at where the moat meets the gateway. Deposition in the excavated part of the moat is stratified into...
seven levels. A rich assemblage of material remains was yielded from the unit.

Stratum 1: Dark grey soil of soft grains and loose texture with fair amount of small gravels, red-baked earthen nodules, calcite nodules, and animal bones. The layer yielded 27 intact or restorable artifacts. The pottery assemblage comprises of an inverted-basin-shaped human face sculpture, jars, bo-bowls, vessel lids, cups, knives and spindle whorls. The stone assemblage comprises of pestles, bolas and bracelets.

Stratum 2: Light grey soils of soft grains and loose texture with small amount of inclusions made up of small stones, loess nodules, daub nodules, charcoal fragments and animal bones. The layer yielded 51 intact or restorable artifacts. The pottery assemblage comprises of painted basins, pointed-bottom bottles, jars, bo-bowls, vessel lids, cups, knives, and bracelets. The stone assemblage comprises of axes, querns, pestles, bolas and bracelets. It also yielded a few bone awls.

Stratum 3: Light brown soil of medium hard grains and loose texture with large amount of red-baked earth lumps, small gravels, ashes, daub nodules, animal bones, and shell fragments. The rich cultural remains yielded from this layer consist of 115 intact or restorable artifacts. The pottery assemblage comprises of painted basins, pointed-bottom bottles, jars, bo-bowls, basins, urns, dou-stemmed bowls, stoves, fu-cauldrons, vessel lids, vessel stands, cups, knives, spindle whorls, and bracelets. The stone assemblage comprises of querns, pestles, bolas, discs, bracelets, arrowheads, and
hammers. Finally the bone assemblage comprises only of bone awls.

Stratum 4: Light yellow soil of soft grains and loose texture with small amount of red-baked earth nodules, gravels, shell fragments and animal bones. The layer yielded 90 intact or restorable artifacts. The pottery assemblage comprises of painted basins, pointed-bottom bottles, flat bottom vases, jars, bo-bowls, basins, urns, stoves, vessel stands, vessel lids, funnels, cups, knives, spindle whorls and bracelets. The stone assemblage comprises of querns, axes, bolas and bracelets. Finally, the bone assemblage comprises only of hairpins.

Stratum 5: Light grey soil of medium hard grains and compact texture with large amount of charcoal fragments, white earth lumps, and silt of 2–3cm thick. This layer yielded relatively small amount of cultural remains that include 24 intact or restorable artifacts. The pottery assemblage comprises of pointed-bottom bottles, flat bottom vases, jars, bo-bowls, basins, yu-basins, urns, vessel lids, cups, spindle whorls, knives, paddle and bracelet. The stone assemblage comprises of querns and axes.

Stratum 6: Light yellow soil of medium hard grains and compact texture with small amount of grey soil and silt; the soft and loose silt distribute in circles. The deposition yielded little cultural remains that comprise of one pottery painted bowl, one jar, and one cup.

Stratum 7: yellowish brown silt of hard grains and compact texture with small amount of charcoal fragments and potsherds.

Among the rich assemblage of cultural remains recovered from the moat sections on both sides of the gateway, the inverted basin-shaped pottery ware with openwork human face (Figure 5), the painted basin with animal motifs, and the cinnabar-painted human-face sculpture (Figure 4) are unique artifacts among the archaeological sites of the same phase.

To confirm the coring survey results and extend the understanding of the characteristics of the circumferential moat, in addition to the west gate area, we have been conducting large-scale excavations on the northeastern and southwestern corners of the moat. Among the findings, the large pottery phallic model recovered from the southwestern corner of the moat (i.e., G8-4) is the most intriguing. The archaeological work in these areas is currently under way.

III. Remains of Banpo IV Culture

The material remains of Banpo IV Culture are primarily distributed in the site’s south area and southern part of the north area. The current excavated materials indicate that the most significant cultural heritage of this phase is a row of dwelling and kiln features distributing along the edge of an east-west oriented cliff in the southern periphery of the excavated area (Figure 13). The 72m long cliff runs approximately from northeast to southwest. A total of 13 dwelling features distribute in a row above the cliff, and several kilns distribute in between the dwellings. In the following, we are going to take a group of possibly related features, F4, F6 and Y7, as examples.

1. F4. This dwelling structure is located to the southwest of kiln feature Y7. It is an 8-shaped dwelling consisting of front and rear rooms connected in the middle by an earthen tunnel. The front room in the south, intruded by H251, situates right by the cliff face. The room has a plan of irregular rectangle that measures 2.1m and 1.5m on the sides, and a remaining height of 0.6–1m. The floor is lined with a trampled and compressed surface of 3–5cm thick. Front-view of the connecting tun-
nel is a rectangle 1 m high, 1 m wide and 0.7 m long. The ceiling is relatively leveled and its trampled floor is leveled with the occupation floors of the rooms it connects. The rear room, an oval-shaped structure, extends northward into the cliff face. It measures 2.3–3 m long and the remaining height is 1.7 m. The northeastern part of the room curves inward, while its north and west walls are curved. The roof of the rear room had collapsed. The preserved physical features suggest that the room is likely a vaulted cave house. The living floor is a leveled and trampled surface.

