

“The Products of Minds as Well as of Hands”: Production of Prestige Goods in the Neolithic and Early State Periods of China



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THE EARLIEST PRESTIGE ITEMS, as the first indications of emerging social inequality, although rarely found, may be traced back to as early as the Middle Palaeolithic. During the Upper Palaeolithic prestige goods were produced more frequently and in larger quantities, and have ever since played a significant role in the development of social inequalities in human history (for a review see Hayden 2001: 235–243, 254–255).

The production of prestige goods is associated with craft specialization developing out of political strategies. Therefore, variables involved in the production and distribution of prestige items can provide insight into the political structure of a given society (for a review see Costin 2001). Increased labor input in prestige-item production often correlates with greater political centralization, because more centralized societies tend to use more complex prestige items, many of which require significant labor investment and sophisticated techniques to produce them (Peregrine 1991). Manufacturing high-status goods out of materials derived from distant sources would give a great amount of potential control to the elite class (Helms 1979, 1988; Renfrew and Shennan 1982). By limiting access to knowledge, skill, tools, and raw material, the elite can gain economic and political advantage (Costin 1998*a*; Peregrine 1991). By monopolizing the production process of prestige goods, the elite may achieve great control of the society economically and symbolically (Earle 1987).

This article examines these propositions based on data from production processes of prestige goods in ancient China, focusing on procurement of raw material, and on manufacture, redistribution, and consumption of ritual objects. By revealing the changes in the relationship between the production of ritual objects and sociopolitical complexity from the Neolithic to the Bronze Age, I argue that some fundamental political and economic changes, which occurred during the Erlitou period, indicate the transition from pre-state to state societies in North China.

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STUDIES OF RITUAL OBJECTS AND SOCIAL COMPLEXITY IN CHINA

In general there were three major categories of ritual objects in the early Bronze Age of China: jades, finely made pottery, and bronze vessels. Jades and high-quality ceramics were used as prestige goods throughout the Neolithic period, while bronzes first appeared as small tools, weapons, and ornaments in the late Neolithic, mainly during the third millennium B.C., and then became ritual objects in Erlitou Phase III (c. 1700 B.C.). The earliest bronze ritual objects took the forms of certain ceramic vessels, particularly white wares, which were mainly used for drinking. Jade artifacts and ritual ceramics and bronzes may have had different functions in ritual ceremonies and conveyed different social meanings.

Previous studies on these ritual objects may be described as having five general approaches. The first is formal, focusing on typology, classification, and spatial distribution of artifacts (e.g., Gao and Shao 1981; Institute of Archaeology 1985, 1994; Loehr 1968; Ren 1995; Xia 1986). The second approach is functional, emphasizing symbolic meanings of certain forms and decorative motifs (e.g., Chang 1983, 1989; Childs-Johnson 1988; Guo 1997; Mou 1997; Nelson 1995; Wu 1985). These two methods, dealing mainly with the consumption of finished products, have been the dominant research strategies during the past decades. The third approach is material, which, although not new, has drawn great attention from scholars in recent years. It investigates the mineral components and the provenance of raw materials of prestige goods, including bronze alloys (Jin 2000; Jin et al. 1995; Shih 1955), jade (Jing and Wen 1996; Wen and Jing 1992, 1997), and pottery (e.g., Chen et al. 1999; Xu et al. 2000). The fourth research theme is technological, especially focusing on metal mining (e.g., Golas 1999) and bronze casting (e.g., Bagley 1987; Barnard 1961, 1993; Chase 1983; Franklin 1983). The fifth approach, which is new to the field, is political economy. It explores topics such as the procurement of raw material, craft specialization, and distribution, particularly focusing on jade (Jiang 1999; Okamura 1995) and bronze (Liu and Chen 2000, 2002, n.d.). These studies have greatly advanced our knowledge on the processes of elite-goods production—from raw materials to finished products, which in turn, enhanced our understanding of the function of these artifacts. These data also have laid the foundation for further synthetic research on prestige-goods production, which is the focus of this article.

This study systematically investigates several issues, some of which have been briefly addressed in previous studies: Who was engaged in producing elite items? How were these products distributed? How did the mode of production change through time? To what extent did such changes relate to sociopolitical transformation from the pre-state to state in China? By tracing the developmental trajectories of three types of ritual objects—jade, white pottery, and bronze—I will discuss production and distribution processes in relation to broad sociopolitical contexts dating to the Neolithic, Erlitou, and early Shang (Erligang) periods, although the late Shang period is also included when relevant. Table 1 provides the chronology for the archaeological cultures mentioned in this study. Special attention is paid to the transition from the Neolithic to Erlitou period, the nature of which has recently become the topic of hot debate concerning the origins of state and civilization in China.

Most scholars adopt two extreme positions, polarizing this debate. On one

TABLE I. CHRONOLOGY OF MAJOR ARCHAEOLOGICAL CULTURES MENTIONED IN THE TEXT

B.C.	UP. YELLOW R.	MID. YELLOW R.	LOW. YELLOW R.	MID. YANGZI R.	LOW. YANGZI R.	LIAO R.
1000	Regional cultures	Shang			Regional cultures	Upper Xiajiadian
1500		Erlitou	Yueshi	Regional culture & Erlitou	Maqiao	Low Xiajiadian
2000	Qijia	Late Longshan	Longshan	Shijiahe	Liangzhu	Xiaoheyuan
2500	Majiayao	Early Longshan	Dawenkou	Qujialing		
3000	Yangshao	Yangshao		Beixin	Daxi	Songze
4000			Majiabang			
5000	Dadiwan	Peiligang	Houli	Chengbeixi		Zhaobaogou
6000						Xinglongwa
6500						

side, archaeologists and historians have argued that the Erlitou Culture was the first civilization or state in China (e.g., Chang 1986:307, 1999:71–73; Du 1991; Li 1997; Liu and Chen 2002; Yan 1997; Zhao 1987; Zou 1980). On the other side, scholars, including many in the West, have questioned if Erlitou ever developed into a level of social organization higher than a complex chiefdom (e.g., Allen 1984; Bagley 1999:131; Keightley 1983; Linduff 1998:629; Railey 1999:178–186; Thorp 1991). Many factors account for the differing views, including different attitudes among scholars over textual records, various definitions employed for the idea of the state, and, most importantly, the paucity of hard evidence for the social organization of the ancient societies in question. The last factor is partly attributable to the lack of a research strategy in Chinese archaeology for employing theoretical and methodological approaches in the study of social change. This article, therefore, attempts to develop analytical models that may be tested in future studies. It is hoped that by modeling changes that took place in prestige production through time, we will be able to gain a better understanding of the nature of the sociopolitical transition during the Erlitou period.

JADE

Neolithic Jades

Prehistoric jade artifacts have been found in large numbers over a broad region in Mainland China, dating throughout the entire Neolithic period (Yun and Mou 1992*b*). The distribution of jade artifacts can be divided into seven regions (cf. Ren 1995; Wen and Jing 1992: fig.1). The first is the Liao River region, which witnessed the earliest development of jade use in China and is dated to the Xinglongwa Culture (c. 6200–5400 B.C.) (Institute of Archaeology 1997). Craftsmanship reached its height during the late Hongshan Culture (c. 3500–3000 B.C.), exemplified at the Niuheliang site (Fig. 1:1) (e.g., Guo 1997; Liaoning Institute of Archaeology 1997*c*). The second is the Lake Tai region in the lower Yangzi River, where jade objects first occurred in the Majiabang and Songze Cultures (c. 5000–3200 B.C.) and became prevalent in the Liangzhu Culture (c. 3200–2000 B.C.) (e.g., Huang 1992; Sun 1993; Yang 1996). The third area is the middle Yangzi River, where jades appeared in the middle Daxi and Qujialing Cultures (c. 4000–2600 B.C.), and flourished during the Shijiahe Culture (c. 2600–2000 B.C.) (Wang 1996*a*). The fourth is the Haidai region in Shandong, where jade objects are mainly dated to the Dawenkou and Longshan Cultures (c. 4300–2000 B.C.) (Shao 1995). The fifth is the middle Yellow River, where jades have been primarily unearthed from several sites belonging to the Longshan Culture (c. 2600–2000 B.C.), including Taosi in southern Shanxi (Gao 2001; Shanxi Team 1980) and Shimao and Lushanmao in north Shaanxi (Dai 1988; Ji 1984) (Fig. 1:4–6). The sixth region is the upper Yellow River, in which jade objects have been found in several Qijia Culture sites (c. 2400–1900 B.C.) (Ye 1997). The seventh is the Lingnan region in southeast China, represented by jades from several Shixia Culture sites (c. 2800–2400 B.C.) (Zhu 1999) (Fig. 1:13). Among these areas, the first four share early jade manufacture dates, each had particular stylistic traditions, suggesting that these were the centers from which jade-making

