

SETTLEMENT PATTERNS IN THE UPPER YING RIVER VALLEY BASED ON EXCAVATIONS AT THE WADIAN SITE

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ABSTRACT

Based on the excavation of the Wadian site and referring to archaeological studies in the Ying River Valley, this paper analyses settlement patterns during the Henan Longshan and early Xia periods. Through this analysis, this paper attempts to trace the processes of cultural change in this area and to search for the remains of the early Xia, in order to understand the general pattern of the origins of Chinese civilization.

THE DISCOVERY AND EXCAVATION OF THE WADIAN SITE

The Wadian site is located in Huolong Xiang, Yuzhou County (Yuxian), Henan province, China (Figure 1). During an archaeological investigation in 1979, I discovered this site on a terrace east-northeast of Wadian village (Henan Institute 1991). The Ying River runs from the northwest to the southeast passing through the site.

In the 1980s, an archaeological team of the Henan Institute of Archaeology and the Archaeological Division of the Department of History, Zhengzhou University excavated Wadian three times (Henan Institute 1983). The total excavated area is 700 m². Four phases were distinguished based on the stratigraphy. The first phase includes pestholes, ash-pits and burials. Pottery found in this phase is similar to the early Longshan ceramics discovered at the Beigou site in Gaocheng, Dengfeng, and the Erlitou site in Yanshi, especially the *ding* tripod decorated with basket patterns and the slim belly pot. The second phase comprises house foundations, storage pits, ash pits and burials. The remains in the third phase are house foundations, storage pits, ash pits, burials and incomplete human skeletons. The fourth phase includes ash pits and storage pits. Typological analysis of ceramic forms, such as tripods, high neck beakers

with small mouths, *zeng* steamers and bowls, shows continuous development throughout the four phases. The excavators believe that these four phases represent the same culture through four different stages.

In 1997, I was in charge of a research program focusing on the early Xia culture, which was a part of the Three Dynasties Chronology Project. One of the tasks of this program was to carry out sub-surface coring and further excavation at Wadian (Henan Institute 2000). Within the excavated area of 180 m², we found house foundations, ash pits, burials, and artefacts made of stone, jade, bone, shell and ceramics. We divided these remains into three phases, which almost coincided with the second, third and fourth stratigraphic phases distinguished during the excavations in the 1980s.

The major achievements of this excavation were to refine the chronology and to provide more details of the internal site plan. In terms of chronology, the site includes deposits of the early, mid and late periods of the Henan Longshan culture, but the dominant remains belong to the late Henan Longshan period (Wangwan III). We were able to demonstrate that the site is relatively large in area, about 20 hectares, and contains some remains associated with high social rank. These include a large rammed-earth foundation (IVF8), a ceremonial pit under the foundation (VT1H16), oracle bones, jade *bi* discs and birds, and pottery *gu* vases, *gui* and *he* vessels, all for drinking.

Based on the date and archaeological features, it is believed that Wadian might have been related to the places termed Juntai and Yangzhai, in ancient texts recording activities of the rulers Yu and Qi of the Xia dynasty.

PREVIOUS ARCHAEOLOGICAL RESEARCH IN THE UPPER YING VALLEY

The Ying River originates in the south of the Song Mountains in Dengfeng. It runs through Dengfeng, Yuzhou,

