

# The Shimao Site in Shenmu County, Shaanxi

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## Abstract

In Shimao Site, stone city walls, city gates, watchtowers, corner towers and auxiliary structures similar to “bastions” are found. The city site comprised the “Imperial City Terrace”, the inner city and the outer city, the general area of which would be larger than 400ha. The eastern gate of the outer city consisting of the inner and outer barbicans, stone-lined rammed earth gate body, the guardhouses, and so on had huge scale, complex structure and advanced construction technique, and yielded jade spades, jade *huang*-semicircular pendant, murals, stone sculptures and potteries and other important artifacts of the late Longshan Age to the Xia Dynasty. Shimao Site is the largest city site of the Longshan Age to the Xia Dynasty known to date, which provided brand-new materials for the research on the origin of Chinese Civilization and is very meaningful for understanding the pattern of the early civilizations in China under the framework of “ancient culture, ancient city and ancient state”.

**Keywords:** Cities–Neolithic Age; Longshan Culture; Shimao Site (Shenmu County, Shaanxi); Xia Dynasty

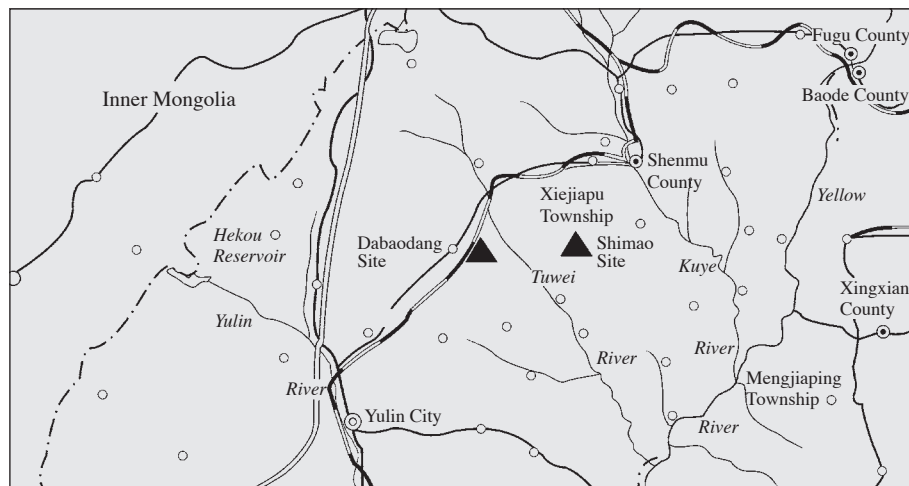
## Outline of the site

Shenmu County under the jurisdiction of Yulin City, Shaanxi Province is located at the joint area of Shaanxi and Shanxi Provinces and Inner Mongolia Autonomous Region: it borders Ordos City of Inner Mongolia on the northwest and Lüliang Prefecture of Shanxi Province on the east across the Yellow River. Most of the territory of Shenmu County is in the transitional zone from Loess Plateau to Mu-Uss Desert, the topography of which is mainly occupied by loess hills and ridges, denudation monadnocks and sandy flats.

Shimao Site is in Gaojiapu Town about 40km to the southwest of Shenmu County seat, which belongs to the watershed of Tuwei River, a primary tributary of the Yellow River; the geomorphologic features on the two sides of Tuwei River are sharply different: on the western side, the undulating sand dunes are stretching broadly everywhere; on the eastern side, the loess ridges and hills are scattered and the tributaries of Tuwei River are originating from these hilly area. The Shimao Site is just located at the confluence of Tuwei River and Dongchuan Rivulet, a tributary to Tuwei River, the terrain of which is eroded by gullies into patchy and fragmentary landscape with the altitude of 1100-1300m above the sea level (Figure 1).

Shimao Site has been famous for large amounts of jades which are attributed to it collected in public or private institutions at home and abroad. In January 1976, Mr. Yingxin Dai from Shaanxi Provincial Institute of Archaeology conducted archaeological survey to

Shimao Site based on the information provided by Gaojiapu Commune, Shenmu County and made a resurvey in September of the same year. In 1981, Banpo Museum, Xi'an City conducted excavation to Shimao Site, by which house foundations, stone cist burials, urn burials, ash pits and other remains were recovered and artifacts with exact stratigraphic relationships were unearthed. In April 1986, Shaanxi Provincial Institute of Archaeology conducted a field survey to Shimao Site. After that, Shaanxi History Museum, Commission for Preservation



**Figure 1** The location of Shimao Site.

of Ancient Monuments, Shaanxi Province and other institutions made many times of surveys to Shimao Site.

