

2006–2007 Excavation on the Liangzhu City-Site in Yuhang District, Hangzhou City

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The Liangzhu City Site lies to the east of Pingyao Town in Yuhang District of Hangzhou City, Zhejiang Province, about 20 km to the northwest of downtown Hangzhou. About 2 km to the north of the site, the lofty eastern branch of Tianmu Mountain runs roughly from southwest to northeast. About 2 km to the south of the site is also an extension of Tianmu Mountain, which resembles a series of hills in an intermittent line. Between the two mountain ranges is a valley about 8 km long from the west to the east and about 5 km wide from the north to the south. Here, the Eastern Tiaoxi River winds its way from southwest to northeast.

In 1936, the West Lake Museum carried out survey and excavation at Liangzhu and Changmingqiao, which brought about great achievements. In 1959, the discovered remains began to be formally named as “Liangzhu Culture.” Since 1936, thanks to the sustained efforts of several generations of archaeologists, above 130 sites in that area have been affirmed through archaeological surveys and excavations.

Discovery of the Liangzhu City Site

Archaeological coring, survey and excavation lasting over a year from June 2006 to November 2007 resulted in the discovery and confirmation of the fact that there exist the remains of ancient city walls round the Mojiaoshan site.

According to the preliminary results of survey and trial excavation, the Liangzhu City site measures about 1,700m in width from the west to the east and about 1,900m in length from the north to the south, covering a total area of over 300 hectares. It is roughly sub-rectangular in plan, the central axis pointing due north and south. The city walls were built in the following way. At first, a layer of livid clay about 20cm thick was spread

out on the bottom, then stone blocks were laid on it to form the foundations, on which the wall body was built up of rather pure yellow earth. The foundations are largely about 40–60m wide, and the walls about 4m high as known from the better-preserved sections. Cross-section excavation of the four city walls suggests that all the accumulations on their toe belong to the late Liangzhu Culture, which, therefore, must have been the *terminus ad quem* of the function of the city walls, but the dating of their starting point calls for further investigation in the future archaeological work.

Inferred by the results of the coring and selective excavation, on both sides of the city walls were water systems. The exterior river system included rather vast water areas that skirted the city on the northwestern, northern and eastern sides. The outer sides of the city walls are not straight. They are full of extending concavities and convexities resembling bastions, the convex parts exceeding one hundred meters in total. A preliminary analysis indicates that these sections must have been traces of the city walls built according to the natural waterside terrains (Figure 1).

Vestiges of City Walls

Since 2006, selective excavation has been carried out in the periphery of the city walls, namely in the following localities.

1. The Putaofan and Baiyuanfan sections of the western wall

The Putaofan section was explored by opening excavation squares and trenches, which covered an area of 730 sqm in total. In the areas suitable to excavation, we cleaned to the full the accumulations in the moat, found out its western bank by opening excavation trenches, and discovered remains of a city wall through selective

excavation on the highland east of the moat (Figure 2). On the remaining city wall, a layer of surface soil about 50cm thick is superimposed upon Liangzhu Culture accumulations that measures about 100cm in thickness and contains lumps of red-burnt clay and potshards roughly identical with those in the upper stratum of the moat. Beneath the Liangzhu Culture layer are the remains of the earthen wall body, which is largely dark-brown and yellow clay rather pure in texture and clear in the superimposition of layers. Near the bottom is a layer of regular stones without weathering traces, which must have been brought here from quarries. Under the stones is a layer of livid clay about 20cm in thickness. The height from the Liangzhu Culture layer to the raw soil is about 230cm (Figure 3).

This section of moat is about 45m wide and 1.5m deep, and contains nine layers of accumulations. Beneath the surface soil is a layer of light yellow natural silt spread all over, which is partially covered by a layer of blackish-brown clay with Han period potshards. The silt layer covers Liangzhu Culture accumulations clearly inclining from the east down to the west, which must have resulted from the dumping of rubbish from the edge of the moat. The potshards in the fourth and fifth layers and those in the eighth and ninth ones show clear changes, which reflects that the moat functioned for a long period of time.

