

The Xichengyi Site in Zhangye City, Gansu

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head, adobe houses and so on are very meaningful for the explorations to the early cultural communication between the East and the West.

Keywords: Adobe houses; metallurgy–Gansu Corridor; wheat–diffusion–history; Xichengyi Site (Zhangye City, Gansu)

Abstract

The Xichengyi Site covering areas about 35ha in total is located in the middle of the Hexi Corridor. In the excavations from 2010 through 2013, areas covering 1350sq m have been excavated, the remains recovered from which were dated as around 4100–3600 BP, lasting from the late Machang Culture, the Xichengyi Phase II period and the early Siba Culture. 351 features including house foundations, ash pits, pottery kilns and burials were recovered and over 2000 pieces (sets) of artifacts were unearthed, which revealed the origins of Siba Culture and preliminarily established the development sequence of the prehistoric cultures in the Heishui River Valley. The discovery of large amounts of remains and relics of metallurgy provided important materials for the researches on the early metallurgic technologies in Hexi Corridor. The discoveries of barley, wheat, mace

Overview of the site

The Xichengyi Site is located in the middle of the Hexi (Gansu) Corridor, the middle reach of the Heishui River, and the northeastern part of Mingyong Township of the Ganzhou District, Zhangye City (Figure 1). In the years 2007 to 2008, Gansu Provincial Institute of Cultural Relics and Archaeology and the Institute of Historical Metallurgy and Materials, University of Science and Technology Beijing (USTB) discovered this site when they investigated ancient metalworking and mining sites in the Hexi Corridor. In 2010–2013, a joint team organized by Gansu Provincial Institute of Cultural Relics and Archaeology, Institute of Historical Metallurgy and Materials, USTB, Institute of Archaeology, Chinese Academy of Social Sciences (CASS) and School of Cultural Heritage, Northwest University carried out four seasons of fieldwork at the site.

As a result of the extensive fieldwork, the site has been found to extend over an area of 35ha. An area of 1350sq m has been exposed, and 90 house foundations, 19 isolated walls, 357 ash pits, 19 ash ditches, 12 hearths, 19 kilns and burials have been uncovered, which comes with 2000 pieces (sets) of pottery wares, stone implements, bone implements, metal artifacts, jades, charred grains, and metallurgy remains. A sequence of architectural structures discovered at Xichengyi delineates a three-phase chronology: Phase I, late Machang Culture; Phase II, Xichengyi Culture; and Phase III, Siba Culture. The radiocarbon dates acquired to date offers a chronology of 4100–3600 BP for the site.

Phase I (late Machang Culture)

To this phase, one may assign a number of ash pits and house foundations, and a number of pottery wares, stone

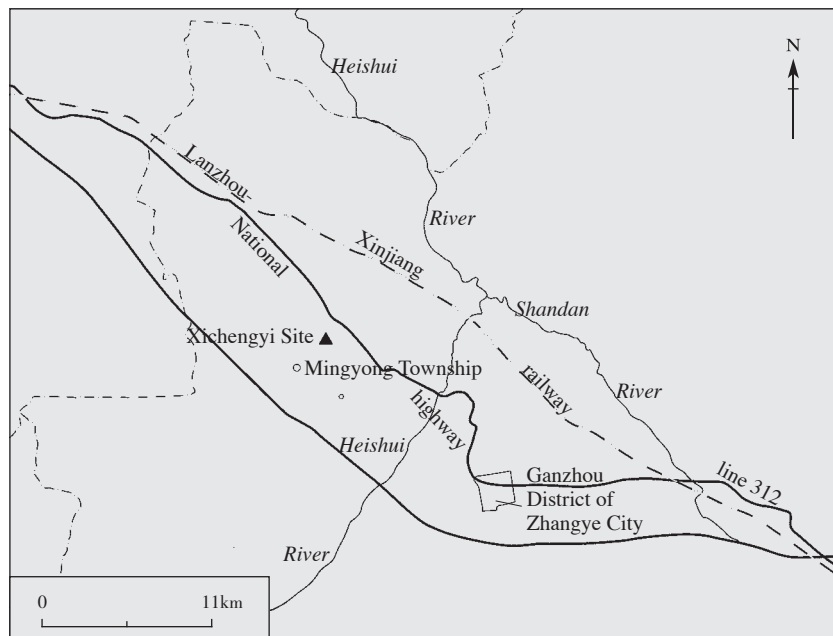


Figure 1 The location of the Xichengyi Site.

implements, bone implements, and broomcorn and foxtail millets, as well as a few pieces of smelting slag.