In July through September 2011, Shaanxi Provincial Institute of Archaeology, Yulin Municipal Team of Cultural Relics and Archaeology and Bureau of Culture and Sports, Shenmu County organized a joint archaeological team and conducted a regional systematic archaeological survey to Shimao Site. In 2012, authorized by the State Administration of Cultural Heritage, the joint archaeological team excavated the eastern gate of the outer city and some remains within the city and obtained important results.

### The archaeological field survey

1. As the main part of Shimao Site, the Shimao city site is discovered and confirmed in the regional systematic archaeological survey of 2011. In 2012, the joint archaeological team resurveyed the structure of the wall-enclosed city and the courses of the walls, and confirmed again that the Shimao city site consisted of the “Imperial City Terrace”, the inner city and the outer city (Figure 2). The “Imperial City Terrace” is the name given by the local people to call a stone-lined terrace located in the center slightly to the west of the inner city, which was roughly in square plan and the stone lining walls at the corners are turning into curved shape. The area of the top of the terrace is about 8ha. Because of the severe damage, some lining walls have been lost; the best preserved part is at the northeastern corner of the terrace, the curved corner of the lining wall has orderly arranged holes, in which decayed wood can be seen; the remaining length of the wall is about 200m in total and the heights are 3-7m. At the southwestern corner and the southern side, some remaining sections of the lining walls are also found, and in the wall on the southern side, well preserved wooden log horizontally inserted into the wall body was found. Different from the walls of the inner and outer cities, the “Imperial City Terrace” does not have walls above the ground, and all of the walls are the retaining walls or lining walls built against the hill body and battered into

steps. In the survey, the joint archaeological team knew that before the 1970s, the lining wall at the northeastern part of the “Imperial City Terrace” still had seven tiers of stepped lining wall; the better preserved parts of the lining wall found in this survey have three to five tiers of steps left.

The inner city enclosing the “Imperial City Terrace” is built along with the terrain and in an irregular oval plan with the major diameter in northeast-southwest orientation. Most parts of the wall are built on the ridges and above the ground; the extant lengths are more than 5700m in sum and the thickness is usually 2.5m, and the height of the best preserved parts is more than 1m above the ground.

The outer city is a crescent-shaped extension of the inner city sharing the southeastern wall of the inner city as its northwestern wall. Most parts of the wall of the outer city are the stone-laid wall above the ground, the extant lengths of which are about 4200m in sum and the thickness is about 2.5m; the height of the best preserved parts is more than 1m above the ground.

2. Because of the various terrains, the building methods were also somewhat different: at the steep cliffs, walls are



Figure 2 The distribution of the stone walls of Shimao city site.

usually not built but the natural terrains are utilized. At the mountain passes, trenches were dug into the mountain bodies and then the walls were built out of them; as for the gentle slopes and flat tablelands, the foundation trenches whose widths are the same as the thickness of the walls were dug first and then the stone blocks were laid out of them into walls above the ground. The stone blocks used for building the walls are processed first; the well touched sides are exposed on the inner and outer surfaces and the stones directly quarried out of the bedrock without trimming are laid in the wall body and daubed with straw-

tempered mud.

3. In the surveys, the phenomenon of walls crossing gullies is found in both the walls of the inner and outer cities. In the bottoms of the gullies, stone walls are found built along the sides upward, and on the walls of the outer city, the wall sections with the bases thickened are found at the bottom of the gullies. These sections made the inner and outer cities into relatively enclosed spaces, and provided important materials for the explorations on the early evolutions of the geomorphology and environment of Shimao Site. The ArcGIS survey and calculation results



**Figure 3** The plan of the eastern gate of the outer city of the Shimao city site.

showed that the inner city covers an area of about 210ha and the outer city, about 190ha, and the general area of the Shimao city site is more than 400ha. In addition, gates are found at the “Imperial City Terrace” and the inner and outer cities, square stone structures similar to watchtowers are found on the inner and outer city walls, and the facilities similar to “bastions” and “corner towers” are found on the outer city wall.

4. In the survey, the remains and artifacts found within the scope of the stone walls at Shimao Site are almost all that of the late Longshan Age to the early Xia Dynasty. Seen from their distributions, almost no potsherds of the early periods are gathered outside the outer city; in most of the localities between the inner and outer cities, fewer than 12 potsherds are gathered; in the localities within the inner city, 13-31 potsherds are gathered, and some of them (concentrated nearby the “Imperial City Terrace”) yield as many as 32-70 potsherds each, and even more than 70. Except for these, the survey discovered seven residential zones with dense remains, two kiln sites, three cemeteries of vertical earthen shaft pit burials, five stone cist burials and three urn burials.