The Baiyuanfan section was explored first by coring southwards and northwards from the excavated plot at Putaofan, which brought the preliminary understanding that city wall remains consisting of stones and yellow earth are distributed from Fengshan Hill in the south to the Tiaoxi River in the north. To get more knowledge of the vestiges, we carried out trial excavation in the

Baiyuanfan section. This part of city wall was seriously damaged because the earth was later taken away to build the Eastern Tiaoxi dike, and the wall body has long been leveled into paddies. In most of the section, yellow earth and stones are revealed directly beneath a 20cm thick cultivated soil layer. The trial excavation was carried

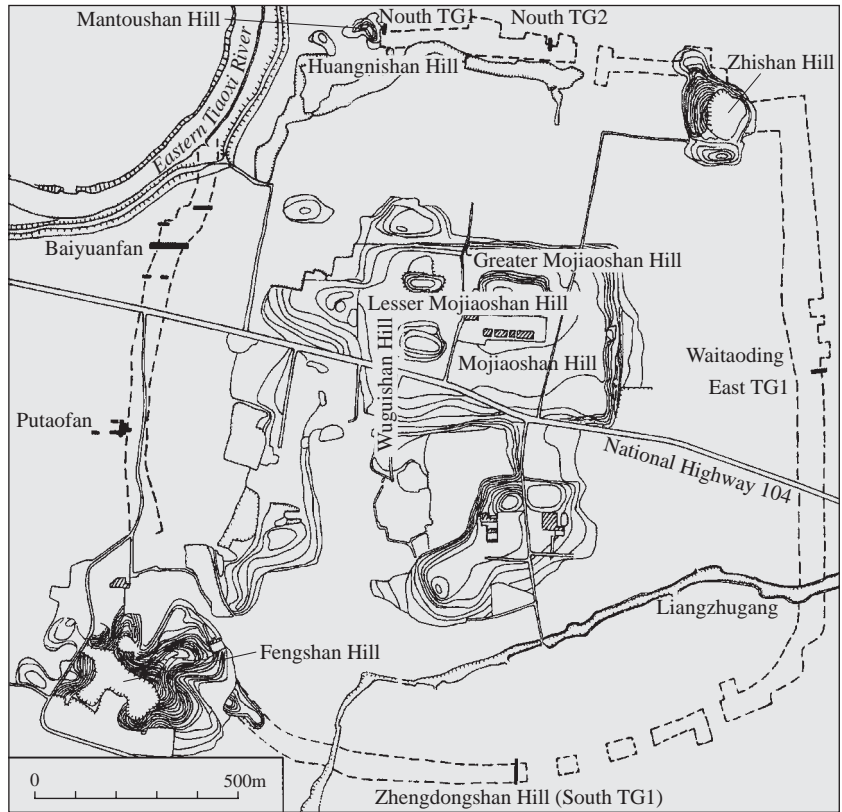


Figure 1. Schematic map of the city walls and the excavation areas

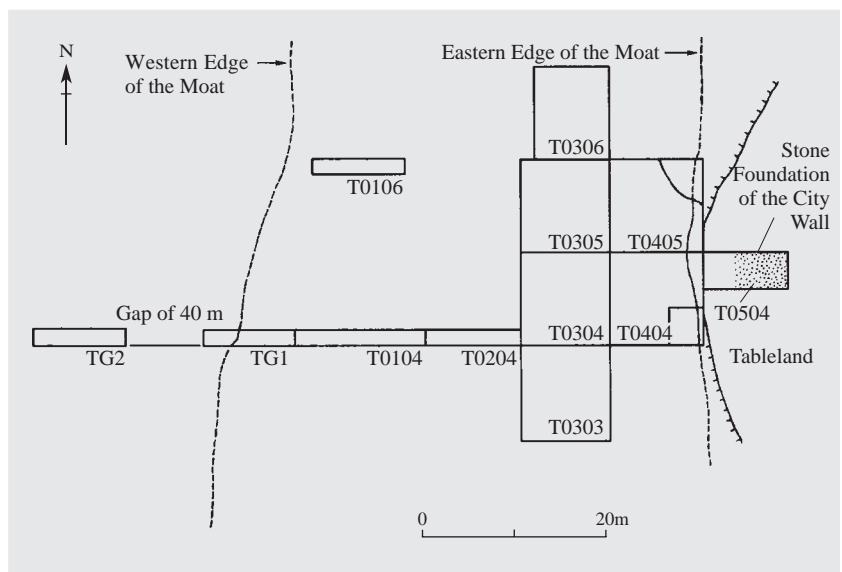


Figure 2. Plan of the excavation area in the Putaofan section

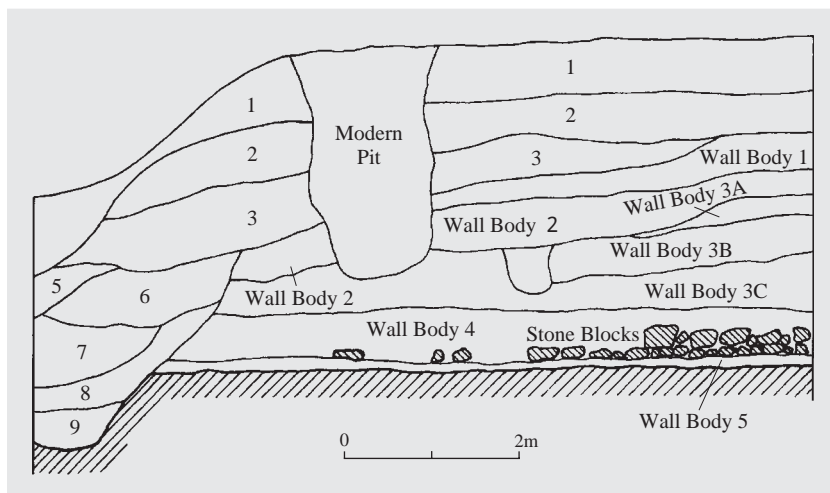


Figure 3. Section of the northern wall of Excavation Square T0504 in the Putaofan section
1. Surface soil 2, 3, 5–9. Accumulations of the Liangzhu Culture



Figure 4. Baiyuanfan section of the western city wall (W–E)

out in three areas in the north and south, covering an area of 1,245 sqm, in which Squares DT1007 and AT1007–AT7007 were arranged in west-east way through the wall body. It revealed that the wall is flanked by moats, and the toe of slope is also furnished with stone protection. At the edges of the inner and outer moats are accumulations of Liangzhu Culture, which contain potshards similar to those from the Putaofan section. The inner moat in AT7007 was finally filled up by accumulations of the Liangzhu Culture. A layer of light yellow silt is superimposed on the Liangzhu Culture layer (Figure 4).

