
The Origins of Chinese Writing: the Neolithic Evidence

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In China, a number of signs from some Late Neolithic contexts suggest that recoding activities were well developed before Chinese writing became widespread during the Shang period. Archaeological and palaeographic evidence indicates that mature writing is likely to have evolved from these earlier signing systems as a result of the increasing social and political complexity of the societies of the Late Neolithic. This article analyses three Late Neolithic signing systems that may have led to the mature Chinese writing of the Shang oracle bone inscriptions, and argues that non-linguistic visual signing played a role in the emergence of writing systems.

The debate on the origins of Chinese writing

The earliest undisputed texts from China are late Shang dynasty (c. 1300–1200 bc) inscriptions on divination bones, mainly from the area of the last Shang capital, Yinxu, near Anyang (Henan). The Shang dynasty (c. 1600–1045 bc), a stratified state society of the Middle Bronze Age, was centred in the middle Yellow River valley, but its hegemonic power extended at times beyond the Central Plain. An important feature of the Shang state was its highly bureaucratic worship of royal ancestors, a system that operated on a ritual calendar and required divinatory inquiries and ceremonial offers. It was around this state-sponsored worship apparatus that various practices that define Shang culture developed. These include the sophisticated bronze industry that produced the food and wine vessels used for ritual offerings, the practice of human and animal sacrifice, and, eventually, an inscriptional system on bones to record oracular inquiries and associated events (Keightley 1978; 1999).

Scholars hold different opinions regarding the dynamics that led to the emergence of Shang writing. Some suggest that oracle-bone writing emerged suddenly with little evolution or at most a couple of hundred years of development. Others believe that the process was much longer and gradual, and suggest that the earliest signs that can be connected with emergence of Chinese writing appeared as early as 4000 years before the oracle-bone inscriptions. Interestingly, these different opinions are sometimes asso-

ciated with different cultural identities. Many, but by no means all, Western scholars hold that oracle-bone inscriptions are the earliest form of Chinese writing, and that the latter began with little incubation during the Shang period in the middle-lower Yellow River Valley area. Since no argument for outside stimulus is made (except Bottero 2004), their suggestion is that in China writing originated as a sudden independent invention in the middle Yellow River valley (Bagley 2004; Boltz 1994; 1999; Keightley 2006). In contrast, for many (but not all) Chinese scholars Early Bronze Age inscriptions and Neolithic signs are evidence of the gradual development of Chinese writing over an extended period of time and from a variety of earlier graphic systems (Chang Kuang-yuan 1991; Gao Ming 1990, end section 1–2; Li Xueqin *et al.* 2003). These diverging opinions and their subsets have generated a contentious debate on the origins of writing in China. The aim of this article is to mediate between these positions and evaluate the Neolithic evidence in light of archaeological data and writing theory.

Theories of writing

The competing hypotheses (gradual *vs* sudden origination) raise questions about the dynamics and timing of the origin of Chinese writing, as well as on the nature of ‘writing’ as a social and cultural phenomenon.

The question of the dynamics of the birth of Chinese writing is of foremost importance. Writing theory and empirical evidence indicate that though

writing can appear rather suddenly, it frequently does so as a result of an outside stimulus. Sudden invention is more properly associated with the appearance of secondary writing systems, rather than primary inventions (various authors in Houston 2004a). Comparative data from areas of the world where primary writing emerged show how, in cases of independent development, writing undergoes an extended evolution before becoming an efficient language-recording tool. For example, for Sumerian cuneiform the transition from the earliest numerical tablets of the late fourth millennium BC to the recording of verbs took approximately 600 years (Nissen *et al.* 1993). Though more controversy surrounds the origins of Egyptian writing, the recent re-analysis of inscriptional evidence from the royal tombs at Umm el-Qaab near Abydos suggests that the earliest signs that can be associated with hieroglyphs are those found on bone tags dating to c. 3150 BC. This date indicates that Egyptian writing is older than previously thought and that it, also, underwent an evolution (Baines 2004; Dreyer 1998). Progression is noted also in Mesoamerica, where a recent discovery of an inscribed block from Cascajal (Veracruz, Mexico) in the Olmec heartland places the emergence of the earliest writing in the Early to Middle Formative at c. 800–1000 BC (Rodríguez Martínez *et al.* 2006). Of particular importance is Mayan writing, which though probably unrelated to the Olmec system, was used for approximately 1600 years. Though difficult to decipher, the earliest texts dating to the first centuries of the common era appear to be dominated by word signs or logographs rather than by the syllabic signs that characterize the better-known later inscriptions (Houston 2004b, 299).

If the theory of sudden origination is in contrast to available comparative evidence, its timing of the proposed emergence of Chinese writing is at odds with the archaeological record. With an origin around the fourteenth or thirteenth century BC, Chinese writing would have been absent in the early state societies of the Central Plain: the early Shang dynasty and the preceding Early Bronze Age Erlitou culture (c. 1900–1500 BC), a phase sometimes associated with China's semi-legendary first dynasty, Xia (traditionally 2100–1600 BC) (Liu Li & Chen Xingzang 2003; Liu Li & Xu Hong 2007). Even though not all state societies have graphic writing, a complex recording system — such as the Inca *quipu* — is generally necessary to handle the growing bureaucratic needs of a complex political organization, and it is unlikely that both the Shang and Erlitou lacked one (Urton 2003).

Studies also show that oracle-bone writing is linguistically complex and unlikely to have emerged as

the result of a sudden invention. This script recorded efficiently (though sparingly) the contemporary language structure, had all categories of speech (nouns, verbs, adverbs, particles), included various sign types (pictographs, semantic and picto-phonetic compounds and phonetic borrowings), and included a grammar that was not dissimilar from that of archaic classical Chinese (Chen Mengjia 1956, 85–134; Norman 1988; Takashima 2004). This suggests that oracle-bone writing reached this level of complexity after undergoing a protracted evolution. In fact, although of great importance, the oracle bones were not the only inscriptions during the late Shang and are not the earliest writing from China. Late Shang ritual vessels were sometimes inscribed with names or brief formulae, and shorter inscriptions and/or single graphs are known from middle Shang (c. 1500 BC) and even pre-Shang bones, bronzes, pottery and jades (Chang Kuang-yuan 1991; Song Guoding 2003). In addition, signs that appear to share elements with early Chinese script have been documented on pottery, jade and bone excavated at various Neolithic sites (Cao Dingyun 2001; Cheung Kwong-yue 1983; Demattè 1996; 1999; Gao Ming 1990, 1–2).

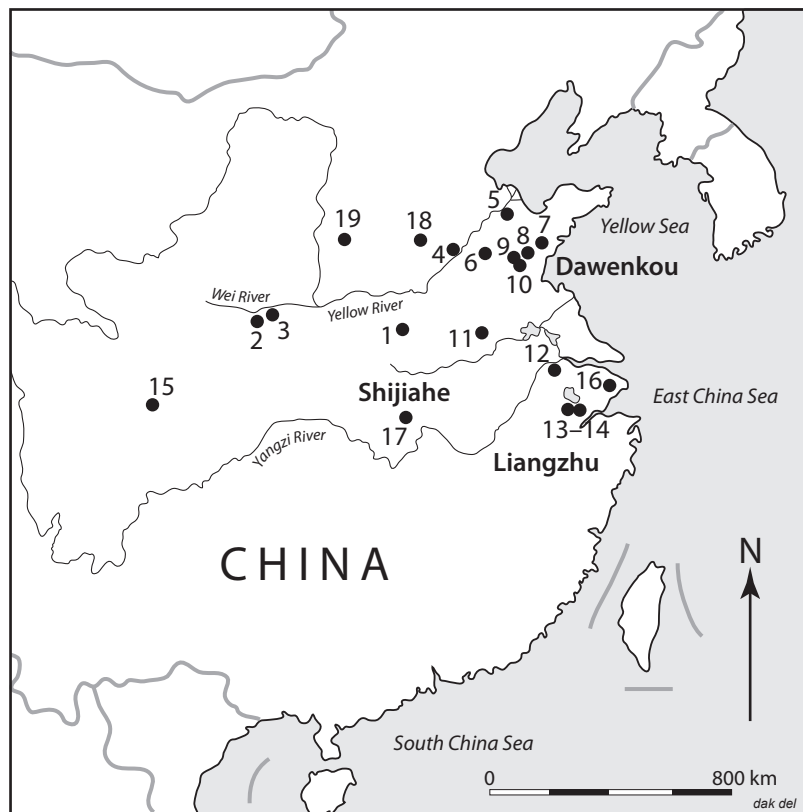
The above evidence questions the model of a sudden and circumscribed origin in the middle–lower Yellow River valley during the Middle Bronze Age and suggests that a gradualist explanation is more attuned to data and theory. If so, the documentation of Late Neolithic and Early Bronze Age signs is central to research on the origins of Chinese writing. Early Bronze Age signs are rare, but Neolithic ones are less elusive and can illuminate the early stages of the formation of this graphic system.