Referring to the tradition of building stone wall-enclosed settlements in the mid-southern Inner Mongolia and northern Shaanxi during the late Neolithic Age and considering the high coincidence of the wall-enclosed area and the distribution area of the remains and artifacts

of the late Longshan Age, the excavators preliminarily inferred that the stone walls and the main remains in the site are contemporaneous, and the Shimao Site is a supersized central settlement from the late Longshan Age to the early Xia Dynasty.

### The archaeological excavations

1. To solve the problem on the chronological issue of the Shimao city site and to further understand its layout and the functional zoning, in May through November 2012, the joint archaeological team excavated a gate in the north of the outer city (according to its relative location in the whole city site, it is called “the eastern gate”; see Figures 3 and 4). This gate is located on the northeastern wall of the outer city and the gateway is facing northeast. Covering an area of about 2500sq m, the gate consisted of the “outer barbican”, two stone-lined rammed-earth platforms similar to gate tower foundations, the “inner barbican” in L-shaped plan, the “guardhouses”, etc., all of which are linked together by the 9m wide gateway in  $\Gamma$ -shaped plan. This gate is located at the highest place of the city site, the terrain of which is flat and broad and the location is important.

2. The “outer barbican” nearly in a  $\Pi$ -shaped plan completely screened the gateway. It was not built attached to the two stone-lined rammed-earth platforms, the gap



**Figure 4** The eastern gate of the outer city of the Shimao city site (NW–SE).

at the southern end of which is the passage leading to the gateway. The wall in north-south orientation directly blocking the gateway is about 21m long and 2.3m thick; the two walls perpendicular to it on its two ends are much shorter: the northern one is about 8m long and the southern one, a large part of which has been demolished, is about 3m in remaining length, and both of them are 3m thick. The outer barbican has been amended for many times. On the northern and southern sides of the northern wall of the outer barbican, the fire-burned remains and hard-packed surfaces of later periods are



**Figure 5** Jade spade inserted in the eastern stone wall of the “outer barbican” of the eastern gate of the outer city of the Shimao city site in situ.



**Figure 6** Jade spade unearthed from the collapsed wall of the northern platform of the eastern gate of the outer city of the Shimao city site.

found; in the north of the outer barbican, the living floor of the upper layers (later periods) is found superimposed over the randomly scattered stone blocks. Therefore, it is inferred that after the city walls were abandoned, the outer barbican was rebuilt for at least one time and a new passage was opened at its southeastern corner leading to the square stone house foundation (F8) in the city gate. The jade spades and jade *huang*-semicircular pendants are all unearthed from the collapsed accumulations of the stone wall and other architectures at the northern end of the outer “barbican”; two of the jade spades are unearthed from the collapsed northern wall in east-west orientation, and their locations were 2m from each other. The jade spade on the east was inserted in the seams between the stone blocks, which were daubed with straw-tempered mud (Figures 5 to 7). From the accumulation of the collapsed southern wall, stone human head figure fragments with intaglio lines are found.

3. The two rammed-earth platforms are built symmetrically across the gateway as the central axis; they are in similar shape and plan, both are rectangular. The platforms are lined with stone blocks and surrounded again by a ring of stone wall (temporarily called as “the main wall”). On the main wall, some orderly arranged holes are found, in which decayed round wood logs are left; these wood logs were inserted into the stone wall and reinforced with straw-tempered mud. The similar cases are also seen on the “Imperial City Terrace”. The outer sides of the two platforms have another wall (temporarily



**Figure 7** Jade spade unearthed from the collapsed accumulations of the stone wall at the northern end of the “outer barbican”.



**Figure 8** The elevation of the southern side of the northern platform of the eastern gate of the outer city of the Shimao city site (S-N).



**Figure 9** The plan of the northern platform of the eastern gate of the outer city of the Shimao city site (top is southwest).

called as “the protecting wall”) built attached to the main wall, respectively; the protecting wall completely enclosed the eastern side including the two eastern corners of the platform. The protecting walls are only seen on the eastern sides (facing the outside of the outer city) of the two platforms, which might be for reinforcing the defending ability of the outer sides of the platforms and enlarging the area for the activities on the platform. On the ground outside the platforms close to the protecting walls, there is a rectangular stone-paved strip 1.2-1.5m in width, which is similar to an “apron (Figure 8).”

