

[Supplementary material]

The Anyang Xibeigang Shang royal tombs revisited: a social archaeological approach

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A new chronological system for the reconstruction of the formation process of the Yinxu royal cemetery of Xibeigang

Introduction

A series of excavations conducted in the vicinity of present-day Anyang 安陽 before the end of the Second World War by the Institute of History and Philology, Academia Sinica, revealed the palace area of Xiaotun 小屯 and the royal cemetery of Xibeigang 西北岡, having yielded bronze artefacts, pottery, jade and other stone artefacts, bone artefacts, and so on. Since 1949, the establishment of the People's Republic of China, the Institute of Archaeology, the Chinese Academy of Social Sciences have conducted a number of excavations, leading to the discoveries of

various scales of cemeteries, bronze workshops as well as residential areas surrounding the Xiaotun palace area such as the Dasikongcun 大司空村 and Miaopubeidi 苗圃北地 locations.

As for a pottery-based chronological system, the excavation of Dasikongcun led to the construction of a four-phase scheme, later to be connected to the chronology of other types of artefacts and upgraded to the general Yinxu 殷墟 chronological system, comprising the Yinxu I, II, III and IV phases. In 1976, the excavation of the Yinxu No. 5 tomb (AXTM5), fortunately not robbed, yielded an assemblage including a large number and types of bronze artefacts, many of which bore the name of 'Fu-Hao' 婦好, one of the wives of the king Wu-Ding 武丁, the twenty-second king of the Shang. The discovery established a fixed point in the general artefact chronology of the Yinxu period of the Shang, and the morphological traits of the Jue 爵- and Gu 觚-shaped pottery confirmed that the assemblage dated from the Yinxu II phase. Stimulated by such discoveries, various attempts have been made to make clearer the contents of the assemblages of the respective phases and to verify their temporal relationship by examining the temporal changes of artefact types and stratigraphic relationships between features yielding the assemblages (e.g. Zhang 1979; Tsou 1980; Zheng & Chen 1980; Yang & Yang 1985).

There remain some ambiguities concerning the temporal relationships between pottery types and that of the other artefacts, requiring further investigations into the combinations between shape- and decorative-motif variables. In doing so, what is of vital importance is to take into account the coexistence of decorative

motifs belonging to different schools or traditions in individual artefacts, the negligence of which might result in the false dating of actually contemporaneous artefacts into different chronological stages. Besides, the fact that not all the excavated assemblages comprise the whole range of the artefacts makes it important to examine the contemporaneousness of different artefact types by cross-checking their temporal relationships across a number of excavated assemblages systematically.

The following chronological system compiled by Uchida, fully aware of those problems of the previous works, uses the Gu-si 骨柶 bone spatulas as the principal chronological yardstick/time marker (see the main article) with which all the other artefacts and their temporal types are compared and determined their relative chronological positions. This supplement describes the processes of stylistic changes in the bone hairpins, bronze artefacts, and jade and stone artefacts, main datable components of the remained assemblages excavated from the royal tombs, and their chronological positions in this newly formulated chronological system.

Description

A. Bone items

Hairpins

Bone hairpins are relatively abundant in the otherwise severely robbed grave good assemblages excavated from the royal tombs, and have been used as a time marker for the investigation of their relative chronological positions. Li Chi (1959) classified

them into six shape-types, and further classified some of them into temporal types. In doing so, he focused on the process of their stylistic simplification. Mai Suzuki (2011) focused on the bird-and-three-bar decoration on the head and attempted to find temporal changes in the shape of the bird, with limited success. Uchida found the top bar of the three became merged with the bird part through time, which coincided with the disappearance of the division between the bird and the bar, and has arranged the specimens into a temporal sequence (Figure S1).

Spatulas

Bone-spatulas ('Gu-si') are a rare artefact type, specimens of which were excavated from most of the royal tombs. Many of its attributes show gradual temporal transformation, which makes it an ideal artefact type for determining the relative chronological positions of the royal tombs. Please refer to Figure 3 in the main text and the relevant descriptions for full understanding of the typo-chronology of this time marker artefact.