Neolithic signs and writing: selection criteria

While I am inclined to accept gradual development as an explanation for the emergence of Chinese writing, I agree with the supporters of sudden origination that some of the graphic data proposed as evidence of early Chinese writing is problematic. Of the many graphic signs known from Neolithic contexts, some appear to be connected with the emergence of Chinese writing, whereas others may have no relation to the script. Below, I outline four criteria useful to distinguish the signs that are likely ancestral to Chinese script from those that probably are not. These criteria are my own, but emerge from ideas put forth earlier by Chinese scholars, in particular Gao Ming (1990). To be considered ancestral to writing, prehistoric signs must:

1. be intentional and form a structurally coherent whole, with distinctive shapes and systematic use;

Figure 1. Map of sites discussed in the text: 1) Jiahu; 2) Banpo; 3) Jiangzhai; 4) Jingyanggang; 5) Dinggong; 6) Dawenkou; 7) Qianzhai; 8) Dazhucun; 9) Hangtong; 10) Lingyanghe; 11) Yuchisi; 12) Beiyinyangying; 13–14) Yuhang county sites (Yujiashan, Anxixiang); 15) Jinsha; 16) Fuquanshan; 17) Shijiahe; 18) Yinxu, Anyang; 19) Taosi.



2. fit into a logical developmental frame and show some morphological relationship with Shang bronze or bone scripts;
 3. form a regional system that expands with time;
 4. appear at a time of relative socio-political complexity.
- These criteria are useful for eliminating unintentional signs as well as early signaries and counting systems that served basic recording needs in non-complex societies. Below, I will first discuss some of the problematic signs outlining the reasons why they cannot be considered the source of Chinese characters. Thereafter, I will propose a set of signs that fit the criteria listed above and show why they may be ancestral to Chinese writing.

Some questionable signs

In China as elsewhere, signs that may not be connected with writing include mnemonic marks for simple recording functions (pot-marks or tallies such as lines, crosses, combs etc.), decorative patterns and signs with no clear intentionality (doodles, scratches caused by deposition or fauna). Another group includes those signs whose authenticity or provenance is not clearly established. These types of signs are not uncommon in Chinese Neolithic contexts. While not all evidence can

be discussed, three well-known examples will suffice.

The earliest signs indicated as the source of Chinese writing are three marks carved on what may have been archaic oracle bones from the Early Neolithic site of Jiahu (Wuyang, Henan) (Fig. 1). Based on stratigraphic periodization and associated carbon dates, these early bone graphs have been dated to c. 5500 BC (Henan Institute of Archaeology 1999). However, the three graphs show a mixture of writing forms from oracle bone to modern block script, to unintelligible. Other, less clearly defined, marks on bones have also come to light at Jiahu, though it is questionable whether they are man-made or the result of depositional events. The presence of this collection of signs on bones has been taken by some scholars to be proof of incipient writing activities (Li Xueqin *et al.* 2003; Cai Yunzhang & Zhang Juzhong 2003). Others are rather sceptical of the evidence and the early date proposed for the origins of writing and suggest other interpretations (Liu Zhiyi 2003). In particular, the shape of some of the signs and the sharp and clean 'V'-shaped cut of the incisions raise questions. First-hand examination of the Jiahu bones and their signs has led me and others to believe that, whereas the bones are ancient, the signs are unlikely to date to the Neolithic (Chou Hung-hsiang pers. comm. 2007; Fig. 2a).

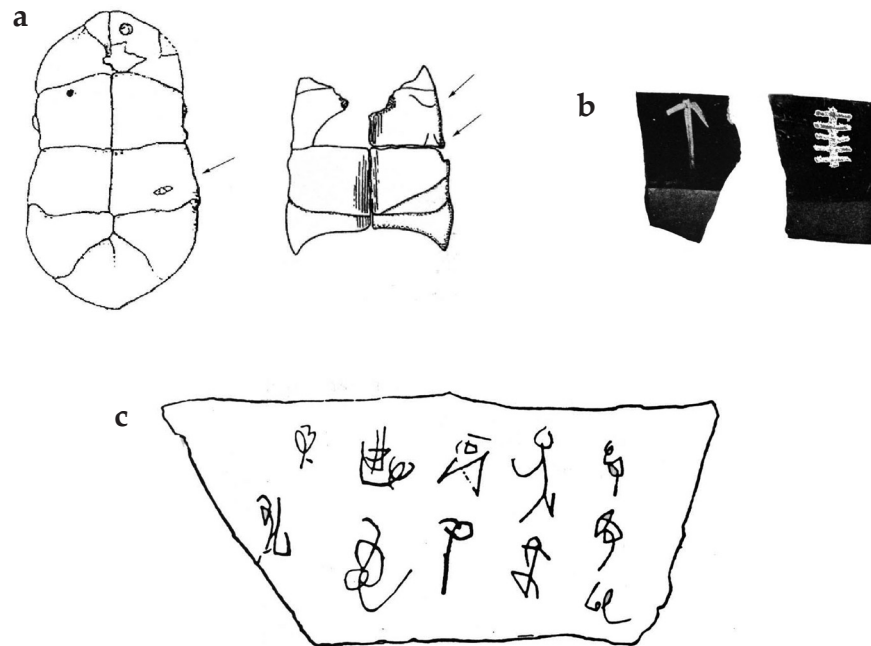


Figure 2. Neolithic signs with no clear connection with the Chinese writing: a) Jiahu tortoise shells with inscribed signs: item 18 from tomb M (left), item 4 from tomb M387 (right); b) Banpo potmarks; c) Dinggong potsherd (redrawn after: Henan Institute of Archaeology 1999; Institute of Archaeology, CASS 1963; Multiple authors 1993).

Some equally problematic evidence has also been proposed for the Late Neolithic (c. 3000–2000 BC). Three inscribed potsherds have come to light at three Longshan period sites on the eastern coast: Longqiu (Gaoyou, Jiangsu), Jingyanggang (Shandong) an urban site, and Dinggong (Zouping, Shandong) a large walled settlement (Fig. 1). Though the purported date and setting of these artefacts are in line with the expected time of emergence of Chinese writing, these are controversial finds for a number of reasons. First and foremost, the stratigraphy and circumstances of discovery for all these sherds are rather unclear. Records for Dinggong, where more data are available, indicate that although the sherd came from a Longshan pit and looks genuine, the ‘inscription’ was discovered only later as all sherds from that feature were washed. Furthermore, examination of the artefacts showed that the signs were carved after firing on sherds rather than on complete pots, a fact that may indicate that the inscription was likely applied later than the time of the vessels’ manufacture. Visual inspection of the grooves shows that the signs were incised with a sharp instrument, probably a knife. To this, we may add the fact that the signs are indecipherable and except for two of the Dinggong sherds (Fig.

2c, top central ones), which vaguely resemble some oracle-bone graphs, they do not seem to relate to Chinese writing. In fact, because of its obscurity, the Dinggong inscription has been interpreted as a form of a supposedly lost prehistoric script. Although the Dinggong sherd (unlike the other two) received much attention when it was discovered, at present the quiet consensus is that the ‘inscription’ is dubious. Alternatively, the ‘inscription’ could have been the doodle of a child (Bian Ren 1994; Cao Dingyun 1996; Liu Li 2004, 203; Multiple authors 1993; Postgate *et al.* 1995; Shandong University 1993; Wang Shougong 1998).

Other signs that have been associated with the origins of Chinese writing are a variety of tallies and pot-marks common on Middle to Late Neolithic painted pottery from several sites, particularly in northwestern China. The best known date to the Middle Neolithic (5000–3000 BC) and have been unearthed in Yangshao contexts of the Wei River valley. Their highest concentrations are at Banpo and Jiangzhai, two early Yangshao villages in Shaanxi province (Fig. 1). Yangshao pot-marks are almost always carved on the black band running around the outer rim of select types of red pottery vessels, such as *bo* bowls. A few marks are carved at the bottom of

the vessel. The inscribed containers appear to have been of higher value than other ceramic and were often used in child burials. The signs appear mainly as single entities rather than as compounds, they are stylistically similar, and re-occur on separate vessels and in different villages of the Yangshao horizon. Most were incised before firing with a sharp stone, wood or bamboo tool, though a few may have been carved after firing (Institute of Archaeology, CASS 1963; Wang Zhijun 1980; Xi'an Banpo Museum *et al.* 1988, vol. 1, 141; Fig. 2b). These patterns of use suggest that the signs carried social meaning and that mark-making on valuable pottery was an established intra-village convention at Yangshao villages. Interestingly, similar marks are present also on ceramic vessels of other Middle Neolithic horizons of the northwest, such as Dadiwan and beyond, and may have formed an even larger regional tradition (Xie Duanju 2002). Though these facts make the signs valid candidates as potential sources of later Chinese writing, other elements — the overall simplicity of the signs, their early dates and the lack in later phases of development towards a more complex recording system — suggest that this may have been a local tradition with no direct relationship to historic Chinese writing. Perhaps future evidence will clarify their role.