In the east of the excavation square, two Eastern Jin period wells intruded the city wall. They contain bricks,

stones and celadon shards.

In the northwest of AT1007, close to the western edge of the city wall, excavation uncovered an ash pit (H4) of Liangzhu Culture. It is opened beneath the surface soil and intruded the rammed-earth body, stone foundation of the wall and raw soil. The opening is sub-circular, the wall is gradually contracted inwards, and the bottom is roughly flat. The mouth diameter is 160–170cm and the depth 74cm. The unevenness of the pit wall might be due to the collapse of stones from the pit side happening when the pit intruded the stone layer. The earth filling in the pit is grayish-brown clay mixed with yellow earth, which is compact in texture and contains some potshards of the Liangzhu Culture. The shards are largely tiny fragments of reddish-brown sandy ware or, in a small amount, gray clay ware and black-coated one. The discernible vessel types include fin-shaped and T-shaped *ding* tripod legs and jar rims. Inferred from the unearthed objects, H4 should be assigned to the late Liangzhu Culture, i.e. to the same period as the cultural accumulations at the edge of the moat.

2. The northern city wall was investigated by opening two excavation

trenches in the western and middle sections respectively (TG1 and TG2)

Trench TG1 is in the western section, on the eastern side of Mantoushan Hill, pointing to the north and south and measuring 4 × 25m. It was opened for inquiring into the northern side of wall body and the outer moat. At this point, on the stone foundations, there remain only about 30cm thick accumulations of Liangzhu Culture, which lie beneath layers of the Ming-Qing and the Han periods. Evidently this wall section was damaged as early as in the Han period.