Many of the spatulas excavated from 1001 retain the shape of the cattle rib bones they are made of, and include quite large specimens, the largest of which is 60cm long. They also include specimens with painted motifs with red pigment. Many of the design motifs are executed in a relief-like manner; the main design motifs, executed in a fluent manner, are left higher than the background design field, which is sunken by shaving and filled with spiral and parallel line patterns (Figure 3A in main article). The animal motifs carved on different specimens vary widely, and

include that of dragon, fish, deer, bird, worm-like creatures, and so on. Most of the specimens have a crest on the concave side (Figure 3A in main article), which is the remnant of an original part of the rib bone, and some of them retain their natural shape, as the others have their top flattened. In some specimens the flattened top is decorated with f-shaped motifs.

Only two carved bone spatulas were excavated from 1550. The one which allows us to reconstruct the original form retains the shape of the original cattle bone. Many of the other spatulas are not carved, and quite large pieces have painted motifs that resemble some specimens from 1001. The carving technique employed and design motifs chosen are fairly identical to that of the number 1001, but the incised lines are shallower, suggesting the progression of technical economisation (Figure 3B in main article).

Most of the spatulas excavated from 1004 do not retain the original bone shape any longer, and become increasingly symmetrically shaped. They do not include large pieces with painted motifs from 1001 and 1550 any longer. The number of design motifs employed decreases and their expression is formalised, becoming 'standardised motifs' to fill the regularly divided decorative units. The tradition of relief-like motif execution, which characterises the spatulas from the 1001 and 1550, begins to decline, with the sunken background design field becoming shallower (Figure 3B in main article). Those observations suggest that the tomb 1004 was constructed after tomb 1550.

The size and shape of the spatulas excavated from 1003 are fairly identical

to the specimens from tomb 1004, but the cross section becomes flatter; the spiral-shaped motifs filling the spaces between the main design units become shallower in their execution and disorderly (Figure 3B in main article); and some of the formerly filled design fields with spirals become left unfilled. Those changes suggest the further progression of the economisation of the execution. Tomb 1003 can be inferred to be constructed after tomb 1004.

On the spatulas from tomb 1002, spiral-shaped motifs filling the spaces between design units begin to be replaced by parallel lines, and some parts that formerly form the component parts of individual design motifs disappear (Figure 3B in main article). At the same time, some specimens begin to have additional parallel lines incised on the main design motifs. However, in all, the curving becomes shallower and the distinction between the main design motifs the design background in terms of their depth becomes reduced.

The bone spatulas excavated from *tomb 1500* are identical to that from tomb 1002, but some of the spiral motifs of the former are not actually spiral any longer; they comprise two straight incised lines with one L-shaped incised line to make a pseudo-spiral (Figure 3B in main article). This suggests an even further progression of technical economisation, suggesting tomb 1500 was constructed after 1002.

Tomb 1217 yielded several carved bone spatulas belonging to a different stylistic category from the ones that have been analysed so far. The specimens of this type are decorated with carved beast face motifs with the representation of the body;

the type which has been examined above does not have the representation of the body of the beasts depicted. Specimens belonging to this type were also excavated from tomb 1002. Comparing with them, those from tomb 1217 are not executed in a relief like manner, nor does exist the distinction between the main and background design fields, both suggesting the progression of technical economisation (Figure 3B in main article). Those observations put tomb 1217 in the position after tomb 1002. The bone spatulas indicate that tombs 1500 and 1217 postdate 1002.

B. Bronze ritual vessels

Amongst a large number of bronze ritual vessels either properly excavated or robbed and in the hands of private collectors, the Jue and Gu that were properly excavated are relatively abundant, because they are often included in the grave good assemblages of middle and small-scale burials across China. They also were excavated from some of the Xibeigang royal tombs, suitable for use as time-markers.

The Jue

The Jue is a three-legged vessel for heating alcoholic beverage (Figure S1). Its temporal change can be recognised with the shape change of the body, the spout, the parasol-shaped decoration and the legs, and that of the decorative motifs. Focusing on the legs, they became increasingly robust through time, with the distance between them reduced, and this trend can be clearly seen in the series that began with the 50WBM1 Jue through the 1001 Jue and the Jues from 1550, the Fu-Hao's tomb, and

1400.