Most ash pits are in the form of regular pouch. H309, as an example, has an elliptical opening 1.7–1.86m across and a flat bottom 2.4m across and 2.6m deep. It has an inverted trapezoidal niche of 25–40cm long and 40cm high. On the bottom it has a posthole of 10cm in diameter and 5cm deep. Six restorable pottery wares are recovered from this ash pit, including one painted basin (Figure 2), one painted pot (Figure 3), and four jars (Figures 4 through 7).

All house foundations, either circular or square in plan, are semi-subterranean. F65 has been intruded by ash pits at both the northeast and southwest corners. The space within its square and shallow pit is divided by several stub walls into several rooms. The stub walls are made of sections of 34–45cm long and 32–44cm wide, which

are formed by piling scales of clay. They are further buttressed by posts along them. From the collapsed roof one can tell that the construction began with the erection of wooden framework, which is thatched with reed or straw mats, and plastered with clay. The floor, 5–10cm thick, is tough and fine. Upon it a fragmented jar is located (Figure 8).

Pottery wares are mostly made of red fine clay or brown sandy clay; they are all manufactured by coiling technique. Major ware types are painted basins, painted pots and jars. Painted basins are made of red fine clay, coated with purplish-red slip, and painted both inside and outside. Double-handled jars are mostly sandy, furnished with flaring rims and two handles that perk upon the rims. Stone implements are mostly knives, bolas, grinding rollers, and choppers. To the inventory one may add jade axes, bone needles, awls, spades, charred broomcorn and



Figure 2 Painted pottery basin (H309 ④ :3).



Figure 3 Painted pottery pot (H309 ③ :2).



Figure 4 Pottery double-handled jar (H309 ④ :4).



Figure 5 Pottery double-handled jar (H309 ④ :11).



Figure 6 Pottery jar (H309 ④ :12).



Figure 7 Pottery jar (H309 ④ :2).



Figure 8 House foundation F65 (SW–NE).

foxtail millets, and a few pieces of bronze smelting slag.

Phase II (Xichengyi Culture)

Of this phase there are semi-subterranean, ground-level, and adobe houses, kilns, ash pits, ash ditches, fireplaces, and tombs, in which are found pottery wares, stone tools, bone tools, jade artifacts, metalworking remains, and charred crop seeds.

Ash pits of this phase are in the forms of pouch (bottom larger than opening), cylindrical, wok (opening larger than bottom), and irregular shapes; they are richly furnished with potsherds, stone implements, charred grains, and metallurgy remains.

H267, a pouch-shaped ash pit, is oval at the opening, 1.46–1.9m across, and flat at the bottom of 0.82m deep. From this ash pit are found potsherds (Figures 9:1 through

9:11), stone implements (Figures 9:12 through 9:14), pebbles and animal bones; in addition, in the south of this ash pit is found a small quantity of bronze smelting slag.

House foundations of this phase, which are abundantly found, fall into the three types of semi-subterranean, ground-level dwellings, and adobe.

Semi-subterranean houses occur mainly in the early stage of Phase II. F70, a round one, is composed of two pouch-shaped pits one upon another. The upper pit is oval, with a dimension of 2.4–2.6m; the lower pit is positioned beneath the southwestern part of the upper one; it is round with a diameter of 2.04m (opening) and 2.3m (bottom). A round posthole of 24cm in diameter and 8cm deep is positioned at the center possibly to

uphold the roof. The floor is covered with a thin layer of blackish ash laid upon the primary soil (Figure 10). Upon it there are five layers of deposit, which contains potsherds (Figure 11), pebbles, and animal bones.