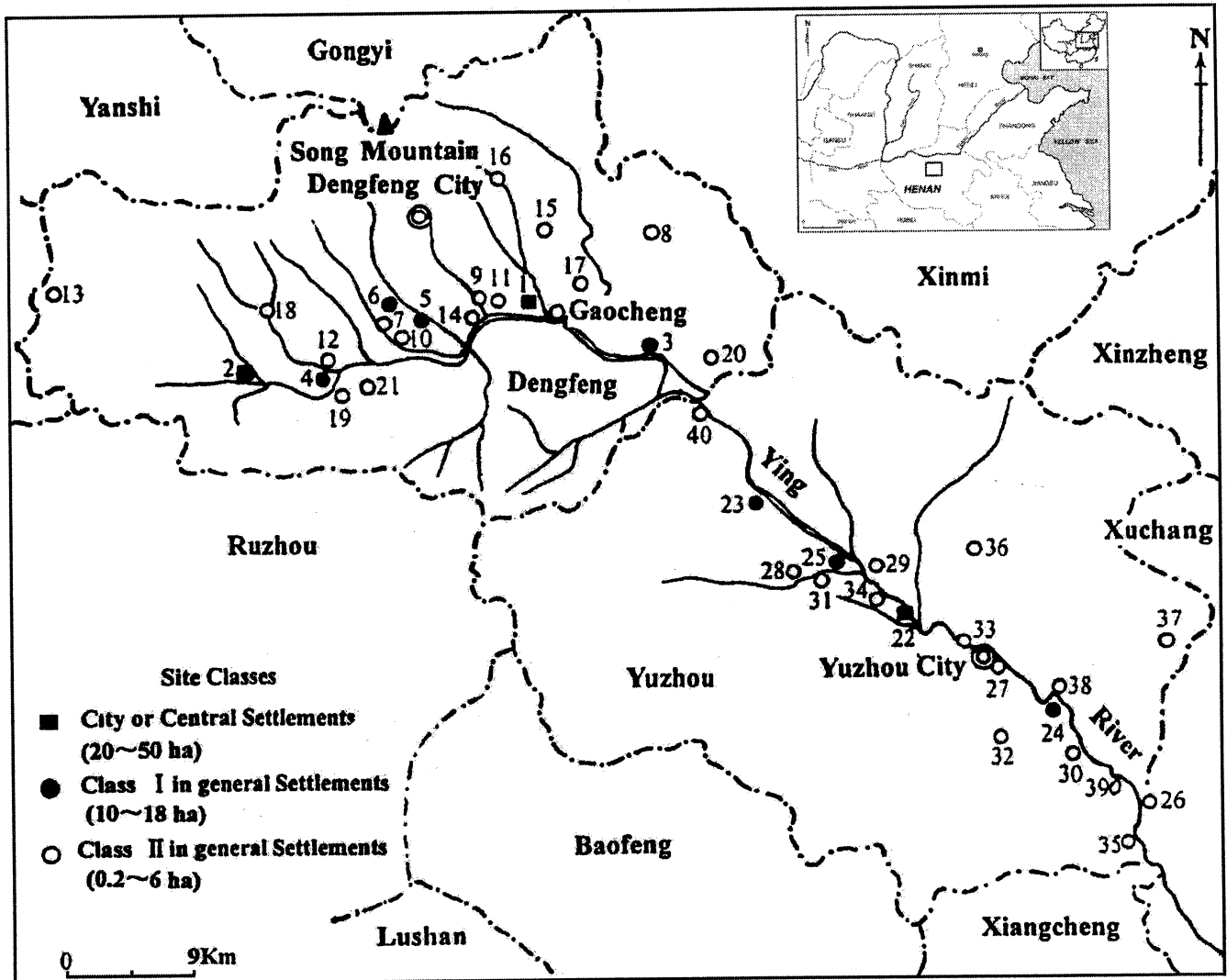


Figure 1: Henan-Longshan culture (Wangwan III) and Erlitou culture sites distributed in the upper Ying River.

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|------------------------|---------------|--------------|-----------------|
| 1 Bafang Wangchenggang | 11 Xifandian | 21 Anmiao | 31 Jizhai |
| 2 Shidao | 12 Lijiacun | 22 Wadian | 32 Dugangsi |
| 3 Shiyangguan | 13 Liuxiang | 23 Yanzhai | 33 Dongzhuang |
| 4 Bijiacun | 14 Nangaoma | 24 Wuwan | 34 Lonchi |
| 5 Yuancun | 15 Hualou | 25 Gushuihe | 35 Tanchen |
| 6 Yangcun | 16 Kangcun | 26 Hulou | 36 Mafen |
| 7 Yuanqiao | 17 Beigou | 27 Cuizhuang | 37 Huangtaizhai |
| 8 Xishicun | 18 Houhe | 28 Lianlou | 38 Zaowang |
| 9 Chengyao | 19 Nanchengzi | 29 Xiawu | 39 Wangshan |
| 10 Youfangtou | 20 Yucun | 30 Yuwang | 40 Baisha |