Trench TG2 is opened in a well-preserved part of the middle section of northern wall, pointing also to the north and south and measuring 4 × 30m. The strati-

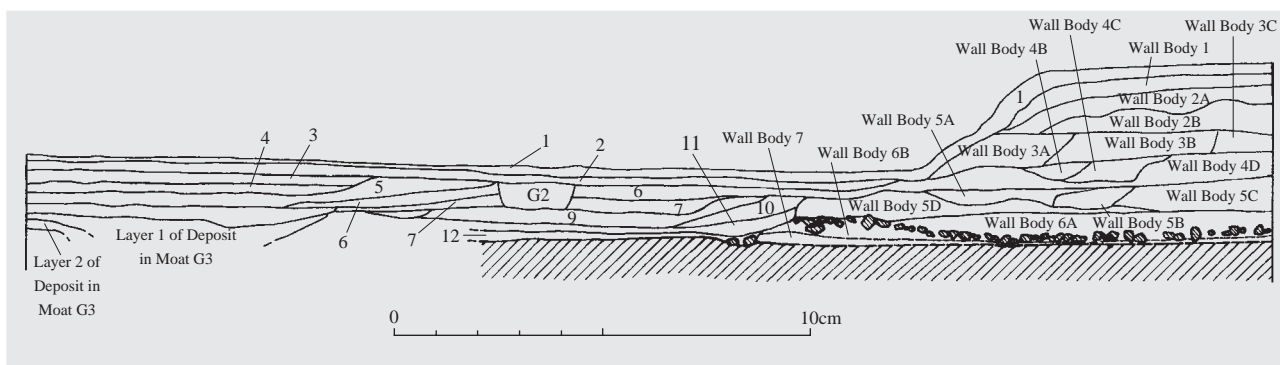


Figure 5. Section of the eastern wall of Excavation Trench TG2 in the northern city wall

1. Livid-gray soil
2. Dark-gray soil
3. Grayish brown-spotted soil
4. Yellowish brown powdery soil
5. Yellow and brown soil
6. Dark grayish brown soil
7. Yellowish brown soil
9. Dark grayish-brown soil
10. Dark-brown soil
11. Brackish-brown soil
12. Fine black clay

graphic accumulations can be exemplified by its eastern wall (Figure 5).

Stratum 1 is a layer of cultivated soil, livid in color and 10–50cm in thickness.

Stratum 2 is of modern times, dark-gray in color, 10–25cm in depth and 0–30cm in thickness. An ash-trench (H3) of the Liangzhu period is opened beneath this layer.

Stratum 3 is formed of grayish brown-spotted soil 35–37cm deep and 0–30cm thick and contains a small quantity of Han period potshards.

Stratum 4 is a layer of yellowish-brown powdery soil 55–60cm deep and 0–25cm thick. It is formed due to natural silting.

Stratum 5 is yellow and brown soil, 30–90cm deep and 0–50cm thick, and contains a small quantity of Liangzhu Culture potshards.

Stratum 6 is a layer of dark grayish-brown soil, 35–62cm deep and 0–60cm thick, and contains potshards of black-coated and sandy wares and a small amount of granulated burnt clay.

Stratum 7 is formed of yellowish-brown soil 60–105cm deep and 0–50cm thick, and contains Liangzhu Culture potshards of red and brown sandy wares and those of clay ware, as well as a small amount of granulated burnt clay.

Stratum 9 is a 60–150cm deep and 30–50cm thick layer of dark grayish-brown soil. It contains a number of late Liangzhu Culture potshards and plant ash.

Stratum 10 is a layer of dark brown soil 30–65cm deep and 0–50cm thick. It contains late Liangzhu Culture potshards of red clay and black-surfaced sandy wares in association with plant ash and charcoal bits.

Stratum 11 is a layer of blackish-brown soil 35–150cm

deep and 0–30cm thick. It has great moisture content and yielded late Liangzhu Culture potshards of sandy, red clay and black-coated wares in association with plant ash and charcoal bits.

Stratum 12 is a layer of fine black clay 160–175cm deep and 0–30cm thick and contains a few stone blocks but no artifacts. Its southern part is superimposed on the stone foundations of the city wall.

Judged by the distinctive features of the revealed accumulations, vestiges and objects, the 12th stratum is the silt on the bottom of the outer moat, and the 5th to 11th strata are the rubbish formed while the city wall functioned. The unearthed potshards are contemporary with those from the western wall. The fourth stratum might be a layer of natural deposits resulting from the immersion of the city wall by water after it was abandoned. The third stratum is traces of Han period people's activities accumulated after the formation of the natural silt as the small number of Han potshards reflect.