The ground-level houses are mostly square, comprising single or multiple rooms; their doorways are oriented southeast. Within them are found postholes, activity surface, hearth, and cultural deposit; in some are additionally found storage pits or storage jars. The activity surface is mostly made of red clay, fine and hard. F20, a square house foundation, is made up of three rooms. The 13 postholes that are preserved are rendered in four rows in the orientation of northeast-southwest. The largest posthole is 26cm in diameter, and the smallest one 15cm, 4–20cm deep. The two rows of postholes in the middle divide the house into three rooms. The small room in the north measures 2.14m long, 1.8m wide, and 3.96sq m in

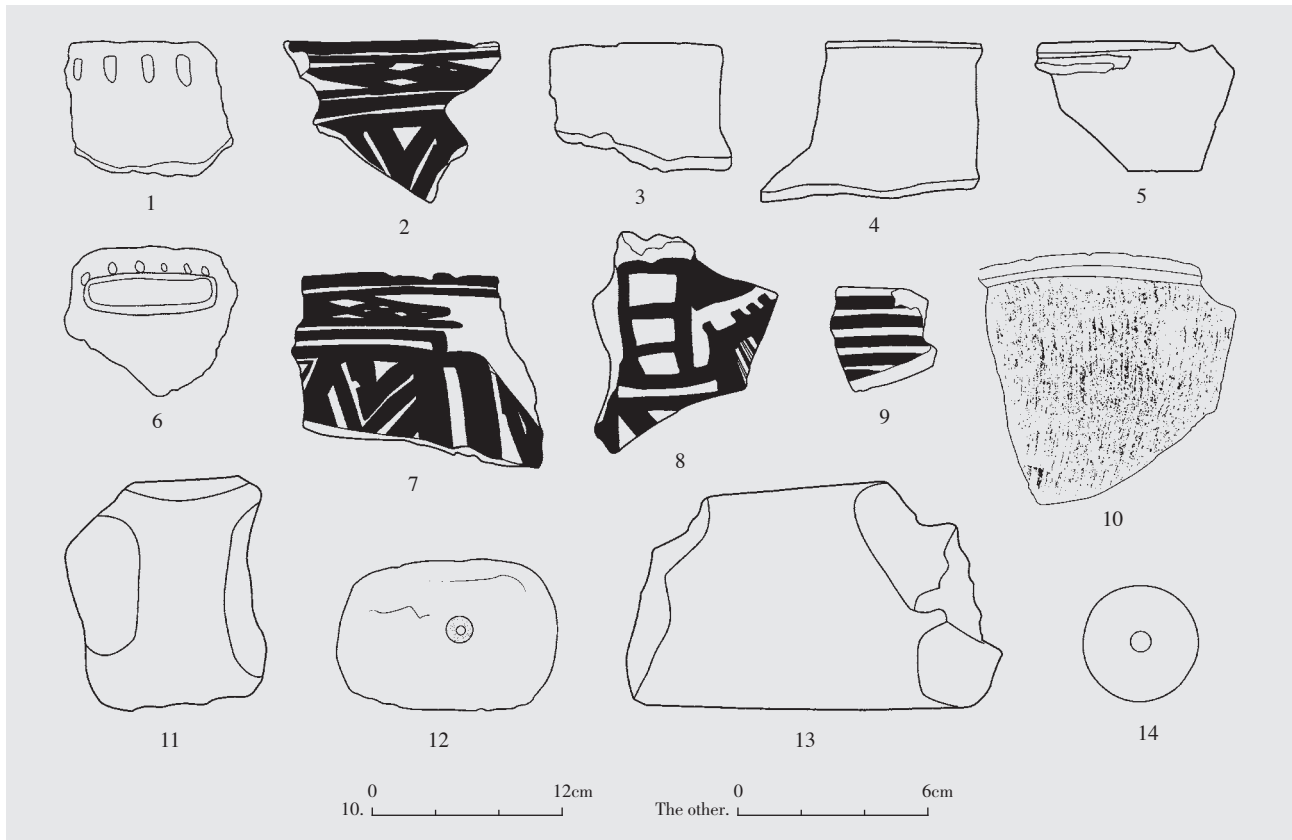


Figure 9 Artifacts unearthed from ash pit H267.