Traces of fire use are seen in three areas of F4. They are numbered as Z1, Z2 and Z3. Feature Z1 is the biggest fire-using feature among the three. It is located in the middle of the rear room near the west wall. It has an oval shape and concave bottom like a wok. The feature measures 0.6–0.75 m in diameter and the remaining depth is 0.15 m. Feature Z2, a circular niche crafted into the wall, is located in the southwestern corner of the connecting tunnel. It measures 0.18 m wide, 0.2 m deep and 0.24 m high. The heavily damaged Z3 is located in the northeastern quadrant of the front room. These fire-using features are circled by a layer of earth at least 2 cm thick that have been baked to reddish color. Moreover, a round posthole of 15 cm across and 10 cm deep situates in the southern half of the rear room.

Deposition of F4 comprises of fair amount of potsherds. Recognized vessels include pointed-bottom bottles, jars and bo-bowls; all bear diagnostic characteristics of the pottery vessels of Banpo IV Phase.

2. F6. This dwelling structure is located to the northeast of Y7. Its preserved physical properties suggest that it is a compound dwelling consists of two rooms, albeit the front room has been completely destroyed. The rear room has an oval plan of 3.6 m in diameter and 1.5 m in remaining height. The living floor is a brownish hard surface. The northern half of the living floor is slightly higher than that of the southern half. The in-curving northern wall suggests that the dwelling is likely a cave house structure. A wall niche is located near the living floor on the eastern wall. It measures 0.6 m wide, 0.65 m deep and about 1.1 m high. The ceiling of the niche had collapsed at the time of excavation. The ramped doorway is located on the southeastern quadrant of the room. It measures 1.8 m long, 0.8 m wide, 1.1–1.25 m remaining height. The floor of the doorway is lined with 2–5 cm of trampled surface.

Fire-using traces are seen in two different areas of F6 (Z1, Z2). Feature Z1 is located in the eastern half of the room. It has an oval plan of 0.57–0.7 m long. Feature Z2 is a rectangular wall niche crafted into the eastern wall of the doorway. It measures 0.35 m long and 0.6 m high. The bottoms and walls of both fire-using features have been baked into reddish brown hard surface.

The deposition of F6 comprises of yellowish grey soil with fair amount of potsherd inclusions. Recognizable vessels include pointed bottom bottles and jars, all diagnosed to Banpo IV Culture. Moreover, bone awls, shell ornaments and stone tools were also yielded from the deposition.

3. Y7. This is a horizontal kiln comprising the firebox, fire channels, fire eyes, and stacking chamber. It measures 2 m in total length and 1.78 m wide. The firebox has an oval plan and a truncated-cone cross-section that measures about 1 m long, 0.25–0.7 m wide, and 0.46–0.78 m deep. The northern mouth is higher than the southern part of firebox by 0.32 m. Tool marks are visible on the surface of treated wall. The fire channels consist of a central fire channel and a circular fire channel wraps around the kiln wall. The central fire channel measures 0.10–0.15 m wide and 0.17–0.44 m deep. The circular fire channel measures 0.08–0.19 m wide and about 0.1 m deep. The dome-shaped stacking chamber 1.28 m in diameter is connected with the firebox through the fire channels in the bottom. The chamber floor has an oval plan and is about 0.7–0.8 m higher than the mouth of firebox. Eight fire eyes are located on the stacking chamber floor. The ceiling of the stacking chamber had collapsed. The kiln wall is about 0.05–0.14 m thick. It has a grey color in the middle, but a red color near the ceiling. The varying color is likely conducive to the kiln atmosphere. A great number of potsherds have been recovered from Y7. Recognized vessels include pointed-bottom bottles, jars, bo-bowls, etc.

The linear distribution of 13 dwellings and kilns in between dwelling in the south area parallel to the cliff does not show superimposing and intruding relationship. They are very likely built under a same plan and definitely related to each other in special ways when they were in use. In other words, occupants of the dwellings might have been specialized potters.

4. Furthermore, a number of ash pits or cellars are located near the cliff in the south area. Some of them are possibly related to the dwellings and kilns distributed on the edge of the cliff. To illustrate, we take H402 as an example.
H402. Situated in the southwestern quadrant of T3640, this feature is located 38m from the cliff. Both the opening and base of the ash pit are oval in shape with a frustum cross-section and flat bottom. The narrower opening has a diameter of 1.1–1.3m, the wider base has a diameter of 2.55–2.7m, and the pit is 2.3m deep. The wall and the floor of the pit have been smoothed. A circle of shallow trough of 15cm wide and 10cm deep was dug around the base on where the wall meets the floor. The grey pit fillings have a compact texture. It yielded large quantity of pottery vessels and unburned ware fragments. Preliminary examination indicates that the assemblage consists of 22 pointed-bottom bottles, 19 jars, 16 bo-bowls, 9 basins, 5 urns, and one possibly potters’ wheel.