The Gu

The Gu is a cylindrical cup with the flaring base and rim. The basic trend of the morphological-temporal change comprises: increased height and the narrowing of the body with enhanced flaring, due to the adding of additional decorative bands (Figure S1) (Namba 1995). The unfolding of this trend can clearly be seen in the sequence from the 50WBM1 Gu through the 1550 Gu and the Gus from the Fu-Hao's tomb and 1400. The presence of the unique looking-back dragon motif in the excavated assemblages from the Fu-Hao's tomb and 1400, and the same motif on a Gu fragment from 1004 puts them in the contemporaneous position (i.e. the YinXu II phase: we shall come back to the relationship between the artefact chronologies and the whole YinXu chronological system in concluding discussion) (Figure S1).

The Ge halberd

Ge halberds include both decorated, and undecorated, more functional specimens. Halberds with a bird-shaped shaft have been excavated from some Xibeigang royal tombs, and they can be relatively dated by the changing shape of the shaft. The trend basically is the deformation of the bird shape, with the tomb 1550 halberd clearly depicting a bird, followed by the Fu-Hao's tomb halberd adding some elements other than bird (Figure S1). The shaft of the 1004 halberd totally lost the characteristics of a bird, with no depiction of the eye and some other bird features. The blade of the

proto-type appears to have been made of jade, and the Ge of 1001, only whose shaft remains, would have been made of jade. The hole on the back edge of the tomb 1550 Ge is the rudiment of that of stone-made blades.

C. Jade items

A range of jade items, originated in the Neolithic period, continued in the Shang. A large amount of jade items were excavated from the royal tombs, prominently including the Bi flanged disk and the jade fish.

The Bi collared disk

The Bi collared disks from Yinxu can be classified into two broad categories, one with collar and the other without. The specimens of the former are characterised with their ivory collar, whereas that of the latter with semi-transparency/green colour. They are also produced with significantly different techniques. A large number of their fragments are excavated from the Xibeigang tombs, and are of significant importance not only for the chronology of the royal tombs but also for the understanding of the exchange systems of the time. Although, basically, the specimens with shorter, thinner collars can be dated later than the taller, thicker-collared specimens (Figure S1), further studies are necessary, and we are currently writing up an article on the artefacts.

The jade fish

Comparing jade fish-shaped items from 1001 and 1550 and the Fu-Hao's tomb shows the basic trend of the temporal change being the deformation of the realistic depiction (Figure S1). The jade fish-shaped items from the Middle Shang period tomb YM331 have the clear depiction of the dorsal and ventral fin. The specimens from 1001, 1550 and the Fu-Hao's tomb have the unclear definition of the back and belly fins with parallel incisions. The 1004 tomb yielded jade fish-shaped items with undefined fins with parallel incisions merely indicating they being the back and belly fins. The section becomes flat and plate-like. The specimens that 1002 and 1217 yielded do not have the depiction of gills nor incisions indicating the back and belly fins, clearly showing the progression of simplification and deformation. 1217 fish-shaped items are made of a freshwater shell.

Concluding discussion

We have attempted to establish a reliable relative chronological framework for the reconstruction of the formation process of the royal cemetery of Xibeigang by fully utilising the relative-datable artefacts excavated from the royal tombs themselves, despite them being heavily robbed. Our intention derives from our realisation that similar past attempts were unsatisfactory due to their heavy reliance upon stratigraphic overlapping between the tombs and haphazard reference to historical sources. Our work, mostly undertaken by Uchida, who has been working on the issue for the past thirty years, focuses on the examination of correlation between the temporal changes of different attributes in individual artefact types in the

classification of them and the determination of their relative chronological positions.

We have compared the outcome of such works with the relative chronological positions of certain royal tombs confirmed by clear stratigraphic overlapping, and it has been confirmed that there does not exist any contradictions between them.

Therefore we are confident that our system is highly reliable.

The so-called Yinxu chronological system, as mentioned, is basically based upon pottery chronology. By utilising the co-existent potteries and bronze and other items in middle and small scale burials elsewhere in the Yinxu site, we can roughly attribute the royal tombs to the four phases of the Yinxu chronology as follows.