1, 3–6, 10 and 11. Pottery jar sherds (H267:P12, H267:P3, H267:P4, H267:P5, H267:P6, H267:P10 and H267:P11); 2, 7 and 8. Painted pottery jar sherds (H267:P2, H267:P7 and H267:P8); 9. Painted pottery basin sherd (H267:P9); 12. Stone knife (H267:4); 13. Stone Ax (H267:6); 14. Stone spindle whorl (H267:2).
3, 4 and 9 belong to Cluster I, 5 and 10 belong to Cluster II and 1, 2, 6–8 and 11 belong to Cluster III.



Figure 10 House foundation F70 (SW-NE).

size. The middle room measures 2.2m per side and 5.1sq m. The southern one is 1.1m long, 4.8m wide, and 5.3sq m altogether. The activity surface is made of red clay, hard, 4cm thick; it retains some ash and trace of burning (Figure 12).

Adobe houses are square or round in shape. The round ones are single-roomed, and the square ones are



Figure 11 Potsherds unearthed from house foundation F70.

1–3, 5, 8 and 9. Jars (F70 ④ :P1, F70 ② :P1, F70 ① :P1, F70 ④ :P2, F70 ⑤ :P1 and F70 ① :P2); 4 and 6. Painted jars (F70 ③ :P1 and F70 ④ :P3); 7. Painted basin (F70 ④ :P4).
7–9 belong to Cluster I, 1–3 belong to Cluster II and 4–6 belong to Cluster III.



Figure 12 House foundation F20 (E–W).



Figure 13 House foundation F45 (W–E).

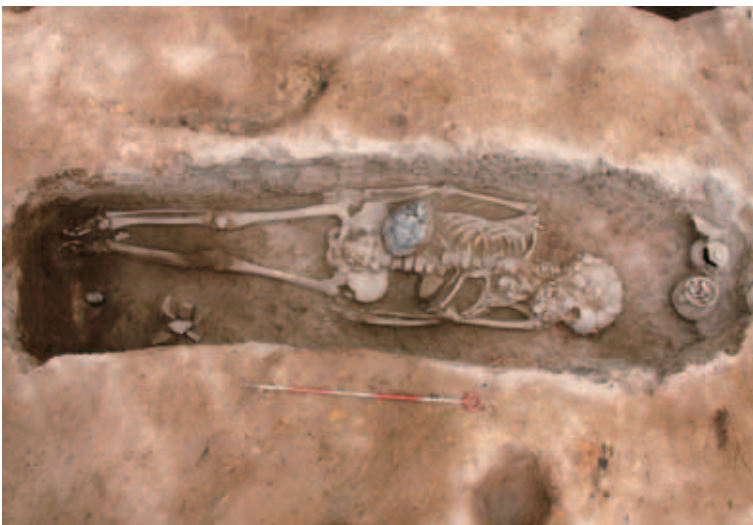


Figure 14 Burial M11 (NE–SW).

single- or multi-roomed. F45, northeast-southwest in orientation, is rectangular. Its eastern wall extends into the eastern balk of the excavation grids T1302 and T1402, and remains unexcavated. Among the other walls, the northern wall is 3.2m long, 0.3m thick; the southern wall 2.5m long, 0.24m thick; the western wall 2.7m long, 0.34m thick. The northern and southern walls parallel each other, with a distance of 1.2m, whereas the western wall meets them at a right angle. This house might have been a multi-roomed one, as the southern wall seems to be a partitioning wall (Figure 13). In the east there is post stand. The activity surface, well preserved, is made of dark red clay; it keeps some broken jars, blowing pipes, and jades.

Burials are mostly belonging to the late stage of this phase and found in the residential area, some inside the houses, with their graves dug along walls. All of them are rectangular shaft pits, but some are furnished with head-end niches, feet-end niches, or side niches. Most of them are single burials, and the occupants are mostly children, who are given more grave goods than those of adults. Some are equipped with jade and stone artifacts.