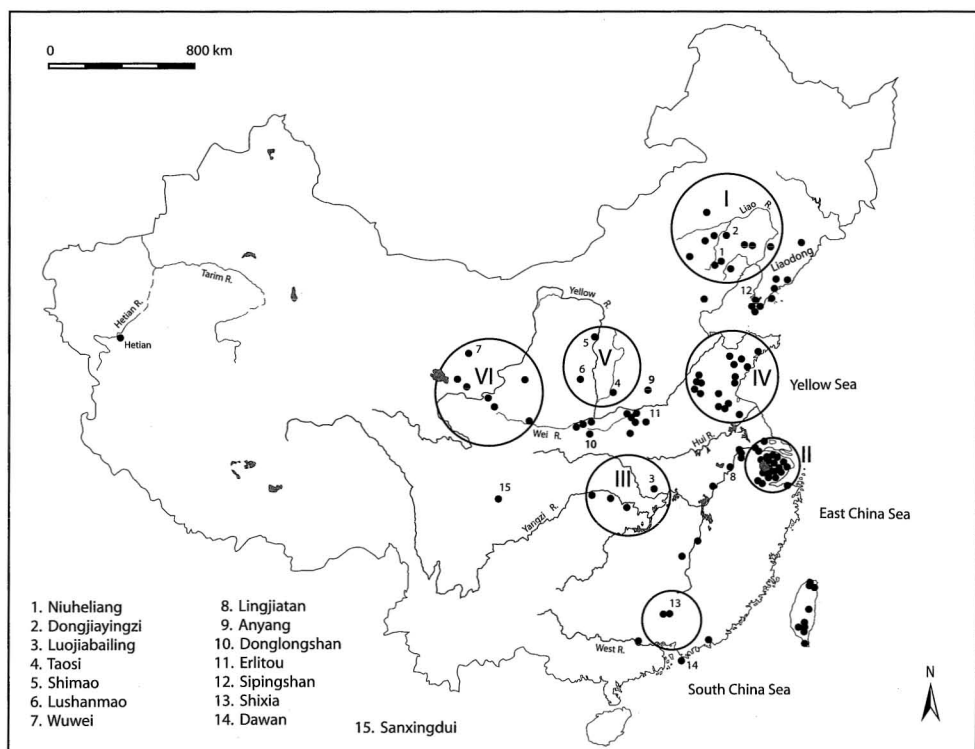


Fig. 1. Locations of major sites yielding jades dating to the Neolithic and early Bronze Age, and seven regions where jade ritual objects were intensively distributed: I: Liao River; II: Lake Tai; III: middle Yangtze River; IV: Haidai; V: middle Yellow River; VI: upper Yellow River; VII: Lingnan (locations of jade sites partially based on Wen and Jing 1992: fig. 1).

was first developed. In contrast, the last three regions were late in the chronology and were associated with jade forms similar to those from earlier jade-making centers, indicating diffusion and influence from other cultures.

Microscopic analysis of use-wear on jade is lacking in China. Classifying objects into different categories is primarily based on inferred functions. Employing the results from previous studies (e.g., Ren 1995; Xia 1986), I divide the jade artifacts into four categories for analytical purposes. The first category includes various forms of personal ornaments such as hairpins, headdresses, and pendants. The second category consists of objects probably used as ritual paraphernalia, such as *bi* disks, *cong* tubes, and *yazhang* tablets (see below). The third comprises tools and weapons, such as axes, adzes, chisels, knives, and spindle whorls. Some of the tools, such as axes and knives, however, were elaborately crafted with no sign of use-wear, and may have functioned as ritual objects. The fourth category is burial jade (*zangyu*) in shapes of disks, awls, or beads, which have been found as covering the eyes, plugging the nostrils, ears, or mouth, or held in the hand of the deceased. This study focuses primarily on the second category: ritual items.

Most jades have been unearthed from mortuary contexts. In the regions where jade manufacture had a long history of development, early jade objects were primarily personal ornaments, showing little correlation with social status or wealth

of individual burials. The middle fourth millennium B.C., however, witnessed a major change, as jade (with or without other types of prestige goods such as pottery) became associated mainly with well-furnished burials, and ritual items dominated jade assemblages in the Hongshan, Dawenkou, and Liangzhu Cultures (cf. Ren 1995). The occurrence of this new form of jade object coincided with the emergence of elite groups during the late Neolithic period, indicating that jade ritual items were closely associated with the development of social inequality and control of ritual power.

Different jade styles may have originally derived from various regional cultures, and some were later adopted by other cultures during the late Neolithic and Bronze Age (Yun and Mou 1992a). Three of the transregionally reoccurring jade forms are *cong* tubes, *bi* disks (Huang 1992: figs. 9, 10), and *yazhang* tablets (Deng 1994: fig. 3) (Fig. 2). The *cong*, originating from the Liangzhu Culture, refers to a tube with a square cross section and a cylindrical, hollow interior (Fig. 2:1–5). Many were engraved with face masks on the exterior surface (Fig. 2:1, 5). The *bi*, a round disk with a hole in the center (Fig. 2:6–11), may have been invented by the people in the lower Yangzi River region. The original meanings of the Neolithic *cong* and *bi* have been lost, although later texts suggested that they represented cosmological concepts of the ancient world view: the circular-shaped heaven and the square-shaped earth. Archaeologists have advanced numerous speculations about the functions and symbolism of these jades in recent years. Some believe that the Neolithic *bi* disks may have indeed symbolized heaven, and that the *cong* tube may have embodied religious power and facilitated the ritual communication between humans and the supernatural world (e.g., Chang 1989; James 1991); while others argue that the link between the heaven–earth concept and jade *cong* and *bi* may have developed in later historical times. It is likely that these two types of jade carried spiritual meanings of some kind and were used for communication with supernatural beings in ritual ceremonies during the Neolithic period (e.g., Mou 1997). The earliest examples of *yazhang* tablets have been found in the Shangdong Longshan culture (Zhang 1994), where *yazhang* may have been used as scepters in certain ceremonies. A bronze figurine, found at Sanxingdui in Sichuan and dating to the Shang period (Sichuan Provincial Institute of Archaeology 1999:247), depicts a kneeling human figure holding a *yazhang* in ritual context. Examples of *yazhang* have been found in locations as far as Southeast Asia, such as Dawan in Hong Kong (Fig. 1:15) and several sites in Viet Nam (Deng 1994) (Fig. 2:12–15).

Some similar zoomorphic forms and decorative motifs have also been found cross-regionally. For example, carved turtles have been found at Hongshan Culture sites (Liaoning Institute of Archaeology 1997a, 1997b), Liangzhu Culture sites (Fanshan Archaeology Team 1988), and Lingjiatan in Anhui (Anhui Institute of Cultural Relics 1989) (Fig. 1 for location; Fig. 2:16–18 for image). Turtle shells have been used as ritual paraphernalia since the early Neolithic period (Gao and Shao 1986; Henan Institute of Cultural Relics 1999b: 966–983) and later became a primary material for divination, known as plastronomy, during the Shang dynasty (Keightley 1978). A traditional belief in the divine nature of the turtle may have been attributable to its shape: the turtle has a round, domed upper shell and flat under shell. These resemble the shape of heaven and earth as believed in ancient China (Allan 1991:103–111), the same concept which may have also

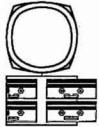

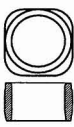
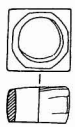
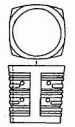
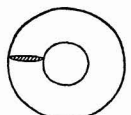


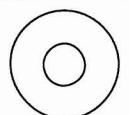
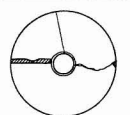
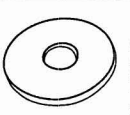



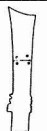

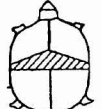
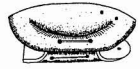




	Liao River (Hongshan)	Lake Tai (Liangzhu)	Middle & Lower Yangzi R.	Lower Yellow R. (Longshan)	Middle Yellow R. (Longshan)	Upper Yellow R. (Qijia)	Lingnan (Shixia & other)
Cong		 Wujin 1		 Dantu 2	 Taosi 3	 Shizhaocun 4	 Shixia 5
Bi	 Niuhefang 6	 Sidun 7	 Lingjiatan 8		 Lushanmao 9	 Shizhaocun 10	 Shixia 11
Yazhang		 Anxi 12		 Simatai 13	 Shimao 14		 Dawan 15
Turtle	 Hutougou 16	 Fanshan 17	 Lingjiatan 18				
Bird	 Fuxingdi 19	 Yaoshan 20	 Shijiahe 21	 Shandong 22			

Fig. 2. Comparison of jade objects with similar motifs and forms, including *cong* tubes, *bi* disks, *yazhang* tablets, turtles, and birds, distributed in different Neolithic and early Bronze Age cultures (for references see Deng 1994; Huang 1992; Institute of Archaeology 1999a; Liaoning Institute of Archaeology 1997c; Mou and Yun 1992; J. Wang 1996).

embodied the jade *cong* and *bi*. Bird imageries depicted on jade and pottery have been commonly found in Neolithic cultures mostly along the eastern coast regions (Fig. 2:19–22), perhaps indicating a shared belief in bird ancestral deities among people who were later referred to as Eastern Yi (Wu 1985). Evidently, the recurring jade forms and decorative motifs in distant communities may indicate shared belief systems and ritual actions.

To understand the wide distribution of similar forms of ritual objects in relation to shared belief systems, I use Mary Helms' (1992:320) concept about vertical and horizontal dimensions of ritual power.

The vertical cosmological dimension is attained by techniques of spiritual travel in which the soul or intangible 'essence' of the actor effects communication, perhaps by 'travelling' itself to otherworldly levels of spheres or, alternatively, by asking deities to do the travelling to the supplicant. . . . In contrast, distant horizontal cosmological locales are generally reached and explored by physical travel in which members of the home society bodily venture forth or foreigners come as visitors to the home center.