Among the discovered vestiges is ash trench H3, which lies in the north of Excavation Trench TG2. Its ends are below partitions, and its edges are beyond the coverage of excavation. It is opened beneath the second stratum and intruded the fifth to ninth strata formed outside the wall in the late Liangzhu Culture period. Its plan looks like an elongated rectangle with a varying width, extending roughly from the northwest to the southeast of the excavation trench. Its opening is narrow in the west, and its wall on this side is oblique, while the opening in the east is widened and the wall curved. The pit bottom is flat. The revealed part measures 400cm in length, 30–42cm in width for the opening, and 74cm in

depth. The earthen filling in the pit is light gray clay with yellow spots, compact in texture and great in stickiness; on the bottom is a layer of silt, which contains a small number of late Liangzhu Culture potshards.



Figure 6. Remains of the northern city wall in Excavation Trench TG2 (S–N)



Figure 7. Remains of the northern city wall in Excavation Trench TG2 (N–S)

The pit may have been a part of a Liangzhu Culture period draining ditch.

The city wall was revealed in the south of the excavation trench. The wall body consists of seven courses, i.e. Courses 1–7 from the upper to the lower. Of them Course 7 is a clay base laid directly on raw soil. It is covered by Course 6B, a stone layer 20–40cm thick. The surface of the stone course is inclined inward from the outer edge. Their regular shape showed that the stone blocks must have been fetched from quarries. Above Course 6B are, from the lower to the upper, Courses 6A, 5, 4, 3, 2 and 1, all built of piled-up earth. These are all remains of the earthen wall body. Their minute difference in color and texture suggests that they can be further divided into sub-courses. In all courses the earth is pure and compact and contains no cultural relics, so it must have been raw yellow soil transported from hills and piled up in a short time. There is no temporal interval between the courses, and their variety in color is completely due to difference in the provenance of wall earth. The earthen courses often contain long narrow sand stone or livid-gray clay blocks, which must have been used as reinforcements (Figures 6 & 7).

3. The eastern city wall is investigated by opening a 5 × 40m excavation trench (TG1) in the middle section, atop the outer side of the wall, in a present-day low-lying paddy

The stone foundations in this section are relatively high, and the excavation covered only the outer half of the wall and the edge of the outer moat. Here, the surface soil measures about 40cm thick,

covers a Liangzhu Culture layer 10–40 thick, which contains granulated red-burned clay and some Liangzhu potshards. Beneath this cultural layer is the wall body built of piled-up earth, largely yellow and partly livid-gray in color. On the bottom are stone wall-foundations built mainly of natural boulders moved from the mountain valley, with the outer (eastern) side higher than the inner (western) one. They are about 140cm deep beneath the surface soil for the eastern stones and about 250cm for the middle stones. Outside the wall, beneath the surface soil is Liangzhu Culture daily life rub-

bish accumulation, which contains a quantity of ash and potshards, the latter showing the same features as those from other city wall and moat sections.

4. The southern city wall is explored by opening two north-to-south connected excavation trenches (TG1 and TG2) in the Shangsicun section

The revealed area is 5m wide and 70m long in total, with the central axis passing through the wall body and the outer side higher than the inner moat bottom. Either side of the wall has a toe, which contains Liangzhu Culture accumulations, including potshards identical with those from other moat sections. Judged by the section of the better-preserved city wall body revealed in the western wall of the excavation trenches, the earthen wall body is directly beneath the surface soil, measuring about 1.8m in remaining height. The whole building process is again as the above mentioned: at first, a layer of livid clay was spread out on the immature soil, then stone blocks were laid on the clay layer, and finally yellow earth was piled up on the stone blocks. The earthen body and stone foundations of the wall are both piled up in the shape of ridges extending in the same direction and slightly differing in earth and stone texture (Figure 8).