Table 1: Sites along the banks of the Ying River in Dengfeng, Henan Province

Site	Size (ha)	Depth (m)	Henan Longshan	Erlitou	Excavated area (m ²)	Source
Bafang- Wangchenggang	50	2	x	x	Wangchenggang: 8575 Bafang: 100	1, 2, 3, 4, 5
Shidao	25	3		x		6
Shiyangguan	15	2	x	x		1, 7
Bjjiacun	10	2	x			6, 8
Yuancu	10	2-5	x	x		9
Yangcun	10	2-4	x			9
Yuanqiao	5	1		x		6, 8
Xishicun	4.5	1.2	x	x		6, 8
Chengyao	4.5	1-3	x	x	75	10
Youfangtou	3.8	3	x	x		6, 8
Xifandian	2.5	1.5	x			6, 8
Ljjiacun	1.6	1.5	x	x		8
Liouxiang	1.5		x	x		6,
Nangaoma	1	2	x	x		6, 8
Hualou	0.8	1	x	x		6, 8
Kangcun	0.3	1	x			6, 8
Beigou	0.2	2	x		40	11
Houhe	?		x	x		8
Nanchengzi	?		x			8
Yucun	?	1-2		x	?	12, 13
Anmiao	?		x	x		8

Sources: 1 *Kaogu* 1959:11; 2 *Henan Wenbo tongxin* 1977:2; 3 *Wenwu* 1983:3; 4 *Dengfeng Wangchenggang yu Yangcheng* 1992; 5 *Huaxia Kaogu* 1992:2; 6 *Chinese Relics Atlas: Henan* 1991; 7 *Kaogu* 1978:1; 8 *Kaogu yu Wenwu* 1997:3; 9 *Kaogu* 1995:6; 10 *Zhongyuanwewu* 1982:2; 11 *Zhongyuanwewu* 1984:4 12 *Xinshixue Tongxin* 1951; 13 *Wenwu Cankao Ziliao* 1954:6.

Table 2: Sites along the banks of the Ying River in Yuzhou, Henan Province

Site	Size (ha)	Depth (m)	Henan Longshan	Erlitou	Excavated area (m ²)	Reference
Wadian	20	2-3	x		900	1, 2, 3
Yanzhai	18	2.5	x		500	4, 5
Wuwan	15	1-3	x		140	2, 6
Gushuihe	10	2.5	x		28	7, 8, 9
Hulou	6	2	x			2
Cuizhuang	5	3	x	x	92	4
Lianlou	4.8	2	x	x		2
Xiawu	4	?	x	x		2
Yuwang	3.8	1.5	x	x		2
Jizhai	3	1	x	x	64	2
Dugangshi	3	1	x			10
Dongzhuang	2.5	1	x	x	135	2
Longchi	2	1.5	x			2
Tanchen	2	2	x	x		2
Mafen	2	2	x			10
Huangtaizhai	2	2	x			10
Zaowang	1.2	2.5		x		2
Wangshan	1	2	x	x		2
Baisha	?		x	x		11

Sources: 1 *Wenwu* 1983:3; 2 *Kaogu* 199:2; 3 *Kaogu* 2000:2; 4 *Kaogu* 1978:1; 5 *Year book of Chinese archaeology* 1984; 6 *Zhouyuan Wenwu* 1988:4; 7 *Kaogu* 1959:11; 8 *Kaogu* 1979:4; 9 *Henan Wenbo Tongxin* 1977:2; 10 *Chinese Relics Atlas: Henan* 1991; 11 *Kaogu yu Wenwu* 1997:3.

Xuchang, Luohe and Zhoukou, before entering the Huai River. The Upper Ying River valley is located in the west of central Henan, which was one of the centres of the early Xia dynasty, as suggested by Xu Xusheng. The area for 30 km along the Ying River around Dengfeng city is a lowland valley, 350 m in elevation. Many streams and creeks join the Ying River in this area. In the Yuzhou territory, the Ying River flows through a broad flood plain 100 - 120 m in elevation, flanked by hills.

Archaeological work in the Upper Ying River has included surface survey and excavation. Five surveys were carried out in the early and late 1950s, the middle and late 1970s, and the late 1990s. Fourteen sites were found (Tables 1 and 2). In 1951, the Henan Relics Administration Committee organized a survey of Dengfeng and Yuzhou for the construction of the Huai River irrigation system. Several sites were found in Dengfeng, including Gaocheng Bafang, Dongshangcun and Yucun. The sites found in Yuzhou were Shibanhokou, Yanzhai and Gushuihe (Zhao 1951).