Chinese Neolithic jade objects, especially those that embodied cosmological significance, may be seen as material manifestations of such vertical and horizontal dimensions of ritual power. The knowledge of the cosmos may have been held by ritual practitioners who were able to communicate not only with vertically oriented deities through ritual performance, but also horizontally oriented domains from which exotic knowledge of the cosmos, along with symbolic art forms, could be obtained through contact with distant cultures. However, we do not see a single locale as the source from which all symbolic representations derived in Neolithic China. There does not seem to have existed a horizon of artistic styles on a transregional level, like that observed in the Olmec and Chavín horizons in the New World (Willey 1962). This suggests that cosmological power was not centralized in Neolithic China. There were many regional centers that may have contributed to the formation of various belief systems, and the few shared jade forms and decorative motifs may have resulted from diffusion, borrowing, and amalgamations among regional belief systems (Fig. 3).

An important dimension in the control of ritual power is the production of ritual items—who made them? A traditional view assumed a sharp distinction between consumers and producers of prestige goods, represented by elite patrons and commoner artisans who were categorized as attached craftsmen (Costin 1991; Earle 1987). Similarly in the study of the elite goods in China, it is commonly believed that the Neolithic craftsmen as a social sector were instructed by the elites to produce certain forms of prestige items (e.g., Nelson 1995:14), and during the Shang dynasty the jade workers were slaves (e.g., Yang 1992:9). This paradigm, however, has been challenged in recent years. Studies on artisan identities in many ancient civilizations—including in Hawai'i and Mesopotamia, and among the Aztec, Maya, and Inka—have suggested that artisans, who often enjoy elite status, may be empowered by a variety of means to determine or influence their own conditions of employment, compensation, and social standing (for a review see Costin 1998*b*, 2001:282–284). This new perspective is enlightening for the investigation of the processes of jade production in Neolithic China.

In most cases the procurement of raw material may have taken place within the region where jade artifacts were distributed. In the lower Yangzi River region,

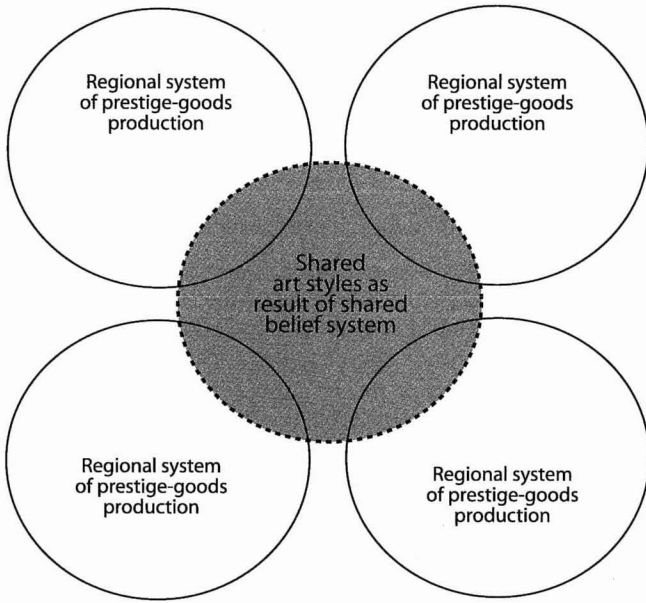


Fig. 3. Model of horizontal dimension of ritual power, indicated by the shared artistic styles (such as jade forms and motifs), which may have resulted from diffusion, borrowing, and amalgamations among regional belief systems.

for example, mineral similarities have been identified between some jade products made of nephrite from the Songze and Liangzhu Cultures and nephrite deposits at Xiaomeiling (Fig. 4). The Xiaomeiling nephrite deposits were formed in contact zones between granite masses of the Mesozoic era and magnesian marble of the late Permian period, and similar geological conditions are prevalent in China. Although archaeologists have not been able to pinpoint the locations of ancient jade mines, there is great potential to locate local resources for the Neolithic jade products (Jing and Wen 1996; Wen and Jing 1993).

The manufacture of jade objects may have also been carried out locally in many jade-using cultures, indicated by sites associated with unfinished products, debris, and wasters, which match the products distributed in the same regions. Such sites have been found at Dongjiayingzi in Aohan, Inner Mongolia, dating to the Hongshan Culture (Liu and Dong 1997:33) (Fig. 1:2); Luojiabailing in Tianmen, Hubei, belonging to the Shijiahe Culture (Hubei Institute of Archaeology and Institute of Archaeology CASS 1994) (Fig. 1:3); Wenjiatun, Guojia-cun, and Xishan developed in the Longshan period in the southernmost part of Liaodong peninsula (Okamura 1995); Haizang Park in Wuwei, Gansu, of the Qijia Culture (Liang and Liu 1993) (Fig. 1:7); and several locations attributed to the Liangzhu Culture (see below).

Furthermore, the elite may have been personally involved in the craftsmanship of prestige goods, as elite individuals were in many other cultures (Costin and Wright 1998), especially in those chiefdom or middle-range societies where ritual knowledge and performance were paramount in achieving and maintaining status (Spielmann 1998). This argument can be best supported by burial patterns of the Liangzhu Culture in the Lake Tai region. Among a few hundred Liangzhu sites discovered, more than 80 have yielded jade (Z. Wang 1996). Many elite tombs contained large numbers of unfinished jade objects from which two characteristics

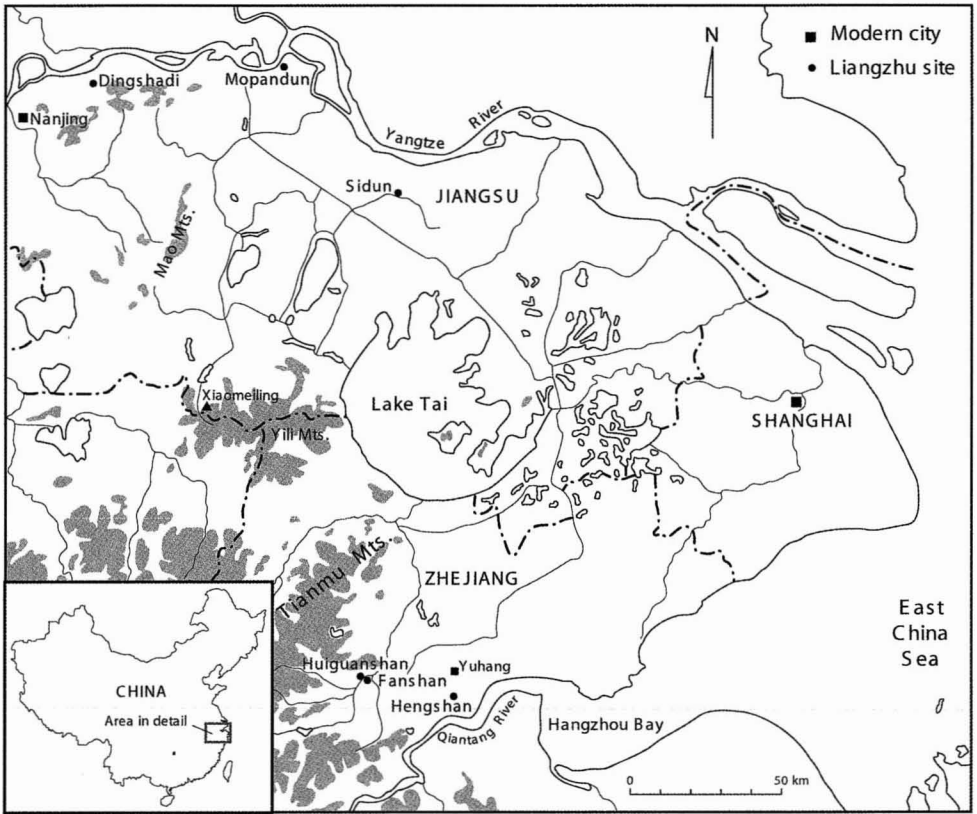


Fig. 4. Location of Liangzhu sites that yielded evidence of jade manufacture in relation to mountains and rivers.

are observable. One or two types of jade artifacts, such as *bi* disks, *cong* tubes, or *yue* axes, dominated the jade assemblage in each tomb. Among these jades a few were finished products, while most were unfinished (Jiang 1997). At Fanshan in Yuhang, for instance, burials M23 and M14 contained 54 and 26 *bi* disks, respectively; and M20 yielded 42 *bi* disks and 25 *yue* axes (Fig. 5). In each tomb a few finely made examples were placed on the chest or abdomen area of the deceased, while most items of these types, only roughly manufactured, were piled up near the legs (Fanshan Archaeology Team 1988: fig. 11). These unfinished objects have uneven thicknesses, damaged edges, and unpolished surfaces with traces of cutting, sawing, grinding, and drilling. Unfinished items from the same burial seem to be made of the same raw material, suggesting they derived from the same provenience (Fanshan Archaeology Team 1988: 8–9). Similarly, Burial M3 at Sidun in Jiangsu yielded 33 *cong* tubes. Only one was finely made, while the rest were unfinished (Nanjing Museum 1984). The same situation has been observed in Burial M4 at Huiguanshan and Burial M2 at Hengshan, both in Zhejiang, which contained 49 and 133 *yue* axes, respectively (Cultural Relics Management of Yuhang County in Zhejiang 1996; Zhejiang Institute of Archaeology 1997). Each tomb had one elaborately made jade *yue* and a large number of unfinished ones