Artifacts

A preliminary systematization of the unearthed potshards suggests that the pottery vessels from all localities share roughly the same distinctive features and belong to the late Liangzhu Culture. Chronologically the accumulations in the moat sections are generally identical, except for those of the fourth and fifth layers in the outer moat at Putaofan and the second and third layers atop the city wall at this locality that are clearly a little later. The main types of pottery vessels include the *ding*-tripod, *dou*-stemmed bowl, ring-foot dish, solid-legged *gui*-pitcher, hollow-leg *gui*-pitcher, wide-handled cup, jar and large-mouthed vat. A number of black-coated *dou* and jars bear on the surface incised delicate designs, including mainly net pattern, animal mask design and coiled-dragon motif (Figures 9–13).

The *ding* falls into the basin- and jar-shaped sub-types. Their legs are widely varied, including flat fin-shaped, T-shaped, triangular, concave-spade-shaped, cylindrical and horizontally elongated trapezoid.

As known from the Putaofan section of western city wall where excavation covered a large area and revealed



Figure 8. Remains of the southern city wall in Excavation Trench TG1 (N–S)

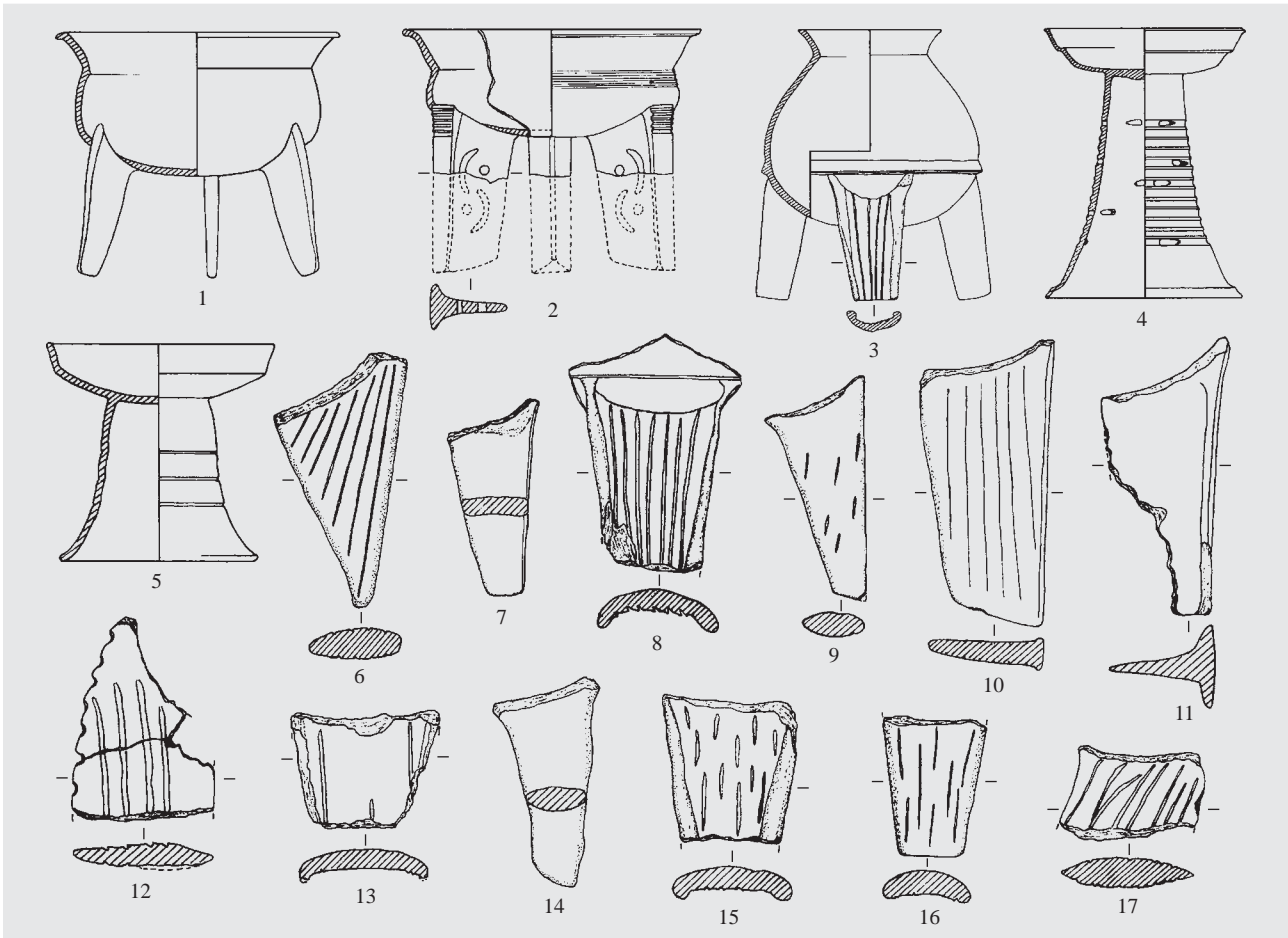


Figure 9. Pottery unearthed from the Putaofan section of the western city wall

1–3. Ding-tripods (T0405 B:30, T0404 , T0404 :46) 4 and 5. Dou stemmed bowls (T0404 :3, T0304 :12) 6–17. Ding legs (T0404 , T0304 , T0404 , T0405 , T0404 , T0404 , T0304 , T0304 , T0405 , T0404 , T0504 , T0405 1, 2 and 4. about 1/7 3. about 1/9 the rest. about 1/5)



Figure 10. Pottery dou stemmed bowl (Putaoan-T0405 :42)



Figure 11. Pottery ding-tripod (Putaoan-T0404 :41)



Figure 12. Pottery gui-pitcher (Putaoфан-T0404 :55)



Figure 13. Pottery gui-pitcher (Putaoфан-T0303 :27)

rich remains, the potshards can be divided into two developmental stages, which is especially distinctly demonstrated in the evolution of *ding* legs. The early stage is represented by the eighth and ninth strata that yielded *ding*, *dou*, ring-foot dishes, solid-legged and pocket-legged *gui*-pitchers and wide-handled cups. The *ding* legs are largely fin-shaped, T-shaped and concave-spade-shaped; elongated trapezoid ones have emerged, featuring great width and thickness and slight flatness in cross section. The late stage is represented by the fourth stratum, where the *ding* legs are largely shaped like a horizontally flattened trapezoid, having a narrow, thin form and a roughly oval section, and large fin-shaped *ding* legs resembling those in the Qianshanyang Culture made their first appearance and became a distinct indicator of the age. The *dou* also underwent an obvious change. In the early stage, it has a flared bamboo-section-shaped stem. In the late stage, its dish became distinctly smaller, and its stem was straightened and was added with an out-turned rim along the base.