Middle to Late Neolithic: Liangzhu, Dawenkou and Shijiahe glyphs

Quite different is the graphic production of three Middle to Late Neolithic cultures: Dawenkou in the lower Yellow River valley, and Shijiahe and Liangzhu in the middle and lower Yangzi river valley respectively (Fig. 1). The signs retrieved from these contexts, which are approximately coeval dating to approximately the middle of the third millennium BC, respond to all the criteria listed above and though simple appear to form an interregional system. Dawenkou and Shijiahe pictographs are carved on large pottery urns (*zun*), while the evidence from Liangzhu includes both graphs carved on jades and inscriptions on pottery vessels or sherds. These sign systems are interesting because they show a degree of interrelatedness and a conceptual similarity with Shang script (Keightley 1989).

This is not altogether surprising, since it appears that Dawenkou underwent a significant demographic expansion during its middle and especially late phases and that the impact of its culture and cultural practices was felt all around its territory as well as in later ages. Archaeological research has shown that Dawenkou and Liangzhu, which are located in relative proxim-

ity, were in close contact with each other, and that the cultural contacts continued also after the demise of Dawenkou and the onset of Shandong Longshan in the lower Yellow River valley. As for Shijiahe, archaeological evidence relating to the preceding Qujialing indicates that this horizon had significant exchanges with Dawenkou culture and that the impact of the central plain on Shijiahe was significant (Gao Guangren & Bian Fengshi 2004).

Dawenkou

Several graphs have been found in the widespread Dawenkou domain that stretched from the lower Yellow River valley in the north to coastal and inland areas to the south. Dawenkou, which is characterized by agricultural settlements and large cemeteries, is divided into three phases: early 4300–3500 BC, middle 3500–2800 BC; late 2800–2500 BC. Most graphs come from sites in southeastern Shandong such as: Yaowangcheng, Dawenkou in Tai'an, Qianzhai in Zhucheng, and Dazhucun, Hangtuo and Lingyanghe in Ju county (Shandong ... & Jinan Museum 1974, 72–3, 117, fig. 59; Wang Shuming 1992; Tang Lan 1981, 80). Beyond this region, several signs have been recovered from Mengcheng Yuchisi in Anhui, and one at Beiyinyangying, near Nanjing in Jiangsu (Institute of Archaeology, CASS 2007; Nanjing Museum 1993). Regardless of their location, all these sites are datable to the late Dawenkou phase (2800–2500 BC). Sites with inscribed evidence tend to be large and they include both cemeteries and villages, such as Yuchisi. The size of the sites and their relative wealth are relevant to the interpretation of the signs since at this time villages had begun to diversify into larger or smaller settlements and burials indicate mounting inequality. The presence of signs in large villages and wealthy tombs ties the development of complex signing systems to emergence of socio-political organization and ruling elites (Demattè 1999).

Altogether there are at least thirty-two single graphs of eight different types that appear with varying frequencies at Dawenkou sites (Fig. 3). The graphs do not appear to constitute texts, however their distribution patterns suggest that they were part of a regionally recognized signing system. Except for a large red graph painted on a grey pottery *hu* bottle from Tai'an Dawenkou tomb 75, all excavated Dawenkou graphs are engraved on *zun* pottery jars (Fig. 4). Some are covered with a red pigment, a practice that in Shang times was used to enhance visibility of the inscription and/or to signal its ritual importance. Signs appear either singly at the bottom or belly of the vessel or in

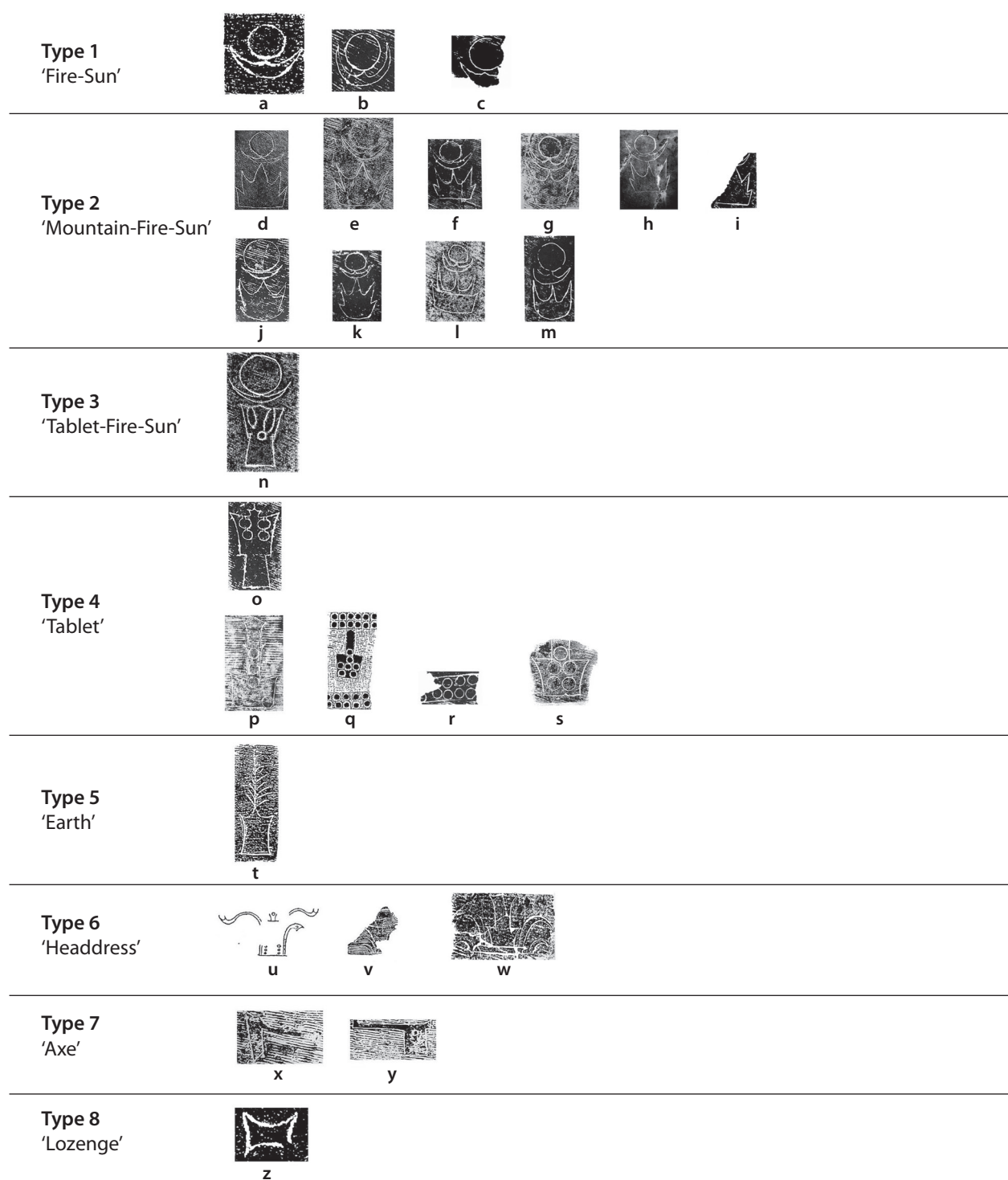


Figure 3. *Dawenkou signs.* Type 1: a) Lingyanghe tomb M7; b) Yuchisi urn line JS10; c) Yuchisi sherd, quadrant T3114. Type 2: d) Lingyanghe surface; e) Yuchisi urn burial M96; f) Yuchisi urn burial M289; g) Yuchisi urn line JS4; h) Yuchisi urn line JS10; i) Qianzhai surface; j) Dazhucun ash pit H17; k) Yuchisi urn burial M321; l) Yuchisi urn burial M215; m) Yuchisi sherd, quadrant T2812. Type 3: n) Yuchisi urn burial M177. Type 4: o) Dazhucun tomb M17; p) Yuchisi sherd, quadrant T3828; q) Lingyanghe surface with 'axe'; r) Yuchisi sherd, quadrant T3313; s) Dazhucun surface. Type 5: t) Lingyanghe tomb M25. Type 6: u) Beiyinyangying ash pit; v) Lingyanghe tomb M11; w) Lingyanghe tomb M17. Type 7: x) Lingyanghe surface; y) Lingyanghe surface with 'tablet'. Type 8: z) Dazhucun tomb M26.