The pointed-bottom bottles recovered from H402 have unique characteristics. Most of them are made of a fine paste. To date, 18 vessels have been recovered. The pointed bottom bottle assemblage can be classified into two morphological types. A typical Type A pointed-bottom bottle has straight flared mouth, wide and flat rim, long neck, broad shoulder, narrowed waist, and no lugs. The necks of Type A bottles are often embellished with small circular appliqués or narrow strip appliqués. Their shoulders are often embellished with a round of whirlpool pattern, and several horizontal incised lines and wave pattern above and beneath the whirlpool pattern. The vessel mouth measures about 13cm in diameter and about 66cm in total height (Figure 14). A typical Type B pointed-bottom bottle has round lip, gourd-shaped mouth, slanted shoulder, narrowed waist, and a pair of square bracket-shaped lugs under the shoulder. Punch-and-press marks are seen on the bulging neck. Other embellishing patterns are similar to that of Type A bottles. The vessel mouth measures about 6.5cm in diameter and about 48cm in total height (Figure 15). The two types of pointed bottom bottles recovered from this single ash pit are finished products showing consistent styles and standardized sizes. Coupled with the circumstances of deposition, we propose that they were made by the same potter group and stored in the cellar.

In addition, a rare and unique artifact was recovered from H402, a possible tool for pottery making – potter’s wheel. The round artifact is made of a fine sandy red paste. Its edge curved up and its rim is embellished with
pressed cord mark. A circular platform is located in the center and a pair of oval holes is located on the side of the platform. The wheel measures 36.8cm in diameter on the top and 31cm on the bottom, and its height measures 8.4cm. The circular platform is 13.8cm high.

Taken together, the various features of the rowed cave dwellings, pottery kilns and storage cellars distributed in the south area of Yangguanzhai Site suggest that it is a pottery workshop zone of the past. The stratigraphy and diagnostic material remains point to Banpo IV phase occupation.

IV. Scholarly Significance

Rich information has been obtained from the large-scale archaeological excavation in the past few years. The scholarly significance of the expedition can be summarized in the following.

First, we have gained basic understanding of the settlement patterns of different phases of the site. The site has a higher elevation in the north and slopes gently towards the south. It can be partitioned into the south area and the north area by the Second East-West Avenue of Jing-Wei Industrial Park, which basically superimposes the circumferential moat of the settlement of Miaodigou Culture. The deposition of the south area is dominated by a settlement of Banpo IV Culture. The deposition of the north area is a settlement of Miaodigou Culture.

Second, the large amount of materials attributable to Banpo IV Culture greatly enhances our understanding of the compositions of the culture, especially in the central area of the Guanzhong Plain, the confluence of Jing and Wei Rivers. The discovery of a pottery workshop in the south area, which comprises of a row of dwellings, kilns and cellars, indicates that division of labor had emerged and some families were specialized in the pottery industry. The appearance of specialized storage cellars for pottery products indicates that the emergence and strengthening of the notion of private property through expression in settlement arrangement. These are important findings significant to the understanding of past social structure.

Third, the discovery of the circumferential moat of the Miaodigou settlement in the north area is definitely the highlight of this year’s fieldwork. First, the findings in Yangguanzhai Site provide evidences that are critical for resolving a perennial question in the academic circle concerning the settlement of Miaodigou Culture. The current information indicates that this site is the one and only Miaodigou phase settlement site enclosed by a completed and preserved moat ever known in China. It has become the most important line of evidence on questions concerning settlement plan and social structure of Miaodigou Culture. Second, the size of the Yangguanzhai’s Miaodigou phase moat settlement is rare in Chinese archaeology. The total length of the moat measures 1945m, making an enclosed area of 25.5 ha. Survey in the vicinity of Yangguanzhai, that is the area of the Jing and Wei Rivers, reveals several Yangshao settlements located in Han Village, Shangmadu, Manan and Weiqiao Villages. However, they are all significantly smaller than Yangguanzhai Site. Given the unique geographic location of Yangguanzhai, we have reasons to believe that this site is the remains of a central settlement of Miaodigou Culture in the Guanzhong region. It is noteworthy to mention that feature resembles that of a wall foundation has been found in a locality neighboring the inner side of the northeastern section of the moat. This could be indicative of a walled Miaodigou settlement. Nevertheless, this is an initial thought needs to be tested in future archaeological work.

Postscript: The original report was published in Koagu (Archaeology) 2009.7: 3–9 with eight illustrations and three color plates. The authors are Wang Weilin 王炜林, Yuan Ming 袁明, Zhang Pengcheng 张鹏程, Zhang Wei 张伟, and Guo Xiaoning 郭小宁. The abridged version is prepared by the first author and translated into English by Lee Yun Kuen 李润权.