As an example, the shaft grave of burial M11 is 2.4m long, 0.24–0.58m wide and 0.15–0.31m deep. The space within the straight and smooth walls is filled with soft dark red mottled earth, which contains a few potsherds and animal bones. The singular skeleton of the occupant is 14–16 years old, although its sex is elusive. The occupant is laid in the extended supine position heading southeast, and facing west; its hands are placed along the sides of the abdomen; and its feet are held together. The skull has been broken, a few ribs lost; no trace of funeral furniture is visible (Figure 14). There are three pottery wares in the grave goods, namely two double-handled jars (Figures 15 and 16), one vessel lid (Figure 17), which are placed above the skull. There are a few bone ornaments (Figure 18) along the left arm, a turquoise bead at his neck, and nine jade pieces at the left chest (Figure 19).

Artifacts of Phase II are relatively rich and the cultural composition more complex. From potsherds yielded by ash pits H70 and H267 one can sort out three clusters. Cluster I comprises grayish dark red sandy clay and red clay sherds, the latter of which are coated with purplish-red slip and painted with black color (motifs are mostly parallel bands). Among the identifiable ware types,



Figure 15 Painted double-handled pottery jar (M11:1).



Figure 16 Double-handled pottery jar (M11:2).



Figure 17 Pottery vessel lid (M11:3).



Figure 18 Bone ornaments (M11:4-13).



Figure 19 Jade pieces (M11:14-22).



Figure 20 Charred wheat grains.



Figure 21 Charred barley grains.



Figure 22 Charred millet grains.



Figure 23 Charred broomcorn millet grains.

there are painted basins and sandy jars (Figures 9:3, 9:4 and 9:9; Figures 11:7 and 11:9). Cluster II mostly comprises orange clay wares, plain or imprinted with basket designs; among the identifiable ware types, there are jars (Figures 9:5 and 9:10, Figures 11:1 through 11:3). Cluster III mostly comprises red clay and fine sandy sherds, which are painted with black color; some of them are coated with yellow slip; the painting motifs are bands, rhombi filled with net; the coarse sandy sherds are mostly plain, sometimes decorated with prod marks; among the identifiable types there are jars (Figures 9:1, 9:2, 9:6 through 9:8 and 9:11; Figures 11:4 through 11:6). Among stone implements, there are knives, axes, adzes, bolas, arrowheads, and scrapers. Among the ornaments, there are jade axes and turquoise beads; there are also raw materials of jade and turquoise. Bone artifacts consist of needles, awls, beads, and ornaments. Metallurgical remains, which are rather abundant, include not only artifacts such as bronze awls, rings, buttons and tubes, but also metalworking materials such as a stone mirror mold, copper ores, smelting slag, furnace walls, and tuyeres. Moreover, there is also a considerable amount of charred grains of wheat, barley, and millets (Figures 20 through 23).

Phase III (Siba Culture)

Of this phase there are house foundations, ash pits and burials. Of the houses there are the two types of ground-level and adobe, which inherited the construction techniques and forms of Phase II. Burials are not well preserved.

There is only one ground-level house (F75). It is in square plan and facing southeast, and furnished with 18 postholes of 10–34cm in diameter and 7–40cm deep. The living floor is paved out of red sandy clay, fine and hard, and assumes trace of burning and thin ashy deposit (Figure 24).

Adobe houses are identical to those of Phase II in terms of construction technique. As an example, F78 is nearly square; its western wall is 4m long, eastern wall



Figure 24 House foundation F75 (SE–NW).

3m, southern wall 1.8m, all of them 0.3m thick; they enclose a space of 15sq m (Figure 25). The ground both outside and inside the house foundation is paved with red clay, fine and hard. Inside the house are found a fragmentary copper knife, a pottery jar, and four stone implements.

The other example, F79, is square and oriented southeast. A small room is built in the southeastern corner possibly for storage purpose (Figure 26). The northern and southern walls, which parallel each other, are 4.9m and 4.1m long respectively; the western and eastern walls are 6.86m and 6.9m long respectively. They are all 25–30cm thick at the base. The northern and eastern walls of the small room are 2.25m and 1.68m respectively, and 20–30cm thick at the base. Overall F79 is 33.71sq m in dimension, whereas the small room 3.78sq m. The entire house was built upon a broader foundation made of a layer of yellowish brown earth and another layer of reddish brown earth; ditches are dug upon the foundation for the erection of walls; one or two layers of earth are filled in them and rammed firm, which are then covered a layer of small pebbles, potsherds and bones, before adobes are laid. Due to severe damaging, the heights of the walls are unknown. Inside the house, a layer of red clay of 2–3cm is paved as living floor, upon which are scattered potsherds, bone fragments and pebbles. To the northwest there is a large plot of burned surface.