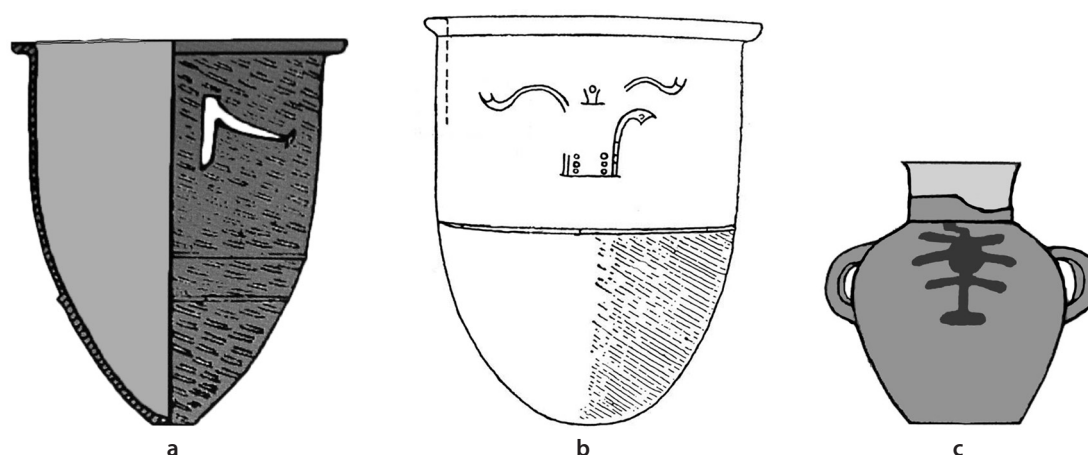


Figure 4. Inscribed Dawenkou zun jars from Lingyanghe (a) and Beiyinyangying (b); flat back hu with painted graph from Dawenkou tomb M75 (c). (Adapted from Shandong sheng wenwu guanlichu & Jinan Museum 1974, 118, fig. 94; Nanjing Museum 1993, 87–8, fig. 49:1.)

pairs opposite each other on the same vessel (paired marks always differ from each other). Some graphs appear to be composites made up of two or three basic signs (1, 2, 3, and 4).

Since many of the graphs resemble Shang bone or bronze inscription forms, Dawenkou signs have been interpreted in light of these similarities and have occasionally been assigned meanings. For example, based on the similarity of their two or three components to the Shang bone or bronze forms of ‘fire’, ‘moon’, ‘sun’ and ‘mountain’, type 1 has been associated with the modern characters 明 (bright), 旦 (dawn), 昊 (sky/heaven), 昊 (blaze/brilliance), whereas type 2 has been seen as 昊山 (brilliant mountain). Following similar reasoning, type 5 has been interpreted as either modern 土 (earth) or 南 (south) (cf. Fig. 13a). Based on Shang pictographs, type 7 signs are recognized as either ‘axe’ or ‘sickle’. Other signs not clearly associated with Chinese characters are referred to as the ‘tablet’ or ‘sceptre’ (type 4), the ‘lozenge’ (type 8) and the ‘headdress’ (type 6) (Wang Shuming 1992; Gao Guangren & Bian Fengshi 2004).

Though these etymological interpretations (which may or may not be correct) highlight the structural similarities between these signs and later forms of Chinese writing, sign use and significance can be better understood by analysing the archaeological evidence. Many of the inscribed zun were recovered complete from graves or pits used to hold ceremonial offers to ancestors or other entities (Liu Li 2000). Others, though found on the occupation surface or collected as potsherds, appear to have been connected with disturbed ceremonial pits. Overall, this indicates that Dawenkou inscribed material when found *in situ*

was associated with ritual transactions in burials or associated ceremonial locales. This is not surprising, since residue analysis and patterns of use suggest that the Dawenkou zun was a vessel for making or storing the wine, and wine was an important component of Dawenkou ancestor worship (Fung 2000; Shao Wangping 1978). In Dawenkou cemeteries of the Shandong area, such as Dazhucun and Lingyanghe, inscribed zun tend to be associated with the tombs of upper-class males. These burials are large and rich in furnishing, having remains of wooden sarcophagi and sets of pottery vessels of types employed in worship. Of the five graphs of Dazhucun, two came from tombs (M17 and M26), two from the original occupation surface, and one from an ash pit. Both tombs with the inscribed zun were rich in burial gifts and had a sarcophagus: M17 had sixty-four vessels, three stone tools and six pig bones, whereas M26 had fifty-five vessels, four stone tools and four bones. Similarly, the five Lingyanghe tombs with inscribed zun were large, wealthy and with wooden sarcophagi, and except for one, where the deceased was of undetermined sex (M17), all belonged to adult males (Wang Shuming 1987a, b).

At Beiyinyangying, a site far from the Dawenkou heartland, the inscribed Dawenkou-style zun was found in an ash pit (H2) datable to phase IV of the Late Neolithic occupation (c. 2500 BC), a time when Dawenkou influence on the territory was increasing (Fig. 4b). Ash pit H2 is the only feature of phase IV and contains a mixture of Dawenkou- and Liangzhu-style items. This assemblage is a remarkable departure from earlier phases (I–III, 4000–3000 BC), when the site featured an intense occupation of the distinctive local

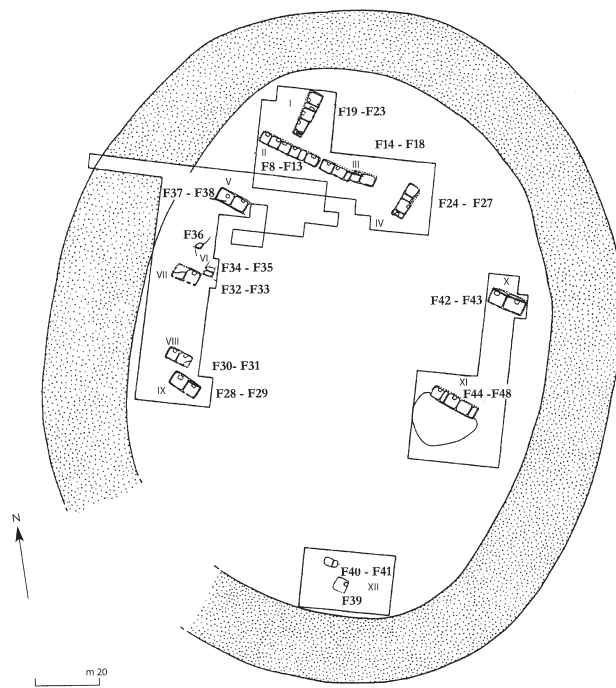


Figure 5. The site of Yuchisi, in Mengcheng, Anhui province. (Adapted after Yang Xiaoneng 2004, vol. 2, 69, fig. 26d).

southern Jiangsu Neolithic. In the latest phase, the Beiyinyangying area lost out to the powerful influence of Dawenkou that was expanding southward (Nanjing Museum 1993, 87–8, fig. 49:1, pl. 50; Zhang Zhiheng 2004, 185–8).

Twelve Dawenkou-type graphs have been retrieved at Yuchisi, a late Dawenkou village in eastern Anhui (Fig. 5). The settlement, surrounded by a defensive circular moat, included nine row-house clusters for a total of over fifty single-room dwellings. A cemetery with about 200 pit and urn burials was beyond the ditch. Each house-cluster had a common courtyard which possibly doubled as a communal ritual ground. Since the settlement was burned and quickly abandoned, the houses retain a wealth of information relating to use. House F33 yielded a high number of food vessels, including a *zun* jar with a *ding* tripod and charred bones inside. The large and diverse vessels assemblage has prompted archaeologists to interpret the set up as evidence of ritual activities (Liu Li 2004, 43).

Overall, data suggest that ritual activities and sign-making were related. As at other Dawenkou sites, the twelve graphs of Yuchisi were carved on large *zun* urns. Five of these were part of urn burials (M177, M215, M96, M289, M321), three were in

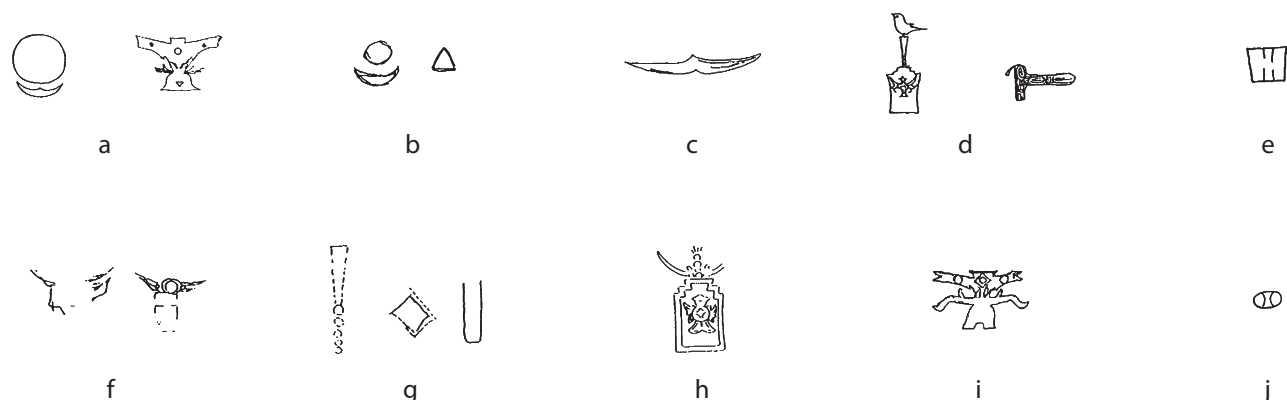
ceremonial pits or alignments (one in JS4 and two in JS10), and four were discovered on the occupation layer in the vicinity of the pits (T3828, T3313, T3114, T2812) in varying degrees of fragmentation (Institute of Archaeology CASS 2007). Though found in burial and ritual areas as at other Dawenkou sites, the Yuchisi *zun* were employed differently. Rather than being in adult burials as was the case at Dazhucun and Lingyanghe (Shandong), the inscribed urns of Yuchisi often served as child-burial containers. However, at Yuchisi these vessels were rare because out of 102 child burials, only five had inscribed *zun*. Their use may have been a mark of distinction for some children, perhaps descendants of newcomers. Studies of the *zun* clay mineralogy, which is similar to that of *zun* from Lingyanghe, suggest that the vessels may have been imported from the Dawenkou core in Shandong (Liu Li 2004, 42).