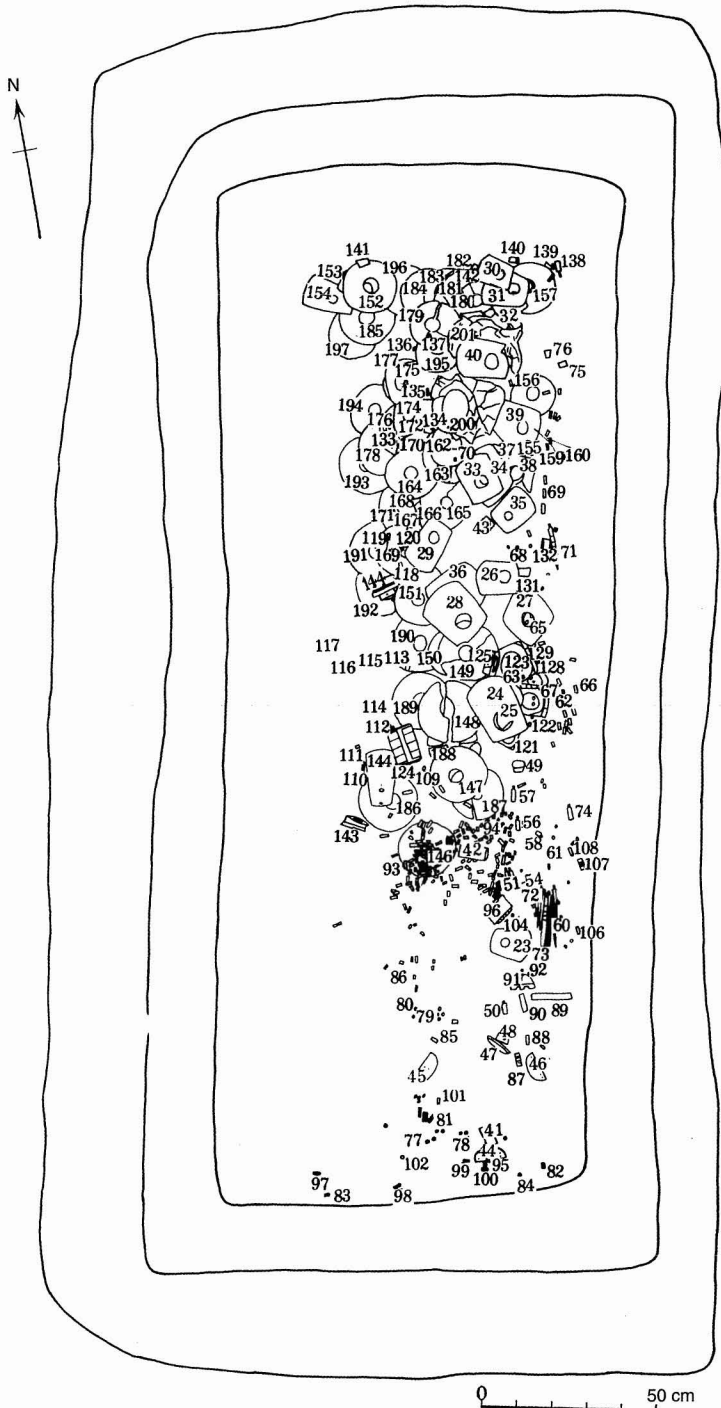


Fig. 5. Burial M20 from the Fanshan site in Zhejiang, Liangzhu Culture. A large quantity of jade objects were associated with the tomb, including 42 *bi* disks and 25 *yue* axes: Jade *bi*: 4, 146–152, 155–157, 162–165, 168–172, 176–197; stone *yue*: 23–40, 153, 154, 166, 167, 174, 175 (after Fanshan Archaeology Team 1988: fig. 6).

made of stone. The large quantities of particular forms of unfinished jade artifacts in elite tombs suggest not only that these high-status individuals may have been the artisans engaged in jade manufacture, but also that making particular forms of jade items may have become highly specialized among the elite artisans.

Many Liangzhu settlements may have been involved in jade production and developed a certain degree of specialization in manufacturing processes, which include quarrying, cutting or sawing, grinding, drilling, polishing, and engraving. Chert drills, grinding stones, and unfinished jade products in different stages of manufacture have been found together at several sites along the southern bank of the Yangzi River (e.g., Mopandun and Daijiashan in Dantu and Dingshadi in Jurong, all in Jiangsu Province) (Fig. 4), which may have been the locations engaged in production of jade objects and jade-making tools (Nanjing Museum 2001; Zhang 2000:62–64).

Unfinished jade objects and wasters have been found at several sites near Anxi (Jiang 1999:179) and Yuhang (Mou 1989), dating to the Liangzhu Culture. A *bi* disk covered with a layer of sand was unearthed from Burial M1 at Sidun; the sand may have been used for jade-making (Nanjing Museum 1981).¹ It has also been observed that elaborately engraved face-mask motifs, which may indicate religious significance, on several jade objects from one tomb (such as Tomb M12 at Fanshan in Yuhang) appear to be identical in style. This suggests that these motifs may have been engraved by one individual, perhaps the tomb occupant, who mastered the highest level of skill in jade crafting and thus had a unique ability to communicate with supernatural beings (Jiang 1999:184). It is notable that most of the jade objects have been unearthed from burials on the western part of the Lake Tai region near the mountain ranges of Tianmu, Yili, and Mao, which may have had jade deposits (Jiang 1999:178). These sites, which have yielded evidence for jade manufacture, are all distributed near mountains and along rivers (Fig. 4), apparently for easy access to the raw material, water, sand, and grinding stones necessary for manufacturing jade objects.

The Liangzhu Culture was by no means the only area where elite groups may have been directly involved in jade manufacture. At Lingjiatan in Hanshan, Anhui (Fig. 1:8), burials with large numbers of jade objects have been found in and surrounding an earth mound. Evidence of jade-making, including a sandstone drill and numerous jade wasters, was associated with several such burials. In Burial M20, for example, 111 jade cores, which are the debris from coring holes on jade objects, were unearthed (Anhui Institute of Cultural Relics 1999). In Liaodong, jade wasters have been unearthed from a large piled-stone tomb (M37) at Sipingshan (Fig. 1:12), near the above-mentioned jade production site at Wenjiatun (Okamura 1995; Sumida et al. 1997).

Furthermore, a Qijia Culture site at Huangniangniangtai in Wuwei, Gansu (Fig. 1:7), has yielded the largest quantity of jade artifacts, dominated by *bi* disks, in the upper Yellow River region. Among 62 tombs unearthed in the fourth season of excavation, 24 tombs were associated with more than 260 jade and stone ritual objects, ranging from 1 to 84 in number from each tomb, and 20 tombs had jade or stone wasters. The best furnished tomb (M48), which contained an adult male in the center accompanied by two females on the sides, was associated with 83 stone *bi* disks, 1 jade pendant, 304 small pieces of jade and stone wasters, and 10 pottery vessels (Gansu Museum 1978). All of the *bi* disks were placed near the

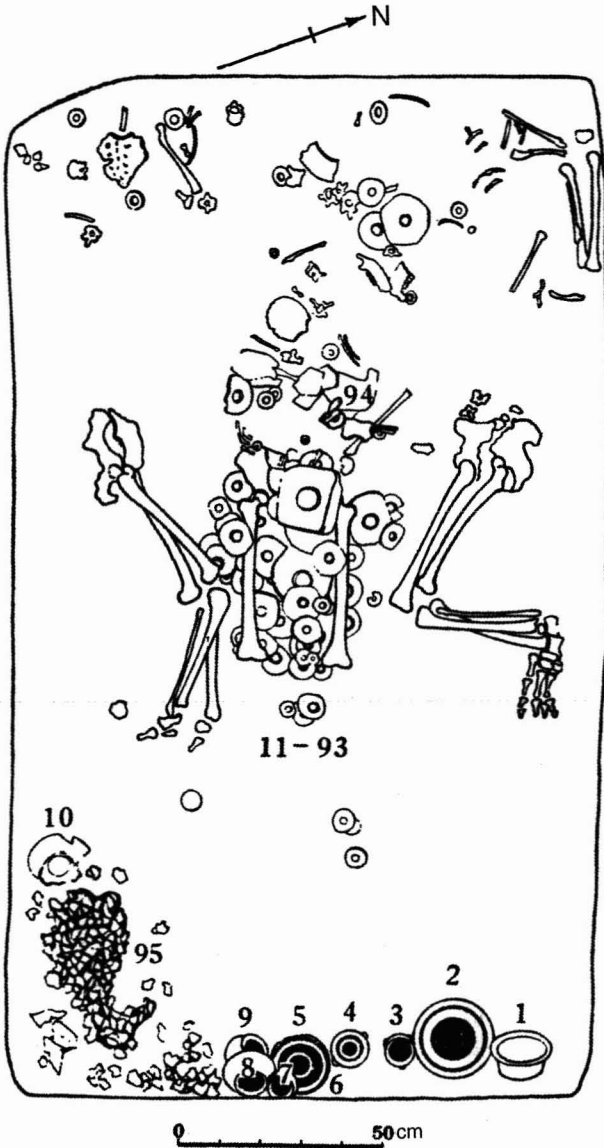


Fig. 6. Qijia Culture tomb M48 associated with jade/stone artifacts and wasters from Huangniangniangtai in Wuwei, Gansu: 1-10: pottery vessels; 11-93: stone *bi* disks; 94: jade *huang* pendant; 95: stone wasters (after Gansu Museum 1978: fig. 17).

male skeleton, while the females were buried in flexed positions toward the male (Fig. 6). Tombs with similar features, that of a male buried with one or two females, have been found in several Qijia Culture cemeteries. This mortuary custom was previously interpreted as women being sacrificed for their husbands in a patriarchal society (Gansu Museum 1978). A recent study, however, suggests that some skeletons in these tombs were incomplete, suggesting that these were secondary burials of family members who died at different times (Ye 1997). At any rate, it is clear that men may have enjoyed higher social status than women, as the latter were usually placed in subordinate positions in these tombs.