The top of northern platform is about 16m long and 14m wide; the main wall is 2.7-4.1m thick and the protecting wall is 1.5-2.8m thick; the stone-paved “apron” on its eastern side is 1.2-1.5m wide. The highest place of the top of this platform is about 6.7m above the ground of that time (late Longshan Age). Nearby the main wall on the western side of the platform, another stone wall 1.3m thick is built, which enclosed the southwestern corner of



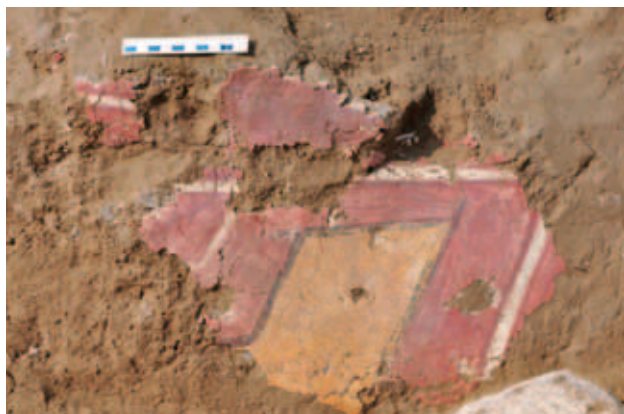
**Figure 10** House foundation F7 (SW-NE).

the platform. This wall is built on the ground of the later phase, which showed that it was built in the Xia Dynasty (Figure 9).

The top of southern platform is about 17m long and 11m wide; the main wall is about 4.2m thick and the protecting wall is 2-2.5m thick; the stone-paved “apron” on its outside is severely damaged, the widest preserved part of which is about 1.3m. The highest place of this platform is about 5.6m above the ground of that time (late Longshan Age). On the western side of this platform, a short retaining wall was built in the Xia Dynasty; meanwhile, the space to the west of this platform was utilized to build an isolated complex similar to a courtyard. The stone house foundation (numbered as F7) is the main body of this “courtyard”; it is in a square plan with the doorway facing west, the ground in front of the door is paved with stone slabs to form a court almost in the same area as the house. The internal area of the house is about 10sq m; the walls are about 0.8m thick and 0.6m in remaining height; the ground in the court was well preserved, on which the burning remains such as the black plant ash and red burnt clay clods are found (Figure 10). From F7, pottery utensils of the early Xia Dynasty, such as jar with lobed rim, high-necked *li*-cauldron and large-mouthed *zun*-vessel (Figure 11), are unearthed; from the collapsed accumulations in the court, a stone human mask figure is found. What noticeable is that the shape and size



**Figure 11** Big-mouthed *zhuo*-vessel (F7:1).



**Figure 12** The unearthed mural.



**Figure 13** The mural unearthed from the lower layer of the ground of the gateway of the eastern gate of the outer city of the Shimao city site (top is north).

of the southern platform is slightly different from that of the northern platform. Referring to the stratigraphic relationship and the remains nearby, it is inferred that the part to the inner side of the city has collapsed and the courtyard including F7 was rebuilt in the later phase (the Xia Dynasty).

4. Between the southern and northern platforms is the main gateway of the eastern gate, the width of which is about 9m. Against the main walls of the two platforms facing the gateway, three short walls parallel to each other and perpendicular to the main walls are built to form four partitions like the “guardhouses” along the gateway, each side of which has two arranged symmetrically (see Figure 3). Hearths are found in some of them. The floors of the “guardhouses” are even, the hard-packed traces on which are clear and the floors of the early and late phases could be linked to the grounds of the corresponding phases in the gateway. Entered the gate, the stone wall on the northwest of the southern platform continues to stretch for 18m to the west, and then turn a roughly right angle to the north and again stretches for 32m to form an L-shaped “inner barbican”. The thickness of this stone wall is about 2.5m, and the highest part is more than 4m above the ground of that time (late Longshan Age). On the inner side of this stone wall, another section of reinforcing wall (1.2m thick) is attached; the stratigraphic relationship shows that this section is built on the ground of the late phase (the Xia Dynasty), which meant that it was an amendment added in the Xia Dynasty. On this section of stone wall and the ground along its base, over 100 fragments of murals are found; the murals were geometric designs painted on the lime-plastered base with red, yellow, black and orange colors, the largest fragment of which is about 0.3m long on each side (Figures 12 and 13).

The stone-laid walls of the outer city are linked with the main walls of the southern and northern platforms of the eastern gate and stretching along the ridges where the platforms are located to the northeast and southwest, respectively; the thickness of the walls is about 2.5m.