Liangzhu

Graphs similar to those found on Dawenkou vessels are visible on over twenty ritual jades that stylistically appear to fall in the Liangzhu domain, but have no archaeological provenance. Liangzhu, a Late Neolithic culture centred in the Yangzi River delta, was active between 3200–2200 BC, but these jades may date to its late phase (c. 2500–2200 BC) (Fig. 6). The inscribed jade so far identified — fourteen *bi* discs, ten *cong* tubes, and one bracelet — carry faintly inscribed graphs with recurring bird and possibly solar symbolism (Teng Shu-ping 1992/93; 2004). When discovered *in situ*, *bi* discs and *cong* tubes are usually found in large numbers in elite Liangzhu tombs. While their exact meaning and uses are unclear, based on historic data these jades are thought to have been used in ceremonies honouring heaven, earth and/or the ancestors. Most importantly, these unusual objects (the *bi* is a circular slab of jade with a hole in the middle while the *cong* is an elongated parallelepiped with a circular perforation) seem to have spread from the Liangzhu heartland to Neolithic horizons throughout China eventually becoming an enduring fixture in the Chinese ritual paraphernalia (Liu Li 2003).

Most signs on these jades consist of a bird in profile standing on a beaded perch atop a stepped platform or directly on the stepped platform. In one case, the stepped platform with the bird rests on a crescent. In other cases, the platform appears alone without the bird. When present, the platform always contains a smaller symbol that may reference the sun or the bird. This suggests that the bird-platform may be akin to a honorific cartouche containing the

Cong tubes



Bi discs

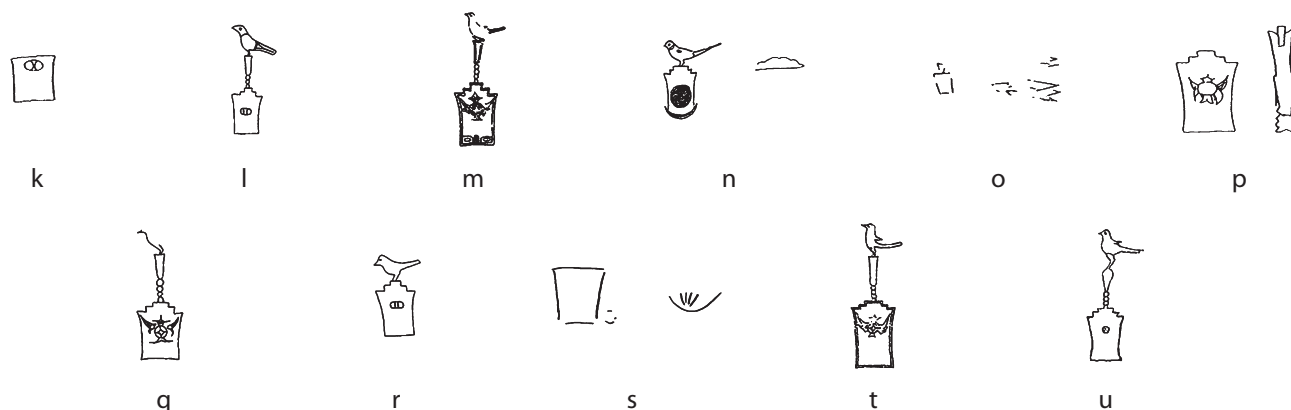


Figure 6. Graphs from Liangzhu-style jades. (Sources: a, k–n - Freer Gallery of Art, Washington DC; b - Museum of Chinese History, Beijing; c, r - Shanghai Museum; d - Capital Museum, Beijing; e, f, o - Palace Museum, Beijing; g, q - National Palace Museum, Taipei; h - Musée Guimet, Paris; i - excavated at Jinsha, Chengdu, Sichuan; j - Feidong county Cultural Heritage Bureau; p - Zhejiang Provincial Museum, Hangzhou; s - found at Linping Yujiashan, Yuhang, Zhejiang; t, u - Lantien Shanfang collection, Taiwan.)

actual meaningful sign. It is worthy of note, that if separated from the bird-platform, some Liangzhu signs resemble the Dawenkou 'sun-fire' logo (Fig. 7). Furthermore, when the symbols appear without a platform, as on a *cong* from National Museum of Chinese History (Fig. 6b) and on a bracelet from the Freer Gallery of Art (Fig. 6a), the graphs are identical to the Dawenkou 'sun-fire' (Shi Zhilian 1987). In other cases, the non-platform graphs represent elements similar to Dawenkou graphs, like the 'axe' and 'wand/tablet'. Beyond these, there are also signs that are altogether different, but the connection of these signs with Dawenkou graphs is evident, as is the close relation between these two Neolithic cultures (Hayashi 1981; 1991; Du Jinpeng 1992). In

fact, the bird-platform sign may be a representation of a Dawenkou pottery object in the shape of house topped with a bird that has been found at Yuchisi (Fig. 8).

Though it is clear from the objects on which they appear that Liangzhu signs had an association with ceremonial paraphernalia, their exact meaning is difficult to determine. Unfortunately, limited information is available on the archaeological context or provenance of these inscribed jades, since for the most part they were not archaeologically excavated and have long been in museum or private collections. The only exceptions are a large *bi* with two carved signs recently retrieved from a wealthy Liangzhu burial at Linping Yujiashan (Yuhang, Zhejiang) (Fig. 6s) and

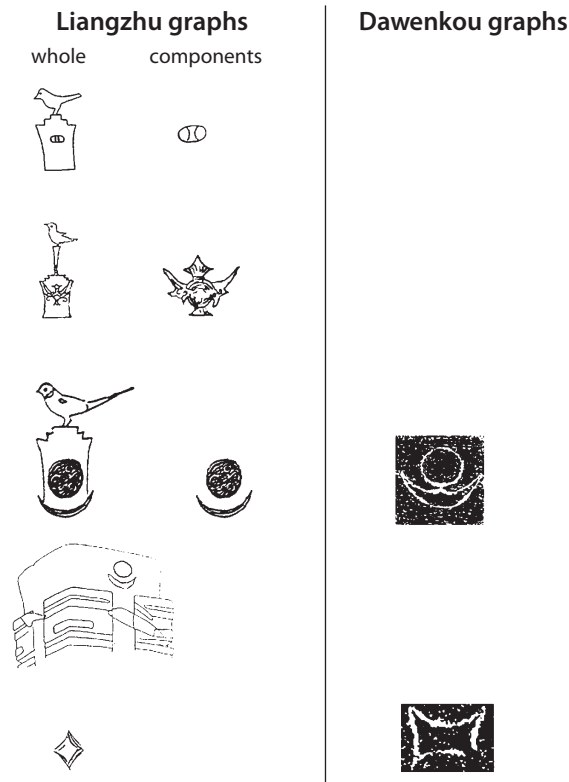


Figure 7. Similarities between Liangzhu and Dawenkou signs.

an inscribed Liangzhu-style jade *cong* found at the bronze age site of Jinsha in Sichuan (Fig. 6i). Little is yet known about them, except that the *bi* was found alongside other 50 jade pieces and that the *cong* context is neither Liangzhu nor Neolithic (Chengdu ... 2005, 56; <http://www.beijingww.com/2008-12-15 08:21:22>). Two *bi* discs retrieved in the Liangzhu area — one at Anxixiang (Yuhang, Zhejiang) (Fig. 6p) and one at Fuquanshan (Qingpu, Shanghai) (Fig. 6r) — come with little context, because the pieces were looted or found accidentally (Mou Yongkang & Yun Xizheng 1993, fig. 1).

In contrast to the museum pieces, most *bi* and *cong* from scientifically excavated Liangzhu burials do not appear to be inscribed. Though it is possible that some of these signs (particularly those on jades that have recently surfaced in private collections) are fakes, many others have been in well-known museums for centuries and appear to be genuine. To explain this incongruity, it has been suggested that these pieces (which are now in different museums, but originally belonged to the Qing imperial collection) may have been recovered centuries ago from



Figure 8. House-shaped pottery urn with bird design from Yuchisi. (From Institute of Archaeology CASS 2007, vol. 2, colour pl. 12.)

a single site or area where signs were used (Jenny So pers. comm. 2009). Another explanation may be in the white burial patina that covers excavated jades and makes the faint signs almost invisible to the naked eye. The patina disappears with repeated handling and is absent from pieces that have long been in museums. Its absence makes the signs easier to spot. If the presence of patina is the reason for the missing graphs in excavated jades, then more careful scrutiny of archaeological pieces is necessary. Graphs, which are in prominent positions, may not have been as invisible in their original context as it is likely that their presence was enhanced with the addition of pigments.