It is also notable that the Huangniangniangtai burial site is about 1.5 km from the jade manufacturing site at Haizang Park, suggesting that the two sites may have been used by the same community specializing in stone and jade manufacture (Ye 1997). The stone ritual items from Qijia Culture sites are mostly made of marble, which perhaps derived from local sources, but the jade materials from Haizang Park vary in color, and some of them may have come from further west in Hetian, Xinjiang (Liang and Liu 1993; Ye 1997). The fine Hetian jades, which have been highly valued in China since antiquity, find their way to the Central Plains during the late Shang dynasty (see below). Wuwei is situated at a node on an important transportation route, the Gansu corridor, which connected Central Asia with eastern China. It remains to be investigated, however, if this jade manufacturing center also played a role in transporting jade material and finished products to the eastern destinations during the prehistoric period.

Compared with the jades from Liangzhu burials, Qijia jade and stone objects are less elaborate in form and fewer in type. At Huangniangniangtai more than one-third of the burials were associated with jade/stone ritual items. Although a few copper tools were unearthed from the site, they were not associated with the most elaborate burials. This indicates that prestige-goods production was primarily concerned with jade/stone ritual items rather than metal in this region at the time. A large percentage of well-furnished burials at Huangniangniangtai suggest that this community may have developed a lower-level social hierarchy, and social inequality was minimal (cf. Hayden 2001:257). It is notable that the Qijia Culture was one of the early metal-using regions in China (see below), but it was the traditional jade/stone ritual items, in addition to pottery, that may have functioned as the major status symbols among elite groups in this culture.

To sum up, it may have been the same elite groups who held the cosmological knowledge, had access to the raw material, and controlled the production and distribution of finished products. In this way the elite individuals may have constructed power networks by monopolizing different stages of prestige-goods production. This is not to impose a universal model on all Neolithic cultures in China, but ample evidence suggests that this pattern may explain many situations.

If prestige goods were essential for maintaining a political power structure in a society, the decline of such society, to some extent, may have disrupted elite-goods production. This situation may have contributed to the decline of the Liangzhu Culture, which was characterized by the massive production of jade objects during its peak, and mysteriously came to the end in the late third millennium B.C.

Liangzhu's disappearance has raised many speculations. Some have argued that natural disasters, such as flood and marine transgression, were the major causes (Wang et al. 1996; Wu 1988); others believe that internal social crises embedded in excessive energy expenditure in the production of jade and the construction of large burial mounds were responsible (e.g., Hsu 1999; Zhao 1999). It has been noticed, however, that the material culture of Liangzhu did not simply vanish, since some pottery and tools in Liangzhu styles continued in use in the following Maqiao Culture. It was the ritual goods, especially jade, elite tombs, and large earth mounds that disappeared (Huang and Sun 1983; Li 1989; Zhu 1996). The descendents of Liangzhu, therefore, appear to have lost interest in supporting a deified elite group that relied on jade ritual paraphernalia to create and maintain

power. This interpretation may explain the collapse of the Liangzhu social complex, but does not explain the reason for the decline of prestige-goods production after the collapse.

The Liangzhu collapse may have been caused by multiple factors, not fully understood. However, since the ritual power of the Liangzhu elite in spiritual communication was primarily embodied in the jade objects, two situations may have jeopardized such power and led to the disappearance of a jade-producing elite group. First, the jade resources that were easy to obtain with prehistoric techniques may have become exhausted by the end of the Liangzhu Culture. Second, the elite failed to bring prosperity to the communities by communicating with supernatural beings; this could be caused by human-induced environmental deterioration or prolonged natural disasters. The intensive jade mining during the Liangzhu period may have led to a scarcity of jade resources.² This situation may have been associated with a long-lasting environmental degradation, such as flooding and marine transgression at the end of third millennium B.C. These conditions may have shook Liangzhu peoples' belief in the divine power of the elite, therefore, the Maqiao communities, the survivors of the Liangzhu Culture, may have changed to an entirely different social organization. In archaeological records, this new society seems to be much less elaborate in material culture and focused little on prestige-goods production.

The collapse of a complex society due to climatic change and human-induced ecological degradation is exemplified by the decline of the Classic Maya in Mesoamerica. In this case, it was the elite material culture and urban center, rather than the Mayan population, that disappeared from archaeological records (e.g., Curtis and Hodell 1996; Freter 1994). Although there are many differences between the Maya and Liangzhu in terms of political organization and causes of collapse, they share a commonality in that the decline of elite power was related to the fragility of an ideology-based social system.

Erlitou Jades

The Erlitou Culture (c. 1900–1500 B.C.), centered at Erlitou in the Yiluo Basin, Henan (Fig. 1:11), witnessed a rapid social transformation with the emergence of the first urban center. Surveys and excavations at Erlitou over the past 40 years have yielded much information suggesting that this settlement, covering an area of 300 ha (Erlitou Working Team 2001), was the largest settlement in China at this time. The site was a political, economic, and ritual center, occupied by a palace/temple complex, residential areas, burials of elite and commoners, and craft workshops producing bronze, ceramic, and bone objects (Institute of Archaeology 1999b). The mode of prestige-goods production seems to have been different from the previous period.

Jades, many in traditional forms such as the *cong* tube, *yue* axe, and *yazhang* tablet, continued to be used as elite goods, and jade craftsmen seem to be preoccupied with making large, thin, flat, rectangular-shaped pointed and sharp objects, such as knives and *ge* halberds (Yang 1997). Within the Erlitou Culture, most jade examples have been found in elite burials at the Erlitou site. The use of jade, therefore, seems to have become a privilege of elite groups with the highest social statuses. Since the Yiluo region lacked raw jade material, it may have been

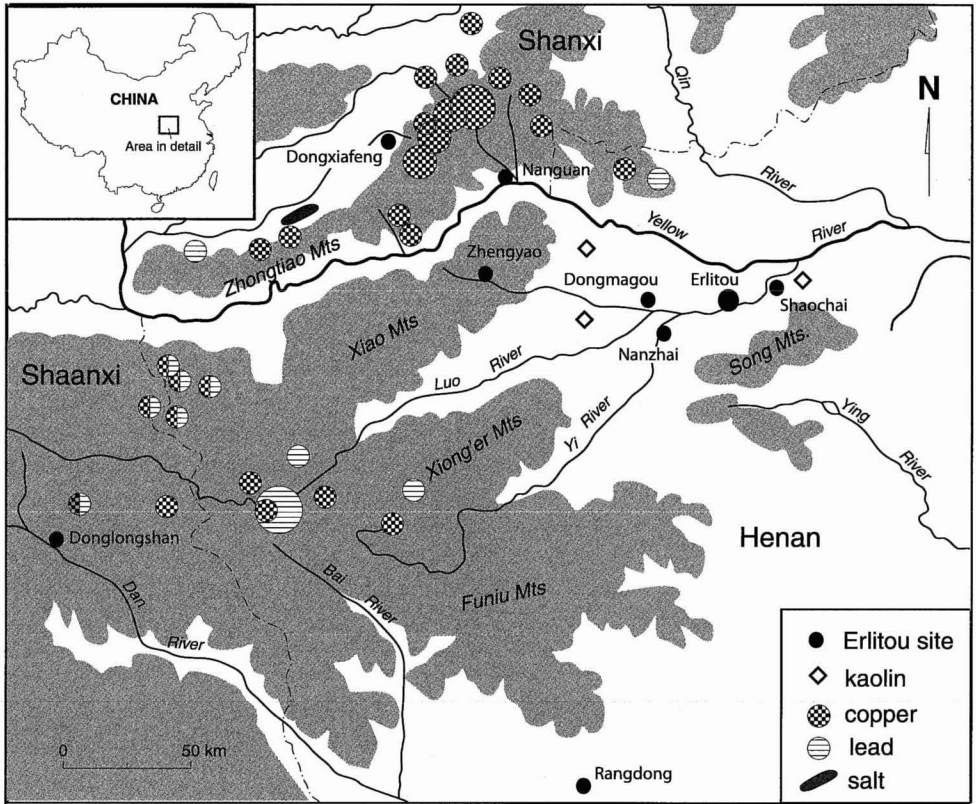


Fig. 7. Locations of major Erlitou sites discussed in the text and the distribution of key non-agricultural resources in the Yiluo Basin and surrounding regions.

obtained elsewhere. Evidence for the manufacture of jade objects is absent at Erlitou to date. However, burials associated with stone/jade ritual objects and core wasters have been unearthed from the strata dating to the early Erlitou period at the Donglongshan site in Shangzhou, southern Shaanxi (Yang 2000) (Fig. 1:10; Fig. 7).³ This site (20 ha), more than 270 km west of Erlitou, yielded a material assemblage with indigenous characteristics combined with Erlitou influence dating to the early Erlitou period, which was then replaced by Erlitou material during the late Erlitou period (Yang 2000). It is notable that the Shangzhou area is known for jade and semiprecious stones (Fang 1995:157). Located in this resource-rich mountainous region, Donglongshan may have been a center of jade production during the Erlitou period. At this point, however, it remains to be investigated if the elaborate jades from Erlitou were indeed produced at Donglongshan. Further research needs to be conducted to compare jade materials from Erlitou, Donglongshan, and jade sources in Shangzhou and surrounding areas.