5. Below the lower layer of the ground, two remains burying large amounts of human skulls are found (numbered as K1 and K2). K1 which is in an oval plan is located on the outside of the long wall of the “outer barbican” in north-south orientation (Figure 14). K2 which



**Figure 14** The human skulls in K1 (top is west).

is in a rectangular plan is located at the entrance of the gateway nearby the northern platform (Figure 15). Each of the two pits contains 24 human skulls the arrangements of which seem to follow some orders; most of them are put with the temporal bone upward, but there are also some with occipital bone or parietal bone upward. Some skulls have clear chopping marks and some bear burnt traces at occipital bone or mandible. The preliminary test shows that most of the skulls are that of young females. These two concentrated human skull burials might be related to the foundation-laying or sacrificial ceremonies for the construction of the city walls.

6. In the gateway of the eastern gate, two layers of ground are revealed. The upper layer of the ground and the accumulations above it contained rich artifacts, the potteries among which are high-necked *li*-cauldron decorated with fine cord pattern, single-handed *li*-cauldron decorated with check pattern, *li*-cauldron with lobed rim, *gui*-pitcher with wide spout, jar with angled shoulder and decorated with basket pattern, etc. The lower layer of the ground contained fewer potsherds, most of which are that of *li*-cauldrons and jars decorated with basket and cord patterns. The styles and decorative patterns of the potteries found in the upper and lower layers have sharp differences. The stratigraphic relationship between the upper and lower layers is clear, between which is a layer of mixed soil which is about 0.4m thick. Underneath the lower layer of the ground is a layer of dark brown hard earth which is about 0.3m thick; the main body of the eastern gate and the related facilities are all built on this layer and the foundation trenches of the stone walls are also dug on this layer. Therefore, this layer would be the bedding layer for the construction of the eastern gate, and its date would be also the same as that.

7. The upper and lower layers of the ground of the eastern gate of the outer city of Shimao city site could be



**Figure 15** The human skulls piled in K2 (S-N).

divided into the early and late phases, which represented the construction and using and reconstruction and reusing periods. The artifacts unearthed from the lower and upper layers of the ground of the eastern gate belonged to the late Longshan Age and Xia Dynasty which are popular in the mid-southern Inner Mongolia, northern Shaanxi and northwestern Shanxi. Therefore, the dates of the eastern gate of the outer city of the Shimao city site even the whole Shimao city site would be the late Longshan Age to the early Xia Dynasty.

### Preliminary understandings

Through the systematic archaeological surveys conducted since 2011 and the excavation to the remains of the eastern gate of the outer city of Shimao Site in 2012, we confirmed a large-scale, well preserved and roughly completely enclosed stone city site and discovered the city gates, gate tower platforms, corner towers and auxiliary structures similar to “bastions” and so on. The Shimao Site consisted of three rings of stone-lined or -laid foundations and walls: the “Imperial City Terrace”, the inner and outer cities, the area enclosed by which covered over 400ha; the *terminus ad quem* of the archaeologically



gathered artifacts within the city is the Xia Dynasty.

The excavation in 2012 revealed the remains of the eastern gate of the outer city in Shimao Site consisting of the stone walls, the stone-lined rammed-earth gate body, the “guardhouses”, the inner and outer “barbicans” all of which were built in huge scale and with complex structure and advanced construction technique, unearthed jades, murals and important artifacts including potteries and stone and bone implements and confirmed the date of the construction of this city site from the stratigraphic relationships for the first time. The excavators preliminarily suggest that the earliest part of the Shimao city site (the “Imperial City Terrace”) began to be built in the mid Longshan Age or later and was abandoned during the Xia Dynasty. Shimao city site is a supersized central settlement in northern China. The magnificent stone city wall and the large quantity of exquisite jades unearthed here in the past all reflected the core position of Shimao Site in the northern cultural sphere.

The scale of Shimao city site is larger than the Liangzhu and Taosi city sites with similar dates, and can be seen as the largest prehistoric city site found in China to date. The excavation to this site not only provided scientific background for the researches on the dates and cultural natures of the jades found in Shimao Site, but also provided brand-new materials for the researches on the pluralistic origins and development procedure of the Chinese Civilization.

### **Postscript**

The original report published in *Kaogu* 考古 (Archaeology) 2013. 7: 15–24 with 17 illustrations was authored by Zhouyong Sun 孙周勇, Jing Shao 邵晶, Anding Shao 邵安定, Ningwu Kang 康宁武, Fengming Qu 屈凤鸣 and Xiaoming Liu 刘小明; this abridged version is prepared by Zhouyong Sun and translated into English by Xiaolei Ding 丁晓雷.