In addition to these signs, others are known from Liangzhu contexts. For the most part, these resemble simple pot-marks such as those from Yangshao villages. An exception is four large signs engraved post-firing on the belly of a black pottery *guan* jar from Chenghu (Wuxian, Jiangsu). Though the signs resemble later bone forms and attempts have been made at interpretations, the meaning of the inscription remains unclear (Lu Sixian 1993).

Shijiahe

Shijiahe signs come from Xiaojia Wuji and Dengjiawan, two areas associated with the walled city of Shijiahe (Tianmen, Hubei) (Fig. 1). The signs date to the late phase of the Shijiahe horizon (2500–2000 BC), a time when the settlement grew in complexity and was surrounded by a now fragmentary square enclosure and a moat protecting an area of about one square kilometre. Within the walls, at locations such as Dengjiawan, Sanfangwan, Yangjiawan, Tanjialing, are dwellings, burials and specialized ritual areas. Beyond the walls, the site was surrounded by about forty contemporaneous loci spread over a five square kilometre area.

Dengjiawan, a cemetery and ritual centre in the northwestern corner of the settlement, has remains of an elevated platform, ceremonial activities and bronze use. Fourteen pottery graphs of five different types were found there. One was incised on a *guan* jar from a burial (M32), whereas the remainder were on *zun* (also known as *gong*) urns that had been ceremonially buried in connected lines or in ash pits (Figs. 9a,b & 10a). The most common graph, which resembles a horn, occurs six times. Others representing a sickle, a tablet or platform and perhaps a strange creature, occur twice each. Finally, one graph may symbolize a *bi* disc (Yan Wenming & Yang Quanxi 2003).

Similar signs in comparable contexts have been found also outside the Shijiahe city walls. At Xiaojia Wuji, an elevated area south of the settlement with few house foundations and more evidence of ceremonial activities, a total of forty-one marks were identified on potsherds and on eight complete vessels (Figs. 9c, 10b). Thirty-five graphs were on *zun* urns (*jiu* in the excavation report), three on *gong* jars, one on a long-neck *guan* and two were on unidentified sherds. As at Dengjiawan, the inscribed sherds or vessels were found either as part of buried lines of *zun* urns (7) or on floors (21) and ash pits (13). Also here the ‘horns’ are very common (17), but there are also different types, such as the ‘stemmed cup’ (2), and some hard

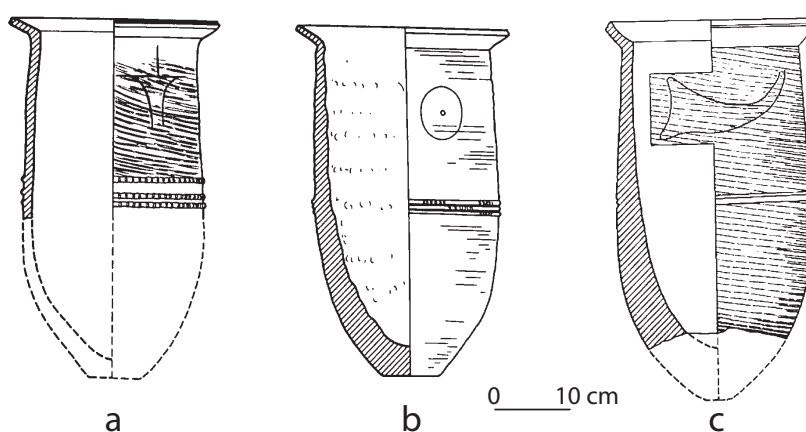


Figure 9. Shijiahe inscribed zun urns from Dengjiawan (a, b) and Xiaojia Wuji (c). (From Yan Wenming & Yang Quanxi 2003, figs. 133/2 & 132/3; Hubei Jingzhou Museum et al. 1999, fig. 135/4).

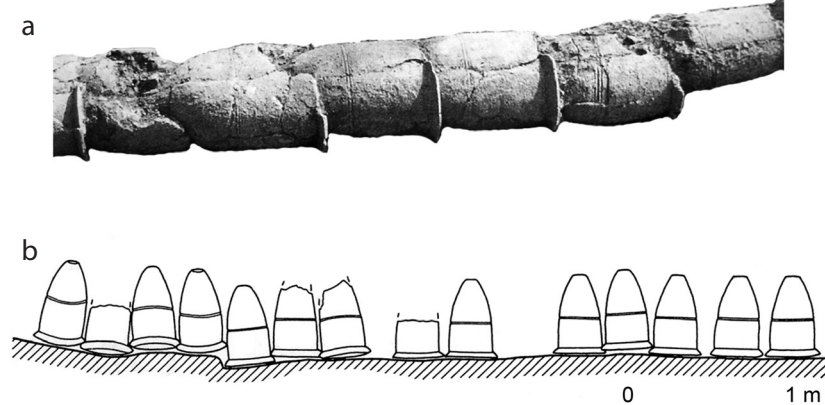


Figure 10. Shijiahe ritual urn lines from Dengjiawan (a) and Xiaojia Wuji (b) (From Yan Wenming & Yang Quanxi 2003; Hubei Jingzhou Museum et al. 1999, fig. 140).

to recognize forms. Most interesting are however two types similar to Dawenkou and Liangzhu signs: the ‘lozenge’ and the ‘fire/sun’ (Hubei Jingzhou Museum et al. 1999).

Like those on Liangzhu jades, Shijiahe signs also show unmistakable evidence of Dawenkou influence. In particular, the objects chosen to bear the graphs are not random ceramic vessels, but specifically the Dawenkou-type *zun* jars (called *gong* in the excavation report). This ceramic form, absent in the preceding local Neolithic phase (Qijialing) and rare in Shijiahe contexts, was apparently introduced with the expansion of Dawenkou in the late third millennium BC. Given the association of these containers

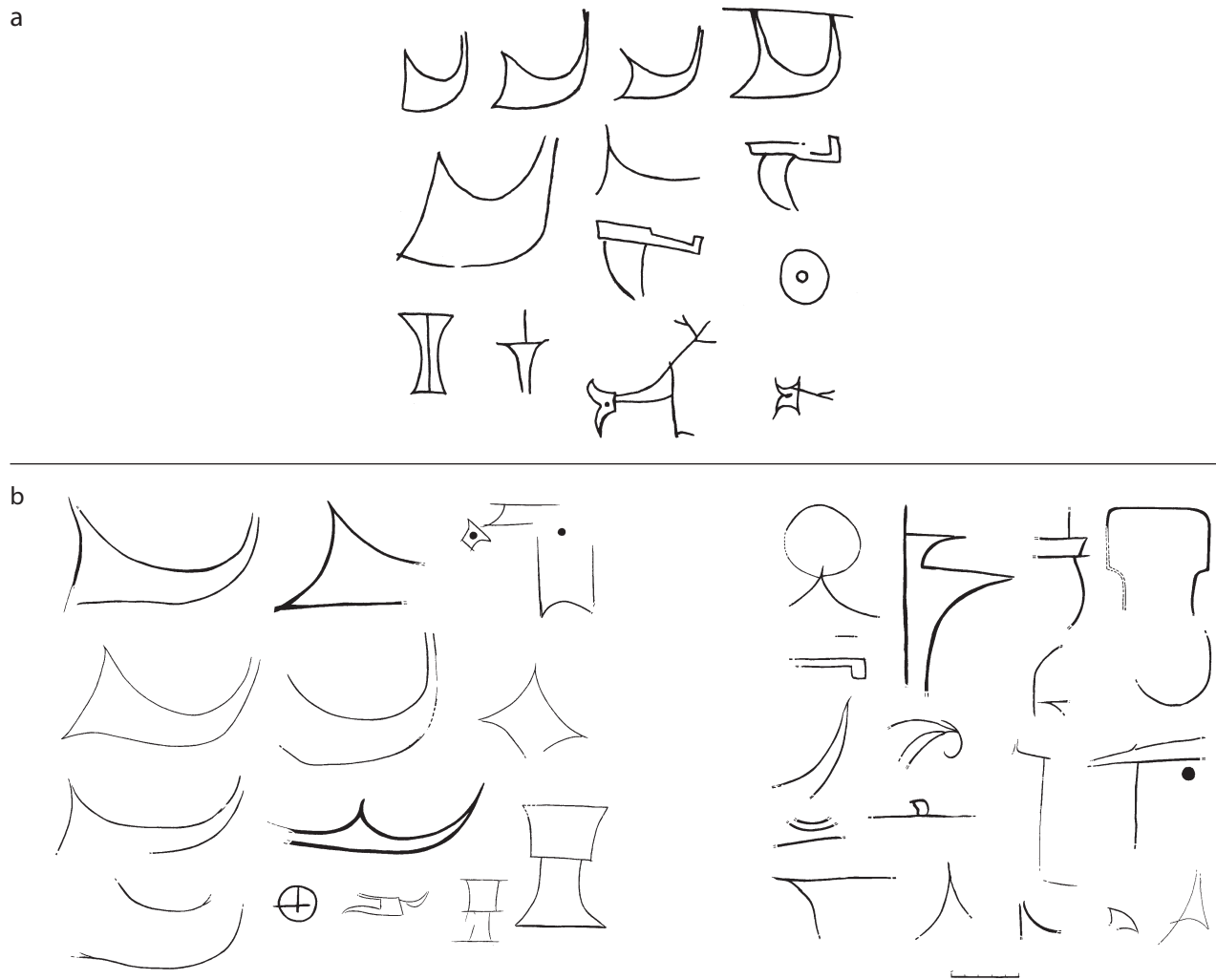


Figure 11. *Shijiahe graphs incised on urns from Dengjiawan (a) and Xiaojiawuji (b). (Redrawn from Yan Wenming & Yang Quanxi 2003, fig. 185; Hubei Jingzhou Museum et al. 1999, figs. 169, 170, 172).*