In 1959, Xu Xusheng of the Archaeological Institute of the Chinese Academy of Social Science (CASS) surveyed Gaocheng Bafang, Shiyangguan, Songjiagou in Dengfeng, and Yangzhai and Gushuihe in Yuzhou, in order to find Xia, the ruins of Xia (Xu 1959). He found Yangshao, Longshan, and early Shang remains at Gaocheng Bafangjian, Yangshao and Longshan remains at Shiyangguan, and Longshan and Shang remains at Songjiagou, all in Dengfeng. The sites found in Yuzhou were Yanzhai, dating to the Longshan period, and Gushuihe, dating to the Yangshao and Longshan periods. His work was a prelude to future archaeological study in searching for the Xia culture in western Henan.

In 1975, the Luoyang Team of the Archaeological Institute of CASS, following Mr Xu's work in 1959, resurveyed these sites and discovered the Beizhuang site in Dengfeng and the Cuizhuang site in Yuzhou (Luoyang Team 1978). At the Shiyangguan site, they found the remains of a transitional phase from Yangshao to Longshan. They also found the early Erlitou remains at Beizhuang and remains dated to Yangshao, the transitional phase, Longshan, Dawenkou and Qujialing phases in Gushuihe. In Yanzhai, they found Longshan and Erlitou remains, and at Cuizhuang they found early Erlitou remains. At the end of the 1970s, the Henan Institute of Cultural Relics and Archaeology (HICRA) conducted archaeological research in search of the Xia culture. The major focus was placed on the Henan Longshan and Erlitou cultures. In the summer of 1977, archaeologists found 20 sites dated to the Longshan and Erlitou periods. These include 6 late Longshan culture sites (Kangcun, Yangcun, Bijiacun, Nanchengzi, Xifandian, and Gaocheng Beigou; some associated with early Longshan and Yangshao), 11 sites dated to late Longshan and Erlitou periods (Xiaoliwan [Houhe], Yuancun, Lijiacun, Shizigou

[Youfangtou], Hualou, Chengyao, Wangcheng-gang, Xishicun, Dongshang [Shiyangguan] Nangaoma and Liouxian), and 4 Erlitou sites (Yuanqiao, Anmiao, Wangcun, Yucun) (Dengfeng Station 1977; An 1997). In 1979, 1 discovered 13 sites in Yuzhou and reinvestigated 4. These include 6 late Longshan sites, some of which are associated with early Longshan and Yangshao (Yanzhai, Gushuihe, Lianlou, Shatuo, Tanchen and Hulou), 9 sites dated to the late Longshan and Erlitou (Cuizhuang, Dongzhuang, Longchi, Xiawu, Jizhai, Wadian, Yuwang, Wangshan and Wuwa), and one Erlitou site (Zaowang) (Henan Institute 1991).

In the mid-1990s, Zhengzhou archaeologists first surveyed Yingyang in Dengfeng and then reinvestigated Yuancun and Yangcun (Zhengzhou Working Team 1995). They found Peiligang, Yangshao and Longshan remains at these sites. In 1996, the collaborative team of HICRA and Missouri University employed GPS and GIS in the survey of the Upper Ying River region. They worked on 25 sites, 14 in Dengfeng and 11 in Yuzhou, mostly reinvestigating known sites (HICRA 1998).

EXCAVATIONS IN THE UPPER YING VALLEY

Six sites have been excavated (Table 1). In 1953, during the excavation of Yucun, three test trenches were excavated. Two phases, Upper and Lower, were distinguished. The artefacts found in the Upper phase included pottery (*dou*, *li*, basins, and *ding* tripods) and metal objects. Lower phase artefacts include pottery *ding* tripods and *andjue* vessels, sherds with impressed decoration, polished black pottery ware, stone knives, ceramic spindle whorls and bone arrowheads. The date of the Lower phase is still unclear. The excavators believed that the artefacts were different from the Anyang and Erligang phases of the Shang culture, but the material remains from many sites in this area are similar to those of Yucun. This phenomenon needs further study (Han 1954). However, the remains found in the Lower phase are assigned to the Erlitou culture by Zou (1980).