Preliminary Conclusions

The discovery of the Liangzhu City Site integrated into a whole the previously recorded Mojiaoshan site, Fanshan elite cemetery and even other numerous vestiges in the Liangzhu site group, and provided new data for researching into the entire layout and spatial relationship of over 130 sites in the Liangzhu site group.

The Liangzhu City Site constitutes the remains of so

far the first known Liangzhu Culture city in the lower Yangtze River valley and also the largest among the city sites of the same period so far discovered in China. The important vestiges include the massive palace foundations at Mojiaoshan that measures above 30 hectares in area and about 10m in height and the elite cemetery at Fanshan. The foundations of the city walls are all built of stones, and the wall body is structured of piled pure yellow clay, which represents a city wall building process discovered also for the first time. All the walls are flanked by moats and water systems, of which the outside northern and eastern water areas are especially broad. It may have been due to the fact that the walls here were built at edges of natural waters. This city wall building process and city layout reflect a model of early cities in the lower Yangtze River valley. Judged by the geographic condition and stratigraphic structure, evidently the location of the city was elaborately surveyed and designed. The Liangzhu city not only had political and militarily defensive functions, but also must have functions in flood control and other public affairs.

The discovery of the Liangzhu City Site evidenced once more that the area around Mojiaoshan Hill was the center of the Liangzhu Culture. It furnished completely new material for re-understanding the social developmental process of the Liangzhu Culture, as well as the position and significance of this cultural complex in the origin of Chinese civilization.

In the past we thought that the prosperous period of

the Liangzhu sites was in the early and mid phases of the Liangzhu Culture. The results of exploration on the Liangzhu City Site changed our previous views.

Actually, this area continued to be a flourishing center in the late phase of the culture.

Postscript: The original paper was written by Liu Bin 刘斌 and published in *Kaogu* 考古 (Archaeology) 2008. 7: 3–10 with six figures and two pages of photos. The present version is prepared by the author himself and translated into English by Mo Runxian 莫润先.