with Dawenkou ceremonial and wine-making activities highlighted above, it is likely that their presence at Shijiahe signals the introduction or at least the influence of a new ritual ideology. Another similarity concerns the shape of the graphs, which are occasionally identical (a partial ‘fire/sun’, the ‘tablet’) or very similar (the ‘sickle’) to those from Dawenkou, or structurally similar to Dawenkou objects (the ‘horn’). The third connection is the use of a red colorant which was sometimes applied on top of both the Shijiahe and the Dawenkou graphs and was also used in the Shang period to highlight inscriptions. Shijiahe graphs may show connections with Liangzhu as well since one of the graphs appears to depict a *bi* disc (Fig. 11).

Differences are also present: the most obvious is the use of the inscribed (and non-inscribed) *zun*,

which at Dawenkou are found mainly in burials and ash pits and at Shijiahe are buried in lines. The choice of burying lines of *zun* may have derived from the earlier (Qujialing) tradition of burying stacks of spiked ceramic cylinders and cones. What we see in Shijiahe contexts may be the continuation of an old ritual practice with newly introduced objects and symbols (Hubei Provincial Museum 2007).

Dynamics and meanings

The above evidence suggests that the Dawenkou, Liangzhu and Shijiahe graphs were part of a Late Neolithic inter-regional signing system that emerged from the ritual recording needs of cultures interacting in the political-trading network uniting the Yellow



Figure 12. Burial jar from Linru. (From Linru County Cultural Center 1981, pl. I.)

and Yangzi River valleys in the middle of the third millennium BC. The growth of this inter-regional signing network, which is regulated by a relative internal coherence in sign form and usage, is to be understood in relation to the Late Neolithic spread of influence of a regional power beyond its local sphere. Since the Dawenkou evidence appears to be earlier, it is likely that these signs emerged in the Dawenkou heartland of Shandong, and from there spread south to the Liangzhu and Shijiahe territories, where they may have been adapted to pre-existing signing systems. In fact, the spread of these signs may have involved even more areas: comparable signs appear on ceramic vessels from Late Neolithic contexts to the west of Dawenkou. For instance, at Yancun (Linru, Henan) a large funerary jar serving as an adult burial was painted with a combination of three signs — a bird, a fish and an axe — which are in part the same as those of Liangzhu and Dawenkou (Linru County Cultural Center 1981) (Fig. 12). The southern and perhaps western expansion of this signing practice might be explained in a variety of ways: from the increasing commercial or military might of

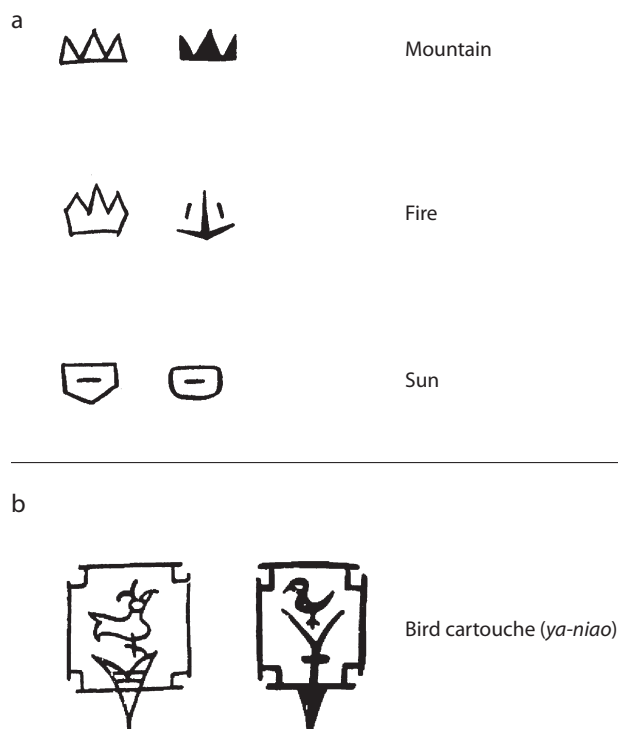


Figure 13. Shang characters and glyphs: a) oracle bone and bronze forms of the mountain, fire and sun characters; b) bird-cartouches from two bronze vessels, the fuyi zun and the fuyi dun. (Adapted from Gao Ming 1980, 592.)

Dawenkou, to the physical move of Dawenkou people owing to environmental circumstances or climactic duress, or to the sheer power of rituals and associated symbols. Whatever the reason, it is possible that the Dawenkou culture expansion was also responsible for the demise of Liangzhu and Shijiahe and for the eventual development of the Longshan interaction sphere and associated social complexity (Liu Li 2004).

The meaning of these signs is difficult to divine, but based on their patterns of use, distribution and form, some conclusions can be drawn. Usage in all three Neolithic contexts indicates that the graphs were connected to ritual performance. The significance of the ceremonies is not discernible, but at least formally these activities bear some similarity to early dynastic practices of ancestral veneration in which writing played a role. For instance, Shang bronze vessels inscribed with names of ancestors, clan emblems and occasionally prescribed formulas were used to make ritual libations of food and wine. Likewise Dawenkou zun jars (both inscribed and not) were used for the storage or making of wine, and sets of ritual drinking vessels indicate that wine was used in ceremonies

honouring ancestors. Jade implements used in Shang ceremonies likewise resemble inscribed Liangzhu jades, and the graphs themselves may represent ritual objects (horns, cups, axes, *bi* discs) or ceremonial contexts (fires, platforms, mountains). In the Neolithic, as in dynastic times, these signs appear to have been part of the ritual-political apparatus, though each culture used the inscribed objects in idiosyncratic ways integrating the symbols into pre-existing practices (Shaughnessy 1991; Fung 2000; Shao Wangping 1978).

The distribution of similar signs over a large territory suggests that, unlike Shang bronze inscriptions, these graphs probably did not record personal names. Clan names or names of ritual offices are more likely candidates. On the other hand, Dawenkou, Liangzhu and Shijiahe signs may have recorded different types of ceremonies to be performed, perhaps naming specific entities to be honoured. Alternatively, Dawenkou and Shijiahe marks may refer to the content of the jars or to place names indicating the origin of the jars or their content.

Finally, although it has been suggested that the Dawenkou, Liangzhu and Shijiahe signs may be 'emblems' or 'blazons' with no connection to writing, their forms and set-up recall Shang characters and indicate links with historic Chinese writing. To cite the most obvious similarities with Shang graphs, the top component of Dawenkou types 1, 2 and 3 (see Fig. 3) is close to the 'sun' pictograph, the bottom of type 1 and centre of type 2 is very close to the pictograph 'fire', and the bottom of type 3 is either a 'mountain' or a 'fire' pictograph (Fig. 13a). In addition, the Liangzhu 'bird-platform' cartouche resembles the Shang glyph 亞 𪗇 *ya-niao* (ya-cartouche + bird) (Fig. 13b). In fact, as previously mentioned, the above similarities have prompted some scholars to go as far as associating these signs with an actual sound (modern) in an effort to support their connection with the Chinese writing. This effort is in vain, however, because, as will be shown below, the close association of a sound to a particular sign is not necessary in early writing.

Are these graphs 'writing'?

The question of the nature of these Neolithic signs in relation to the origins of Chinese writing is bound by our definition of 'writing' and our understanding of the processes that led to its emergence. Due to the alphabetic nature of most contemporary writing systems, writing is seen today as inextricably connected with language and is often considered to be simply a tool for recording speech. The similarities

between the two are, however, only superficial. No script can faithfully record the nuances of spoken language, and the equation 'language = writing' is less prominent in cultures that depend on logographic scripts, like Chinese. The differences between these two semiotic systems are highlighted by their distinct functions and origins. On a general level and leaving aside recent technological advances, we can say that language is associated with face-to-face communication, whereas writing is a visible recording system used to store information beyond the constraints of time and space. Recording systems do not need to rely on speech to effectively store information, in fact those that handle quantities and metrological relationships often transcend speech. For instance, music scores and mathematical equations use a quantitative code that can be understood by anyone who is informed about its logic regardless of linguistic abilities (Harris 1986).