From 1975, survey, coring and excavation was undertaken at the Gaocheng Bafang site. In 1977, after the discovery of the late Longshan walled settlement at Wangchenggang, archaeologists turned their major attention here and a total area of 8575 m² had been excavated by 1981 (HICRA 1992). The fortification at Wangchenggang comprised two enclosures: the west and the east. The west one (1 ha in area) was well preserved. There were ceremonial pits and traces of a rammed-earth structure in the western enclosure. The Longshan remains found in the enclosures contained five phases and the fortification was built in the first phase, existed through the second phase, and was abandoned in the third phase. The deposits of the fourth and fifth phases were formed after the fortification was abandoned. The

succeeding Erlitou remains found in this site included four phases. The site also contained Peiligang, Erligang, Yixu and Eastern Zhou remains. In 1996 I was required by the Three Dynasties Chronology Project to collect samples from Wangchenggang for C-14 dating (Fang 1999; Xia Shang Zhou 2000:79).

During fieldwork in the winter of 2002, we found a large surrounding fortification, about 30 ha in area, for the Wangchenggang site. The fortification discovered in the 1970s was located in the northeast corner of this large enclosure. The remaining northern wall of the major enclosure is 370 m long, 8 - 12 m wide, and 0.5 - 12 m high. The ditch associated with the northern wall is 630 m long, 10 m wide, and 3 - 8 m deep, and seems to have connected with the Wudu River. The western ditch was 130 m long, 10 m wide and 1.5 - 2 m deep, and possibly connected to the Ying River. The eastern and southern parts of this large enclosure are situated in the lowland and, based on coring evidence, might have been destroyed in the past. I believe that the date of this large surrounding enclosure is no later than the Erligang period. Nevertheless, it needs to be investigated in the future to determine if it was already occupied in the late Longshan period (Special Team 2003).

In the spring of 1979, HICRA excavated the Chengyao site, over a total excavated area of 75 m². Four layers were identified: (1) Eastern Zhou; (2) Phase I of Erlitou; (3) and (4) late Longshan (Zhao 1982). In the autumn of 1979, HICRA excavated 40 m² at the Gaocheng Beigou site and found early Longshan remains (HICRA 1984). From 1979 to 1980 HICRA excavated the Bafang and Shuangmiao sites (HICRA 1992). An area of 100 m² was excavated at Bafang, which contained Yangshao remains. Bafang and Wangchenggang are actually the same site, referred to as Bafang-Wangchenggang. A total of 75 m² was excavated at the Shuangmiao site, containing two periods of Yangshao remains.

Seven sites have been excavated in Yuzhou (Table 2). In 1976 HICRA excavated 28 m² at the Gushuihe site and identified three phases: the first and second were late Yangshao, and the third was the transitional period from Yangshao to Longshan, with some influence from the Qujialing culture of southern Henan (HICRA 1979). In 1979 HICRA excavated 140 m² at the Wuwan site. Two layers were distinguished, dating to early and late Longshan periods (HICRA 1988). In 1979, HICRA excavated 92 m² at the Cuizhuang site and 135 m² at the Dongzhuang site. The remains discovered at Dongzhuang were identified to three phases, the early (late Yangshao), middle (late Longshan) and late (Erlitou Phases II and III) (HICRA 1991). From 1980 to 1982, HICRA, together with Zhengzhou University, excavated the Wadian site, and in 1997 I organized another excavation at this site as required by the Three Dynasties

Chronology Project. My excavation was addressed earlier in this paper.

In 1981 HICRA and Zhengzhou University excavated 64 m² at the Jizhai site. Three layers of deposits were distinguished, late Longshan on the lower and middle layers and early Erlitou on the top layer. In 1983 HICRA and Zhengzhou University excavated 500 m² at the Yanzhai site. Two layers of excavated deposits were assigned to the Late Longshan period (Kuang 1984). Some archaeologists have pointed to the possible relationship between this site and 'the ancient Xia fortification of Shaokang', due to the short distance from the ancient Kang fortification, but this relationship needs further study (An 1997).