Shang Jades

We have a much better archaeological record on jade objects for the Shang dynasty, especially the late Shang (Yinxu phase; c. 1250–1046 B.C.). More than

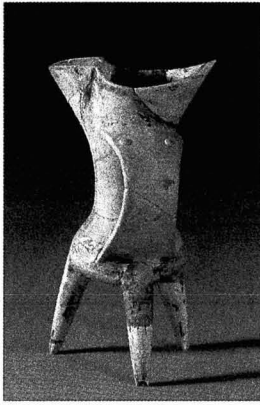
2000 jade artifacts were unearthed before 1986 at Yinxu, a capital city of the late Shang in Anyang, Henan (Institute of Archaeology 1994:323) (Fig. 1:9). Archaeologists have also identified remains of the manufacture of stone and jade objects within the palace/temple complex at Yinxu. Two houses were found containing more than 600 unfinished stone objects including many *zhang* blades, 260 grinding stones, and some finished jade and stone artifacts. Excavators suggest that these houses were associated with jade manufacturing specializing in grinding and polishing (Institute of Archaeology 1994:76–77). Since Xiaotun was not near any jade sources, production must have relied on imported raw material. It has been suggested that the Shang people at Yinxu may have obtained jade from Hetian in Xinjiang, Nanyang, in southern Henan, and Xiuyan in Liaoning (Institute of Archaeology 1994:324). Based on the location of the jade workshop and types of artifacts found, the Shang elite individuals seem to have been engaged in manufacturing stone/jade ritual items, at least in the final stages of production.

Many Anyang-style stone or jade items have been found in South China, such as the elite burial at Dayangzhou in Jiangxi (Jiangxi Institute of Cultural Relics 1997:141–159) and ritual pits at Sanxingdui in Sichuan (Sichuan Provincial Institute of Archaeology 1999:428–432, 447). Local ethnic groups dominated these regions, as the artifact assemblages were characterized mainly by regional non-Shang elements. It is possible that stone or jade ritual objects made at Yinxu were elite items used not only for indicating religious power and political hierarchy within the Shang area, but also indicate long-distance trade with polities in the periphery for their prestige goods, such as metal and turtle shells, which were available in abundance in the south and highly demanded by the late Shang royal court in the north.

In summary, during the Neolithic period jade may have been one of the most important materials used to express ritual power, social status, and wealth in many cultures, especially in the Liangzhu and Hongshan Cultures. Jade production, however, may have been decentralized, primarily operating on a regional level. Coinciding with the rise of urbanism in the Erlitou period and especially in the late Shang, jade production appears to have become a transregional operation that involved obtaining raw material from the periphery. Distribution may have been more centralized. At this time, the elite also made ritual objects from other materials, such as white pottery and bronze. As a result, jade lost its position as the most significant prestige material in the archaeological record.

WHITE POTTERY

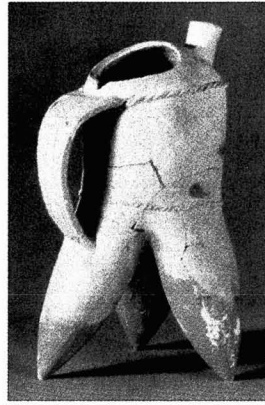
White pottery was made of kaolinite clay, the same material used for making porcelain in the historical period. In replication experiments, Dawenkou white pottery vessels were fired in temperatures up to 1200 °C (Shandong Bureau of Cultural Relics Management 1974:51), which is higher than that for making ordinary pottery. The most recurrent form of white pottery was the *gui* vessel in the Neolithic, and the earliest examples of this kind date to the late Dawenkou period (c. 3000–2600 B.C.) (Gao and Shao 1981:434). Most *gui* vessels were made of red paste and white ones were rare. The distribution of *gui* vessels during the late Neolithic period expanded to a much larger region including Shandong, Jiangsu, Hubei, Henan, Shaanxi, Zhejiang, Jiangxi, and Fujian (Gao and Shao 1981:451).



A1



A2



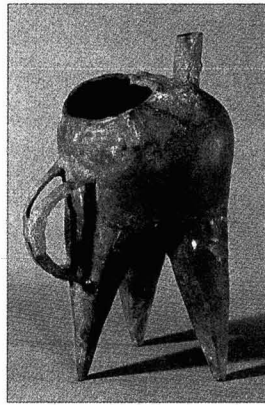
A3



B1



B2



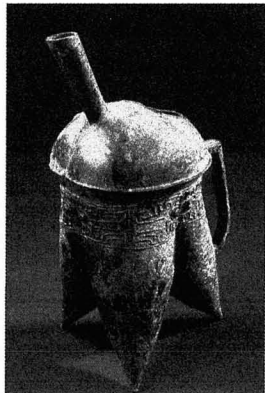
B3



C1



C2



C3

Fig. 8. Comparison of white pottery ritual vessels with their bronze counterparts: A: Major forms of white pottery vessels, A1: *jue* (18.6 cm high); A2 *gui* (26.1 cm high); A3 *he* (28 cm high); all from Erlitou Phase II (after Institute of Archaeology 1995: figs. 5, 54, 122). B: Major forms of the earliest bronze vessels corresponding to white pottery, B1: *jue* (14.8 cm high); B2: *jia* (30 cm high); B3: *he* (24.5 cm high); all from Erlitou Phase III (after Institute of Archaeology 1993: figs. 92, 92-1, 93-2). C: Major forms of Erligang bronze vessels, C1: *jue* (15.2 cm high); C2: *jia* (24.5 cm high); C3: *he* (21 cm high); all from Zhengzhou dating to the Erligang period (after Ma 1996: figs. 63, 82, 101).

In Henan, only black or red pottery *gui* vessels have been found. Not until the Erlitou period did white pottery enter the inventory of prestige goods in the Yiluo region.

Four Erlitou sites in the Yiluo region have yielded the most examples of white pottery, including Erlitou (300 ha), the primary center (Erlitou Working Team 2001:32; Institute of Archaeology 1999b); Shaochai (60 ha) in Gongyi (Henan Institute of Cultural Relics 1993); Nanzhai (25 ha) in Yichuan (Henan Institute of Cultural Relics 1996); and Dongmagou (5 ha) in Luoyang (Luoyang Museum 1978) (Fig. 7). The three most recurrent types of white pottery vessels found at these sites are *jue*, *gui*, and *he* (Fig. 8:A1–3) (Institute of Archaeology 1995:32, 34). The *gui* and *he* vessels were used for heating liquid and pouring water or alcoholic beverages, since some examples from Nanzhai have traces of smoke on the external surfaces near the legs (Henan Institute of Cultural Relics 1996). The *jue* vessels were probably used as drinking goblets. Together, these vessels facilitated ritual ceremony, most likely for ancestor worship, which may have involved drinking. They were apparently different from jade ritual objects, which may have been used primarily for ceremonial display in ritual performance.

White pottery vessels have been found in two contexts. Most have been unearthed from the palatial area and elite burials at Erlitou, while others have been found in burials at regional centers (Shaochai and Nanzhai), or relatively large sites (e.g., Dongmagou). Among these sites, Shaochai yielded the earliest examples of the white *gui* vessels, dating to Erlitou Phase I (Henan Institute of Cultural Relics 1993), which preceded the corresponding form of bronze *jia* vessels (Fig. 8:B2).

The Yiluo region has kaolinite deposits, but in only a few locations. Erlitou, situated in the center of the Yiluo floodplain, was not close to any of those deposits. Three above-mentioned sites, Shaochai, Nanzhai, and Dongmagou, which yielded burials containing white pottery, were located within a 25-km radius from Erlitou to the east, south, and west, respectively. They were also situated close to kaolinite deposits, where porcelain production was carried out in later historic times (Fig. 7) (for the distribution of porcelain kilns see Yang 1991:44–45). Remains of tools and kilns for making tricolored, white, and green porcelain wares have been found scattered along an area 2-km long on the north side of the Wuluo River near Shaochai, dating to the North Song dynasty (A.D. 960–1127) (Cao and Sun 1990). Eight kilns for making tricolored porcelain dating to the Tang dynasty (A.D. 618–907) have also been found near Huangye, about 20 km northeast of Shaochai (Guo and Liu 1977; Liu 1981). The clay used at these kiln sites was probably obtained from kaolinite deposits in the nearby mountainous areas (Gongxian County Chronicle Editorial Board 1991:65). Shaochai is located on the eastern bank of the Yiluo River, and may have functioned as a transportation node to control the water channel leading to Erlitou. Given the fact that the earliest white pottery in the Yiluo region was found at Shaochai, this site seems to be the most important location associated with the production or transportation of white pottery during the Erlitou period.

The elite at Erlitou may not have directly controlled the production of white pottery, but received the vessels as tribute from the production area, and then redistributed them as gifts to other regional centers. However, this hypothesis remains to be tested archaeologically.