Tomb 1443 and 50WGM1, large tombs situated in the east zone, date from the Yinxu 1 phase or earlier. 1001 probably belongs to the Yinxu I, and 1550 probably dates from the transitional phase between the Yinxu I and II. The assemblage of the Fu-Hao's tomb typifies the contents of the early Yinxu II phase, and 1400 is contemporaneous to the Fu-Hao's tomb. 1004 can be dated to the transitional phase between the Yinxu II and III phases. A chariot accessory from 1003 bears a unique variant of the so-called 'Taotie' stylised animal motif. This particular variant consists of scattered animal body parts, and is attributed to the Yinxu III phase (Namba 1995). 1002 yielded a fragment of a rectangular Zun 尊 vessel. An identically-shaped Zun vessel (a private collection) also bears the identical Taotie 饕餮 motif, allowing to infer that 1002 also dates from the Yinxu III phase.

1500 and 1217 did not yield any datable items, and the determination of their respective chronological positions has to rely on Gu-si bone spatulas. They

indicate those tombs post-dated 1004, at least, but it is highly difficult to determine their respective position in the Yinxu chronological system. It can be safely said that they dates from sometimes in the Yinxu 3 and 4 phases.

According to the work of the Xia Shang Zhou Chronology Project Team (2000), the Yinxu I phase dates from around the fourteenth century BC, and the end of the Shang (i.e. the end of the Yinxu IV phase) dates from the eleventh century BC.

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Gu-Si (Bone Spatulas)

Hairpin

Bronze vessels

Bronze Weapons

Jade items

Taotie with two bodies

Repeated masks

Large

Jue vessels

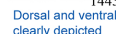
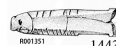
Gu cups

Ge Halberd

Jade disk

Jade fish

HPKM1443
50WGM1
(Yin-xu Phase 1)



The legs are thinner and the distance between the legs is fairly large

The height is relatively low, and the diameter of the narrowest part relatively large

Collar relatively thick and high

Dorsal and ventral fins clearly depicted

The depiction of same motifs varies
The number of the design units forming the whole design system large

HPKM1001



inlaid with Turquoise not inlaid

Design motifs executed in a relief-like manner

Painted with vermilion and black pigments



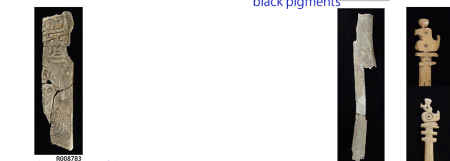
50WBM1
Fine spiraled Taotie series

Stylised bird-shaped shaft



Some specimens losing clearly depicted fins

HPKM1550



Complex motifs executed in a fluent manner

Painted design motifs (disappearing after this phase)

Division between the bird and the pin part clear



Shaft deformed but still retaining bird characteristics



Collar becoming thinner

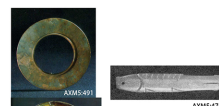
Fuhao-tomb (Yin-xu Phase2)



Stylistically situated in between the specimens from 1550 and 1004



Shaft added with some elements other than bird, e.g., elephant nose



HPKM1400

Motifs became summerrally-shaped and standardised

The legs become thicker and the distance between the legs reduced

The height increased, with the narrowing of the body and the enhanced flaring of the rim and the base



Collar becoming very short

HPKM1004



Curvings become shallower, and the section flatter

Division between the bird and the pin part becoming unclear



Ding tripod



Gu fragment with looking-back dragon motif



Shaft totally lost bird characteristics



Collar becoming very short



Definition of fins lost, and the section becomes flat

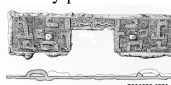
HPKM1003 (Yin-xu Phase 3)



Curvings become shallower, and the section flatter



Accessory plate of Chariot



Scattered animal parts Taotie dating from the Yin-xu III

HPKM1002

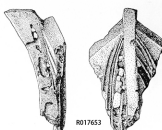


Additional parallel lines

Curvings become shallower, and the motifs simplified



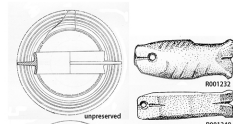
Zun Vessel



Identically shaped to the Sen'oku Hakukokan Zun dating from the Yin-xu III phase



cf. Sen'oku Hakukokan Zun (Yin-xu phase3)



Some fragments from 1002 are now lost, and the material and other details unknown

HPKM1500



Spiral motifs replaced by two parallel lines

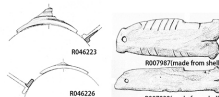


Further simplified

HPKM1217



Curving become shallower further still, and motifs simplified



Made of freshwater shell