SETTLEMENT PATTERNS OF THE LONGSHAN AND ERLITOU PERIODS IN THE UPPER YING RIVER AREA

To summarise the above, there are 40 sites along the Upper Ying River assigned to the Longshan and Erlitou cultures, 21 in Dengfeng, and 19 in Yuzhou. A total of 11 sites have been excavated, but only two are large sites, which are Bafang Wangchenggang (8575 m²) and Wadian (900 m²). The excavated areas at other sites range between 28 and 500 m². The following discussion of settlement patterns of the Longshan and Erlitou cultures in the Upper Ying River area is based on these data.

The Henan Longshan period (Wangwan III)

A total of 34 Longshan culture sites have been discovered along the Upper Ying River. Among them, 5.88% sites are over 20 ha in size, 20.5% are 10 - 18 ha, and 73.52% are 0.2 - 6 ha. Such a distribution of site sizes suggests the existence of a settlement hierarchy during the Longshan period. In Dengfeng, Bafang Wangchenggang (50 ha) as a centre is surrounded by several lower ranking sites (<15 ha) such as Shiyangguan, Bijiacun, Yuancun and Yangcun. Some still smaller sites (<5 ha) are also distributed in this area. The settlement hierarchy is clear.

In Yuzhou, Wadian as the center (20 ha) is surrounded by sites less than 18 ha, such as Yanzhai, Wuwan and Gushuihe, which again are surrounded by even smaller sites (<6 ha), such as Hulou, Cuizhuang and Lianlou. These sites also form a hierarchical settlement system.

The Erlitou period

There are 25 Erlitou sites distributed along the Upper Ying River. Two are larger than 25 ha - Bafang Wangchenggang and Shidao (8% of the total number of sites). Two medium-sized sites (10 - 15 ha) are Shiyangguan and Yuancun. The rest of the 21 sites (84% of the total) are 0.2 - 5 ha in size, such as Yuanqiao and Hulou.

In Dengfeng, the centers are Bafang Wangchenggang (50 ha) and Shidao (25 ha). The next tier of settlement includes two sites, Shiyangguan (15 ha) and Yuangcun (10 ha). There are 11 third tier sites (<5 ha), such as Yuanqiao and Chengyao. Such a hierarchical settlement system is the same as in the Longshan period.

Ten small sites (<5 ha) have been found in Yuzhou, such as Cuizhuang and Lianlou, giving a settlement pattern which is different from that of the Longshan period. Perhaps the center of the Erlitou culture moved northwards, and then developed rapidly in the Yi-Luo River region of the northwest Song Mountains.

ANALYSIS OF SETTLEMENT HIERARCHY: THE HENAN LONGSHAN PERIOD (WANGWAN III)

A major change in settlement pattern during the Longshan period in the Upper Ying River was the emergence of fortifications and the differentiation between centres and ordinary settlements. Fortifications were usually built with rammed-earth walls. For example, Bafang Wangchenggang comprised two enclosures. The Wudu River has destroyed most of the eastern one, but the west and south walls of the western enclosure are preserved. The size of the western enclosure was nearly 1 ha. It contained some rammed-earth foundations associated with 10 ceremonial pits, but no ordinary house remains of the Longshan period have been found. The large outer enclosure (30 ha) discovered recently appears to have surrounded the small fortifications. Although its date is still unclear, Bafang Wangchenggang is very likely to have been the central settlement of the area.

No rammed-earth walls have been found at Wadian, but there are remains of rammed-earth house foundations and ceremonial pits, as well as pit houses and small pit burials. The divination bones, jade objects and exquisite pottery drinking vessels are the most elaborate artefacts dated to the Longshan culture. Therefore, Wadian seems to have been similar to Bafang Wangchenggang, and was probably an important central settlement in this period.

There were approximately two classes of ordinary settlement in the Longshan period. One class includes sites 10 - 18 ha in size. Seven sites belong to this class of which Yanzhai and Wuwan have been excavated. A number of houses arranged in lines, with storage pits and burials, were found in Yanzhai. A large *qing* chime stone was found with a child burial. Artefacts made of pottery, stone and bone were also discovered. Some ash pits and remains of house walls built on the surface were found in Wuwan. I tentatively put these two sites into the class of ordinary settlements because they have not yielded very important remains.