Of the burials, M13 is equipped with a rectangular grave of 2m long, 0.54m wide, and 0.21–0.37m deep. A skeleton of a child, sex undetermined, is laid in an extended supine position heading southwest. No burial furniture is found (Figure 27). From the burial are uncovered 11 pottery wares (Figures 28–37), two bone spatulas, one stone knife; moreover, one white stone is found nearby the skull, and nine jade pieces near the chest.

M18, the shaft grave of which is in rectangular plan with curved corners, is severely damaged. At the present state it is 0.62m long, 0.3–0.35m wide, and 8–10cm deep. The four walls are rendered straight and smooth, but a large niche is carved out from the wall of the head end; wider than the shaft pit itself but linked up with the bottom of the pit, it is 10cm deep, 46cm wide, and 8cm high, containing three pottery jars. The single skeleton has its skull broken, but its teeth are intact; the remaining spine bone, right-side ribs, and right arm are poorly preserved.



Figure 25 House foundation F78 (NW–SE).



Figure 26 House foundation F79 (SE–NW).



Figure 27 Burial M13 (NW–SE).



Figure 28 Painted double-handled pottery jar (M13:1).



Figure 29 Double-handled pottery jar (M13:2).



Figure 30 Pottery vessel lid (M13:5).



Figure 31 Double-handled pottery jar (M13:10).



Figure 32 Pottery jar (M13:6).



Figure 33 Pottery vessel lid (M13:3).



Figure 34 Painted double-handled pottery jar (M13:9).



Figure 35 Pottery pot (M13:8).



Figure 36 Double-handled pottery jar (M13:4).



Figure 37 Painted double-handled pottery jar (M13:14).

It is rendered extended supine, heading southeast, facing northeast. It is likely a child, who is furnished with two turquoise beads (Figure 38).

The inventory of artifacts is typologically identical to that of Phase II, including pottery wares, stone implements, jade ornaments, charred crop grains, and metallurgy remains. All the potsherds are sandy; the majority are red, but there are gray pieces. The wares are made by coiling; the miniatures are simply hand pinched. The painted pottery is generally coated with slip of purplish red, and added black motifs, which tend to peel off. Among the motifs, there are parallel bands, zigzags, hatched rhombi, triangles, nets, and meanders. Apart from the regular types of jars, basins and pots, there

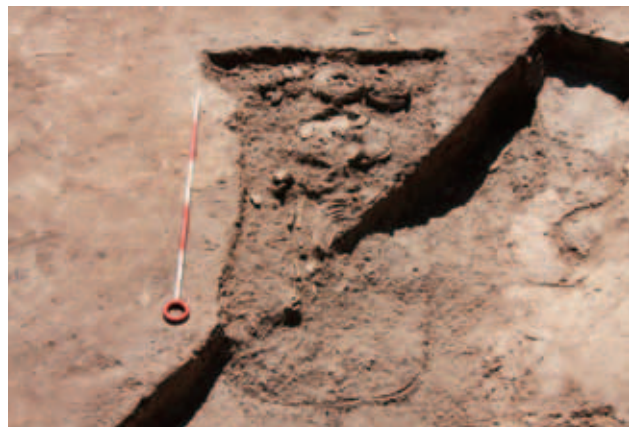


Figure 38 Burial M18 (NW-SE).



Figure 39 Stone mace head mold (gathered).
Left. Casting cavity; right. Mold back.

are many vessel lids. Among the metallurgy remains, there are copper ores, slag, tuyeres, stone molds, and copper droplets. Bronze artifacts mainly comprise knives, rings, buttons, and awls; a broken stone mold of mace head, 6.4cm in remaining height, is gathered from the excavation area. It has a spherical shape with a spherical cavity; two incised grooves, one encircling the top and the other perpendicular to it, are possibly meant for securing the mold. But it bears little trace of usage; one may surmise that it was broken before finishing (Figure 39). In form it is close to the bronze mace head found at the Huoshaogou Cemetery.