Therefore the question to ask is: did writing originate specifically to record language or did it come into being to record something else (quantities, names, relationships), only to be subsequently transformed into a speech-dependent recording system? I favour the latter view and believe that writing developed out of early graphic recording systems and that language, though key to its eventual transformation, was incorporated into the system only *later* and *gradually*. This means that the origins of writing (in China as elsewhere) must be searched beyond its language recording capabilities, focusing on its original function. To do otherwise would be to adopt a teleological approach to the problem.

Evidence from areas of the world where primary writing systems emerged shows that early graphic signs that eventually developed into writing did not necessarily record speech. At first, these visible systems were used to keep track of quantities, types and probably names. In Mesopotamia, the well-documented development of cuneiform writing shows that writing was not devised to record language, but simply to record anything that was recordable by a visual mark: quantities, types, sequences, relations, practices, locations. Furthermore, it appears (though few reject this hypothesis) that the earliest signs from Mesopotamia can be traced back to differently shaped clay tokens (*calculi*) used in administrative transactions, which had numerical and symbolic values, but no obvious grammaticalization (Amiet 1982; Schmandt-Besserat 1992; Cooper 2004). The bone tablets from Umm el-Qaab which represent the earliest examples of Egyptian writing, record numbers and probably place or goods names, but though some

signs may have been used phonetically, their linguistic nature is limited at best (Baines 2004).

This suggests that writing emerged as a systemization of pre-existing visible graphic systems (tallies, counting systems, pictographs, emblems, and narrative imagery), originally designed to handle quantities, kinds and names in pre-literate contexts. It was only at a later stage, when the bureaucratic necessities of political control took hold, that these once loosely organized systems became intertwined, structured and optimized. The systemization could take different forms (including non-linguistic ones such as the Inca *quipus*), but apparently in many parts of the world language was chosen as a vehicle. Several causes may have favoured the solution that literally put language into the picture. First, the realization of the potential for puns (the so-called *rebus* principle) inherent in some visual signs (i.e. representing a 'sun' to convey the concept of 'son'; or a 'bee' + a 'leaf' to write 'belief'). With that, words that had been difficult to record with a pictograph (such as verbs and abstract concepts) could be written with borrowed signs. Another inspiration was probably the idea of narrative, which is inherent in much visual imagery, from prehistoric rock art to historic friezes and instructional paintings. Imagery, which may have provided a visual prop for story-tellers, may have encouraged early sign users to experiment with language as a holding structure.

Bridging the evidence: from Late Neolithic to Early Bronze Age signs

If the Dawenkou, Liangzhu, and Shijiahe signs of the Middle to Late Neolithic are likely the initial source of Chinese writing, the transition from these Neolithic pictographs to the mature writing of the Bronze Age is difficult to document. For various reasons, evidence of writing is scarce between 2200 and 1500 BC (the Late Neolithic Longshan era and the Early Bronze Age), though some has been found at Taosi (Shanxi), Chengziyai (Shandong), Shijia (Shandong) and Erlitou (Henan).

The earliest and most compelling is from Taosi, a large Late Neolithic site occupied between 2600–2000 BC. A flat-back *hu* bottle inscribed with red-painted signs was found in an ash pit ascribable to the late occupation stratum (c. 2200–2000 BC). Though the pot is incomplete and some of the signs are difficult to understand as a text, one clearly resembles the archaic form of the character 文 (modern *wen* 'writing'). This find is of great importance because Taosi with its rich cemetery, defensive walls, dwellings and early bronze use, fits the expectations of socio-political complexity

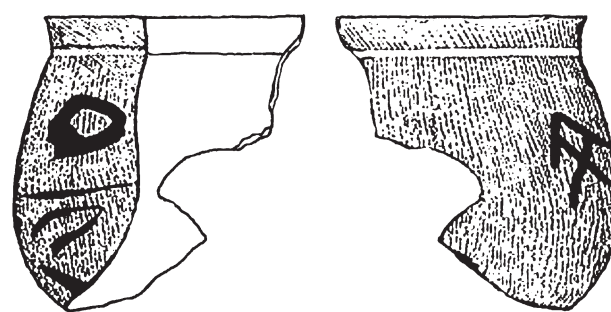


Figure 14. Hu bottle with painted characters from the Taosi site, Shanxi province. (After Li Jianmin 2001, fig. 1.)

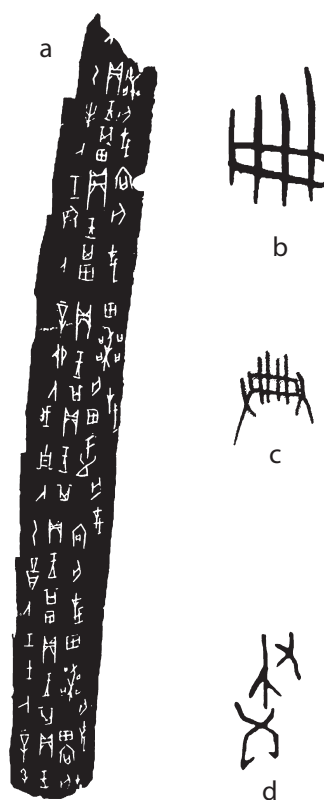


Figure 15. Shang writing: a) inscribed oracle bone from period 3; b–d) oracle bone forms of *ce* ('volume'), *dian* ('classic'), and *shu/hua* ('to write, picture'). (Adapted from Gao Ming 1996, fig. 38.5.)

associated with the use of writing (Li Jianmin 2001; Fig. 14).

In addition, eighteen different graphs inscribed on pottery cups or jars were recovered in the 1930s at Chengziyai, a Longshan era site. The simplest and most common are straight lines, crosses and multiple lines, but the more complex include pictographic forms similar to later forms for 'leaf' and 'wing'. Two inscribed bones were excavated at Shijia (Huantai), a

prominent Longshan, Yueshi and Shang walled site with remains of ritual platforms and sacrificial pits. The bones, dated to the Yueshi phase (c. 1700 BC), carry two characters structurally similar to Shang oracle bone writing (Zibo City Cultural Heritage Bureau *et al.* 1997). Finally, twenty-four different types of graphs carved inside *zun* jars were found in the late stratum (1500–1400 BC) of the Early Bronze age Erlitou site. The signs range from single strokes to complex forms, including one resembling the Shang fish pictograph (Li Chi 1976; Institute of Archaeology CASS 1965). Though these inscribed artefacts show the transition from Neolithic graphs to mature Shang writing, more data are needed to complete the picture. Unfortunately, little can be done except to continue investigations of sites likely to hold inscriptional material and to adopt excavation techniques capable of identifying and recovering perishable materials. The latter action is of importance, as the paucity of inscribed material may be due to the vagaries of preservation. It is likely that at the beginning of the second millennium BC, cheaper but perishable writing surfaces, like bamboo and wood, were introduced alongside the writing brush to handle the expanding needs of writing. Archaeology, historical texts and palaeography tell us that at least by the Middle Bronze Age (c. 1500–1200 BC), the ancient Chinese preferred to write with a brush on bamboo or wooden tablets, which were strung together to form bundles of texts (Tsien 1962). These volumes have never been discovered in pre-Shang or Shang contexts, but inscribed tablets have been recovered in burials dating to the last centuries BC and are mentioned in historic texts and Shang inscriptions (Loewe 1993). For instance, the oracle bone and bronze pictographs for ‘volume’ (modern *ce* 冊) represents a bundle of tablets, whereas the pictograph for ‘classic’ (modern *dian* 典) shows a bundle held by a pair of hands. In addition, the pictograph ‘writing/picture’ (modern *shu* 书 or *hua* 画) is made up of a hand holding a brush and producing a pattern (Fig. 15). These characters reinforce the notion that oracle bone and bronze inscriptions were niche documents and that the abrupt appearance of mature writing in the late Shang has more to do with the sudden decision to record royal divinations on durable bone surface than with the sudden invention of writing. Though the meaning of this event should not be discounted, given the partial record available early evidence should not be dismissed.

Conclusion

Having analysed the graphic evidence from the Chinese Late Neolithic and the competing hypotheses for

the origins of Chinese writing, in light of recent writing theory and available archaeological and palaeographic evidence, it is feasible to conclude that the Dawenkou, Liangzhu and Shijiahe graphs represent the beginning thread of the Chinese writing tradition. The forms and usage patterns of Dawenkou, Liangzhu, Shijiahe graphs suggest that, like other examples of early writing from other parts of the globe, these signs could perform simple recording tasks without having to handle sound or grammar. Ultimately, the question is not whether the Dawenkou, Liangzhu, Shijiahe signs are ‘writing’ (this depends on the inclusiveness of the definition), but whether or not they constitute the beginning of a thread that led to Chinese writing. Since they appear to be closely linked to the mature writing of the Shang period, I believe they do.

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