Another class of ordinary settlement includes sites 0.2 - 6 ha in size, of which Cuizhuang, Chengyao, Jizhai and Dongzhuang have been excavated. The discoveries from

Jizhai include house remains, ash pits, burials and ceremonial pits associated with foundations. The house remains at this site were built on the ground surface using rammed earth. A ceremonial pit containing an infant skeleton was found in one house foundation. Most burials were a vertical pit with a single interment. Five dismembered skeletons were also found. Since the excavated area is relative small, I classify this site as an ordinary settlement.

ANALYSIS OF SETTLEMENT HIERARCHY: THE ERLITOU PERIOD

The Erlitou culture sites distributed in the Upper Ying River Valley are mainly ordinary settlements. There are three classes distinguished by site size. The first class contains sites 25 - 50 ha in size, represented by Bafang Wangchenggang, which is the only excavated site. The Erlitou remains are distributed mainly in the west of Wangchenggang and the east of Bafang. House-foundation pits, burials, and ash pits were found at this site. The burials only contain one skeleton associated with ordinary pottery (*//*, basin, *lei* and *zun*). Even though this site is quite large, it was an ordinary settlement according to the material remains discovered there.

The second-class settlements are 10 - 15 ha in size, such as Shiyangguan and Yuancun; neither have been excavated. These sites would not be higher than Bafang Wangchenggang in settlement hierarchy due to their small sizes. The third-class settlements include 21 sites, 0.2 - 5 ha in size, such as Yuanqiao and Hulou. Five sites (Chengyao, Yucun, Cuizhuang, Jizhai and Dongzhuang) have been excavated, but only ash pits and ash-filled ditches have been discovered, indicating that they belong in the lower level of the settlement hierarchy.

Even if these sites could be divided into several classes based on size, there is a lack of important remains comparable to those unearthed from the Erlitou site in Yanshi. Therefore, these sites are classified as ordinary settlements. It is notable that these Erlitou remains are usually associated with Longshan (Wangwan III) remains, and the same cultural tradition developed continuously through the entire Longshan and Erlitou periods. This continuity of cultural tradition provides important information for understanding the relationship between these two cultures.

CONCLUSIONS

The major tasks of settlement pattern study of the Longshan and Erlitou cultures in the Upper Ying River Valley are to search for the Xia culture, study the origin of civilisation, and to generalise basic rules of the formation of civilisation. Based on recent study, I have reached some major conclusions.

During the Longshan period, to judge from site size distributions and construction of fortifications, central settlements became distinguished from ordinary settlements. The existence of a settlement hierarchy is very clear. The percentage of centres, with or without fortifications (Bafang Wangchenggang and Wadian), is only 5.88% of the total number of sites. Features such as fortification walls, ceremonial pits and rammed-earth foundations, and artefacts such as bronzes, vessels inscribed with characters, oracle bones, jades and ceramic drinking vessels reveal the high rank of these central settlements in the hierarchy. These elite remains, coexisting with pit houses, small sized burials, ash pit burials and ordinary pottery, suggest social differentiation within the communities.

Ordinary settlements, such as Yanzhai and Wuwan, had lower-class house structures and artefacts which could not compare to those of the centres. Although there appear to have been two classes of ordinary settlement based on size, namely seven larger sites (20.58% of the total numbers) and 25 smaller sites (73.52% of the total), they were not substantially different.

During the Erlitou period, the differentiation between central and ordinary settlements became obvious, particularly in the central area of the Erlitou culture in the Yi-Luo River region. In the Upper Ying River area settlements can be classified into several size classes, including Bafang Wangchenggang and Shidao (25 - 50 ha) as Class One, Shiyangguan and Yuangcun (10 - 15 ha) as Class Two, and 21 sites (<5 ha) as Class Three. Nevertheless, the distribution of these Erlitou sites is similar to the previous Longshan culture in the Upper Ying River Valley. For instance, higher-ranking settlements were surrounded by lower-ranking ones, which were again surrounded by still lower settlements.