Implications of the excavation materials

The cultural deposit of the Xichengyi Site can thus be divided into three phases. Phase I can be attributed to the Late Machang, which dates to 4100–4000 BP. Phase II may be named “Xichengyi Phase II remains” for the time being, and its date is 4000–3700 BP. Phase III belongs to the Siba Culture, and its date lasts from 3700–3600BP, perhaps even to around 3500 BP.

The cultural sequence of Xichengyi, late Machang–Xichengyi Phase II–Siba, fills up a significant gap in the prehistoric chronology of the Hexi Corridor. During the four seasons of fieldwork, the excavators surveyed the surrounding regions, and excavated the severely endangered sites in a nearby farm in Zhangye City and at Guohuitai in Shandan County. It appears the site in the farm belongs to Shajing Culture, and the Guohuitai to the Shanma Culture. The discovery of the Shajing and Shanma Culture sites serves to extend the distribution areas of the two cultures from the earlier known Wuwei and Jiuquan Oases respectively. The Xichengyi Phase II remains in combination with other sites that have been investigated so far constitute a full sequence for the Heishui River Valley, i.e. Majiayao Culture – Banshan

Culture – Machang Culture – Xichengyi Phase II – Siba Culture – Shanma (Shajing) Culture. During the late Machang Culture, the Qijia Culture makes its way to the Heishui River and coexists with the Machang Culture in some loci. The Xichengyi Phase II remains are compositionally complex; its potsherds consist of three clusters: Cluster I, residue of late Machang; Cluster II, transitional from late Machang to Siba; Cluster III, the Qijia Culture. During Phase III, or the time of Siba Culture, one can still see remnants of the Qijia Culture. Overall, the Qijia Culture persisted throughout the three phases.

It appears that the ancient residents of the Xichengyi Site live a sedentary life. The houses of the settlement experience a transition from the semi-subterranean pit dwellings to a mixture of semi-subterranean, ground-level, adobe houses, and further to a mixture of ground-level and adobe houses. The semi-subterranean dwellings occur mainly during the phase of late Machang, decrease in use during Phase II, and disappear during Phase III. The ground-level and adobe houses are abundantly found during Phases II and III. This sequence provides an important reference point for the study of ancient architecture in the Hexi Corridor.

Metallurgy has been testified to begin during the late Machang and persisted through the phase of Siba, but it climaxes during Phase II; it lasts from 4100 to 3600 BP, or for 500 years. Aside from a few small artifacts, there have been found slag, ore, furnace fragments, tuyeres, and stone molds. The beginning of metallurgy in the Hexi Corridor can thus be securely positioned at 4100 BP; Xichengyi might even have been a metallurgical center, which has a great implication for the study of early metallurgy of China.

The discovery of barley, wheat, mace head, and adobe houses attests to the fact that the East-West cultural interaction is rather intense around 4000 BP. The barley

and wheat, which appear around 4000 BP, are the largest and earliest find in the Hexi Corridor, and thus provide important materials for the study of the diffusion route and date of the crops to China. Mace heads, which first emerged in the Middle East and Egypt, also make their way to the Hexi Corridor. At the Huoshaogou Cemetery, not only stone samples, but also bronze four-ram-headed samples of mace head have been found. The date of Huoshaogou parallels Phase III of Xichengyi, during which a fragmented stone mold of mace head is discovered. The date of the mold is slightly earlier than that of the bronze sample of Huoshaogou. Adobe houses emerged likewise in the Near East. In China, they have been discovered in prehistoric sites in the valleys of the Yellow, Huai, and Yangtze Rivers, and the eastern section of the Great Wall zone. In the Hexi Corridor, it is first discovered at the Donghui Mound Site of the Siba Culture period. At Xichengyi, it is first found during Phase II. One has good reason to suggest that the barley, wheat, mace head, and adobe houses have been derived from the west.

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Postscript

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