White pottery vessels seem to have been most prevalent during Phase II of the Erlitou Culture (c. 1800–1700 B.C.), occurring in burials that were not necessarily large in size. But during Phases III and IV (c. 1700–1500 B.C.), while ritual bronze vessels appeared in elite burials, white ware vessels began to be finished with gray slips and disappeared from small burials in the Yiluo region (Henan Institute of Cultural Relics 1996:41; Yuan 1996:65; Zheng 1995). This phenomenon may suggest an increase of institutionalized social stratification during the Erlitou period. It is notable that at Shaochai, Nanzhai, and Dongmagou, each relatively rich tomb usually contained a group of ceramics including one or two white pottery vessels (usually one *he* and one *jue*), but no bronze ritual objects. At Erlitou, in contrast, white pottery *he* and *jue* sometimes coexisted with bronze *he* and *jue* in elite burials. This shows that the use of ritual vessels corresponded to social hierarchy in the mortuary practices of the Erlitou Culture. While the white pottery vessels were distributed among higher and lower elite groups, bronze ritual objects seem to have been reserved for individuals with the highest social statuses.

It is notable that white ritual pottery was likely distributed beyond the Yiluo Basin, but many have not been identified by archaeologists because of the gray slip that covered the white paste. Fine-paste gray ritual vessels, some notably fired in high temperatures,⁴ have been reported from several Erlitou sites outside the Yiluo region, including Zhengyao in Mianchi, western Henan (Henan Institute of Cultural Relics 1987), Yuanqu and Dongxiafeng in southern Shanxi (Institute of Archaeology et al. 1988; National Museum of Chinese History and Shanxi Institute of Archaeology 1996), and Rangdong in Dengzhou, southern Henan (Henan Institute of Cultural Relics 1999a)⁵ (see Fig. 7 for locations). These examples, dating to Erlitou Phase III, are strikingly similar in form to their counterparts at Erlitou (Fig. 9). Further study is needed in order to confirm that these gray ritual vessels distributed outside the Yiluo region were indeed made of kaolinite. Phase III was a period when the Erlitou cultural expansion reached its peak, especially toward southern Shanxi (Liu and Chen 2000, 2002). Such cultural expansion most likely involves organized population movement to resource-rich regions (see discussion below).

The regional distributions of these ritual vessels also vary, with the highest concentration in the Yiluo Basin, and vessels becoming scarce in the surrounding regions. This pattern seems to suggest that these vessels were likely made in the Yiluo region and redistributed as status symbols to the lesser elite in the periphery. The striking similarity in style among these objects cross-regionally points to a shared ritual practice and cultural value.

White pottery disappeared from the inventory of prestige goods during the early Shang (Erligang phase). It was probably replaced by bronze ritual vessels, which functioned similarly in ceremonial activities. White pottery reappears in large and medium elite burials at Yinxi (Institute of Archaeology 1994:228–237), but as one of many types of prestige goods in the late Shang.

It is also important to understand the techniques for making white pottery. Erlitou white pottery vessels are characterized by three hollow or solid legs; this form was derived from the Dawenkou white *gui* vessels in Shandong, which also have hollow legs. According to a replication experiment, Dawenkou *gui* were manufactured with outer molds in order to form a highly standardized vessels

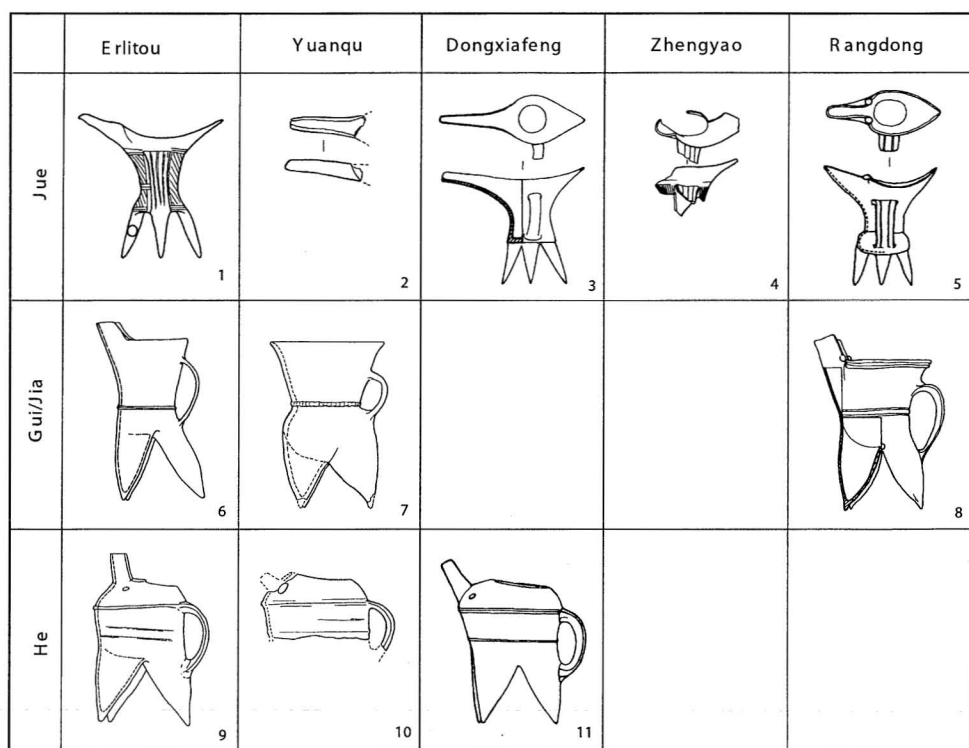


Fig. 9. Comparison of pottery ritual vessels from Erlitou and sites outside the Yiluo Basin (for site locations see Fig. 7), dating to Erlitou Phase III or later. The stylistic similarities among vessels of each type over distant regions suggest a common cultural origin.

shape (Wei 1999). In the middle Yellow River region pottery vessels with hollow legs, including *gui* and *he*, were also very common from the late Neolithic to Erlitou period, but they were fashioned with inner molds (Li 1996; Li and Zhang 1998). The three legs for each vessel were either made individually then joined together, or made as a single piece by positioning three inner leg molds in place before coiling the clay around them (Li 1996:13–17). Such ceramic molding techniques may have been the precursor for the further development of multi-piece mold bronze-casting techniques (see below).

BRONZES

The origin of metallurgy in China has been a matter of debate for decades, primarily dominated by two groups of scholars who argue either for cultural diffusion from the west or for independent innovation (for a review see Linduff 2000; Muhly 1988). Compared to its elusive origins, the development of early metallurgy is much better understood, thanks to archaeological discoveries made in China during recent decades. Archaeological data demonstrate that copper and bronze objects first appeared in the late Neolithic period dating to the third millennium B.C., with the earliest examples from the Majiayao Culture (c. 3100–

2700 B.C.) in northwest China. The metal objects dating to the second half of the third millennium B.C. are scattered over the Yellow River region, but most are concentrated in the northwest (for a review of site locations and more references see Linduff 1998; Linduff et al. 2000: map 1). The earliest metal artifacts found in China are mainly copper and bronze personal ornaments and utilitarian items including small tools and weapons, which were hammered or cast in simple stone molds. This metallurgy is consistent with those found in other parts of the Old World, especially in the Near East and Central Asia, but China was considerably later than her western counterparts (Muhly 1988).

Interestingly, there is little correlation between the occurrence of early bronze/copper items and the presence of social hierarchy in the archaeological record prior to the second millennium B.C. in China. In the Qijia Culture, as discussed above, the status symbols appearing in rich burials were stone/jade ritual objects and pottery. At the largest Longshan site at Taosi, southern Shanxi, where burial patterns demonstrate pronounced social stratification, elaborate pottery, jade, and wooden artifacts were associated large burials, while a copper bell was found in a small tomb with no other grave goods (Shanxi Team 1984). In the Central Plains of China, bronze did not enter the inventory of prestige goods until an important change took place at the Erlitou site—the emergence of multipiece mold-casting techniques for making high-status ritual vessels.

Erlitou Bronzes

During Phases II and III, the Erlitou site reached the peak of its development. The site appears to have been divided into several functional areas where different activities were carried out. The palatial zone, about 7.5 ha, was located in the center of the site. It included a few dozen rammed-earth foundations, probably the remains of palaces and temples (Yang 2001:33–36). In the southern part of the site, an area of 1 ha was occupied by a bronze foundry, indicated by thick deposits of slag, remains of crucibles, clay molds, and the remains of casting processes (Institute of Archaeology 1999*b*; Thorp 1991; Zhao 1987). The clay molds found in the bronze foundry included those for casting tools, weapons, and ritual vessels. Some molds were used for making very large vessels (up to 36 cm in rim diameter). Others were used for making vessels with various shapes and sophisticated decorations. The corresponding bronze vessels have not been found, probably because only medium and small Erlitou tombs have been excavated to date. These molds indicate that Erlitou bronzes may have been much more spectacular than those seen in the archaeological record (Zheng 1998: 191). Based on archaeological evidence, this bronze foundry was the only locale in which bronze ritual vessels were cast during the Erlitou period.