Both Longshan and Erlitou settlement patterns thus reveal a pyramid structure. During the Longshan period, 5.88% of sites served as centres, 20.58% were intermediate, and 73.52% were ordinary settlements at the bottom of the pyramid. During the Erlitou period, the high and middle level sites totalled 16% of total site numbers, forming the upper part of the pyramid, and 84% of the sites belonged to the lower level. Therefore, three levels of settlement hierarchy in the Longshan period are observable, but during the Erlitou period it is really only possible to distinguish two. This situation may indicate that the Erlitou culture was less hierarchically organized than the Longshan in the Ying River area.

ACKNOWLEDGEMENT

Translation by Wei-ming Jia and Li Liu.

REFERENCES

- An Jinhui. 1997. The importance of the Upper Ying River valley of west Henan in searching for the Xia culture. *Kaoguyu Wenwu* 3:54-60.
- Dengfeng Station of Henan Museum. 1977. Survey and excavation of Gaocheng in first half year of 1977. *Henan Wenbo Tongxun* 2:41-3.
- Fang Yanming. 1999. The project of chronology of three dynasties 'archaeological study of Xia - the research of early Xia'. Unpublished report.
- Han Weizhou. 1954. Summary of an ancient site found in Yucun, Henan. *Wenwu Cankao Ziliao* 5:18-24.
- Henan Institute of Cultural Relics and Archaeology. 1979. Report of excavation at Gushuihe in Yuxian, Henan. *Kaogu* 4:300-7.
- Henan Institute of Cultural Relics and Archaeology. 1983. Brief report of excavation in Wadian, Yuxian, Henan. *Wenwu* 3:37-48.
- Henan Institute of Cultural Relics and Archaeology. 1984. Report of the excavation of Beigou in Gaocheng, Dengfeng. *Zhouyuan Wenwu* 4:9-12.
- Henan Institute of Cultural Relics and Archaeology. 1988. Report of excavation at Wuwan in Yuxian. *Zhongyuan Wenwu* 4:5-10.
- Henan Institute of Cultural Relics and Archaeology. 1991. Survey and excavation in the banks of Ying River in Yuxian, Henan. *Kaogu* 2:97-109.
- Henan Institute of Cultural Relics and Archaeology. 1992a. *Dengfeng Wangchenggang and Yangcheng*. Beijing: Wenwu Press.
- Henan Institute of Cultural Relics and Archaeology. 1992b. Test excavations of Yangshao remains at Bafang and Shuangmiao in Dengfeng. *Huanxia Kaogu* 2:1-13.
- Henan Institute of Cultural Relics and Archaeology. 1998. Report on application of GPS and GIS to the surveys in the Upper Ying River, Henan. *Huaxia Kaogu* 1:1-16.
- Henan Institute of Cultural Relics and Archaeology. 2000. The excavation of the Longshan remains in Wadian in 1997, Yuxian, Henan. *Kaogu* 2:16-39.
- Kuang Yu. 1984. Yuxian Yanzhai Longshan site. *The Year Book of Chinese archaeology*, pp.126. Beijing: Wenwu press.
- Luoyang Team of Archaeological Institute CASS. 1978. Archaeological survey in western Henan in 1975. *Kaogu* 1:6:23-34.
- Special Team 2003. The major achievements of the excavation of Dengfeng Wangchenggang, Henan, in 2002. Paper presented at the 2002 Conference *In Search of the Origins of Chinese Civilisation*, pp. 1-21. Beijing.
- Xia Shang Zhou Chronology Project Team. 2000. *Achievements of the Xia Shang Zhou Chronology Project in 1996-2000*. Beijing: Shijie Tushu Press.
- Xu Xusheng. 1959. Preliminary report of the survey for Xiaxu in west Henan in 1959. *Kaogu* 11:592-600.
- Zhao Huijun. 1982. Brief report of test excavation in Dengfeng Chengyao, Henan. *Zhongyuan Wenwu* 2:9-13.

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Zhao Qanjia. 1951. Report on several Neolithic sites in Henan (II). *Xinshixue Tongxun* 1(4):15-6.

Zhengzhou Working Team. 1995. Survey of several Neolithic sites in Dengfeng, Henan. *Kaogu* 6:481-96.

Zou Heng 1980. The study of Xia. In *The Collection of Papers on the Xia Shang and Zhou*, pp.95-182. Beijing: Wenwu Press.