The multipiece-mold technique seems to have been invented especially for making bronze ritual vessels, which became the most important symbol of political, religious, and economic power throughout the Bronze Age of China (Chang 1983, 1991). The exact time when this technology developed is not certain. Although the bronze foundry dates to as early as Phase II (c. 1800–1700 B.C.), the first bronze vessels did not occur before Phase III (c. 1700–1600 B.C.). The ritual function of metal works distinguished Erlitou from the rest of China as well as other parts of the world, as the latter regions continued to make a variety of

items including utilitarian and ornamental objects. Technologically, multipiece-mold methods also marked the departure of metallurgy at Erlitou from the surrounding regions. Instead of relying on hardening metal by cold-working, softening it by annealing, or casting it with single- or double-stone molds, artisans made a bronze vessel to fit a specific application by changing the physical properties of the metal (developing bronze alloys of copper, tin, and lead), and by using a sophisticated assemblage of clay inner and outer molds (Barnard 1961, 1975; Chase 1983; Gettens 1969).

The emergence of bronze ritual vessels cast with multipiece-mold techniques may have been related to the production of ceramics, especially white pottery. The earliest examples of bronze ritual vessels at Erlitou occurred in four forms: *jue*, *jia*, *he*, and the *ding* tripod (Institute of Archaeology 1993:116–120) (Fig. 8:B1–3), which, except for the *ding*, remarkably resemble in form the above-mentioned white pottery vessels (Fig. 8:A1–3).

There have been different opinions regarding the origins of the forms of the earliest bronze ritual vessels. Several archaeologists have noticed that pottery *gui*, *jue*, and *he* vessels are formally similar to, and chronologically predate, their bronze counterparts, and therefore, the latter was derived from the former (Du 1992; Gao and Shao 1981; Zou 1979:19, 1980:147–157). Fitzgerald-Huber, on the other hand, has suggested that the copper pouring vessels from Bactria in Central Asia exhibit the closest affinity with the bronze *jue* found at Erlitou, since they both have long pouring channels (Fitzgerald-Huber 1995:60–63). However, the earliest examples of bronze *jue*, characterized by relatively short pouring channels (Institute of Archaeology 1975) (Fig. 8:B1), are quite distinctive from the Bactrian vessels whose pouring channel is long, but resembles the white pottery *jue* in style (Fig. 8:A1). Since white pottery vessels were highly developed in Erlitou Phase II, existing prior to all corresponding types of bronze ritual vessels, it is more likely that the forms of Erlitou bronze ritual vessels were inspired within the indigenous cultural context. The stylistic continuity of these ritual vessels also suggests that similar forms of ritual ceremonies involving drinking continued.

Moreover, as discussed above, pottery vessels with hollow legs, which characterized the *jia* and *he* vessels, were manufactured with either inner molds or outer molds during the Neolithic and Bronze Age. These technologies are similar in principle to, but less sophisticated than, the multipiece-mold casting techniques, which use both inner and outer molds. As Franklin (1983) has discussed, technological processes of manufacture can be characterized as holistic and prescriptive as two ends of a spectrum. The holistic process, such as raising and chasing a bronze bowl, involves a single, step-wise progression toward the final object. In contrast, prescriptive processes, such as multipiece-mold techniques, refer to a production sequence in which “the image of the final product stands at the beginning of the production process. A considerable degree of abstraction and a thorough technical understanding is required to perceive a division of the process into unit processes dictated by the technical requirements of production” (Franklin 1983:96). The prescriptive production, according to Franklin, requires a higher level of division of labor and greater control of material resources, knowledge, and people than the holistic production does. She has also suggested that bronze casting may not have been the only prescriptive production process developed in China, and that ceramic production, which was closely related to the beginning of metallurgy,

may have gone through a process similar to that of the bronze industry (from holistic to prescriptive) at about the same time (Franklin 1983:97–98). Archaeological research on pottery-making techniques, as discussed above, seems to partially support Franklin's hypothesis. Prescriptive production indeed developed in ceramic manufacture, seen in molding techniques, which occurred in the Neolithic period, rather than being simultaneous with the development of metallurgy, as Franklin suggests. It is likely that such ceramic molding technology, widely employed in the middle Yellow River region, was most closely related to the innovation of piece-mold bronze-casting techniques during the Erlitou period.

It is crucial to understand the procurement of metal resources in this early stage of bronze production. Erlitou is situated in an area with no copper sources in its immediate surrounding regions. The nearest copper deposits are found in the Zhongtiao Mountains in southern Shanxi, about 150 km northwest. As discussed elsewhere in detail (Liu and Chen 2000, 2002, n.d.), two regional centers in the Zhongtiao Mountains region, Dongxiafeng in Xiaxian and Nanguan in Yuanqu, may have been the outposts of the Erlitou polity for procuring copper and salt (Fig. 7). Erlitou material culture also expanded toward other regions, such as Donglongshan in southern Shaanxi and Panlongcheng in Hubei (Figs. 7, 11 for site locations). The mountainous region around Donglongshan not only produced jade deposits, as mentioned before, but also was rich in copper, lead, and tin resources (Huo 1993). Similarly, Panlongcheng, which was in close proximity to abundant copper deposits in the middle Yangzi River valley, has yielded evidence of bronze making dating to the Erlitou period (Wang and Chen 1987:74). Copper may have been smelted near the mining areas in the periphery, and elites in the regional centers may have played a major role in obtaining copper ingots (Liu and Chen 2000, 2002, n.d.).

The occurrence of the Erlitou material in these regions appears to vary in nature. In southern Shanxi and southern Shaanxi, Erlitou culture remains became dominant in material assemblages. In Hubei, however, it coexisted with indigenous cultural components. These phenomena may manifest the endeavor made by the Erlitou elite to control metal resources by expanding from the core area to the periphery, although such attempts may not have been equally successful in different regions (Liu and Chen 2000, 2002, n.d.).

It is notable that although bronze casting may have been carried out at several sites outside the Yiluo region, such as Dongxiafeng and Nanguan, only tools and weapons were produced (Liu and Chen 2000). Erlitou is the only locale that yielded evidence for making ritual vessels with piece-mold techniques, as mentioned above. Furthermore, Erlitou bronze vessels seem to have been distributed only at the Erlitou site, while ceramic ritual vessels have been found at several major Erlitou sites across a broad area. These phenomena suggest that the Erlitou rulers monopolized the casting of bronze ritual vessels, and the products were exclusively distributed among elite members with the highest social status. White pottery vessels, whose symbolic status became secondary to the bronzes during Phase III, may have functioned as an important material to create and maintain a larger political-economic system that included both the core and periphery regions.

Bronze ritual vessels were primarily used for ancestor-worship ceremonies. Since the products were divine in nature, the technology and production pro-

cesses may have also been viewed as sacred. Ancestor-worship rituals have functioned as a means of access to political legitimacy since antiquity in China. By controlling the production process of the material for conducting such rituals, the state ruler could ensure their right to rule (Chang 1983; Keightley 2000; Liu 1999, 2000). In addition, making ritual vessels with multipiece-mold techniques required a high degree of technical complexity, labor input, and social organization (Franklin 1983). On the contrary, weapons and tools were made with less sophisticated, single- or double-stone molds. The technology of casting ritual vessels, therefore, may have been specially controlled by a particular group of craftsmen attached to the Erlitou high elite in the primary center.

Erligang Bronzes

If the Erlitou Culture initiated a core-periphery relationship in the procurement of key resources for elite-goods production, it was the Erligang Culture, or the early Shang (c. 1600–1400 B.C.) that developed such a mode of production at an unprecedented level. The early Shang built its capital at Zhengzhou in central Henan. It measured 24 km² in area and had two layers of rammed-earth enclosures to form an inner and outer city. The royal elite lived in the inner city, where archaeologists have found a few dozen rammed-earth house foundations—probably the remains of royal palaces and temples—ranging from 100 m² to 2000 m² (Henan Institute of Cultural Relics 1994:181–184; Pei 1993; Song 1993:53).

Two large bronze foundries have been found in the outer city. One was located at Nanguanwai, about 700 m south of the southern inner-city wall. Within an area of about 0.8 ha, archaeologists have found crucibles, slag, clay molds, remains of casting processes, copper ore, and remains of smelting furnaces. The clay molds from this workshop suggest that the main products were tools, weapons, and ritual vessels, including *ding*, *jue*, *jia*, *li* tripods, *gu* goblets, and *pan* basins (Fig. 10) (Henan Institute of Cultural Relics 1989). The forms and decorations of early Shang bronze vessels found at Zhengzhou and many other sites match the molds unearthed at the Nanguanwai bronze foundry (Henan Institute of Cultural Relics 1999c:93–94), suggesting that Zhengzhou was the center for manufacturing ritual bronzes. Although the Erligang Culture developed more bronze vessel types, the *jue*, *jia*, and *he*, which are stylistically similar to their Erlitou predecessors, were still the most recurrent forms (Fig. 8.C:1–3). Like the Erlitou site during its period, the Nanguanwai bronze foundry is the only location that has yielded hard evidence for the casting of ritual vessels with multipiece-mold techniques during the Erligang period.

Also like Erlitou, the sites involved with bronze metallurgy in the periphery showed no sign of casting vessels during the Erligang period. For instance, Huaizhenfang in Shaanxi was a copper-smelting site (Xi'an Banpo Museum 1981), and Panlongcheng in Hubei apparently carried out bronze production, but no evidence has been found for making bronze ritual vessels (Hubei Provincial Museum and Beijing University 1976; Wang and Chen 1987). Several sites have yielded stone molds for casting bronzes, but the products were limited to weapons and tools. For example, Dongxiafeng and Yuanqu Shangcheng (which was named as Nanguan in the Erlitou period) in southern Shanxi became fortified

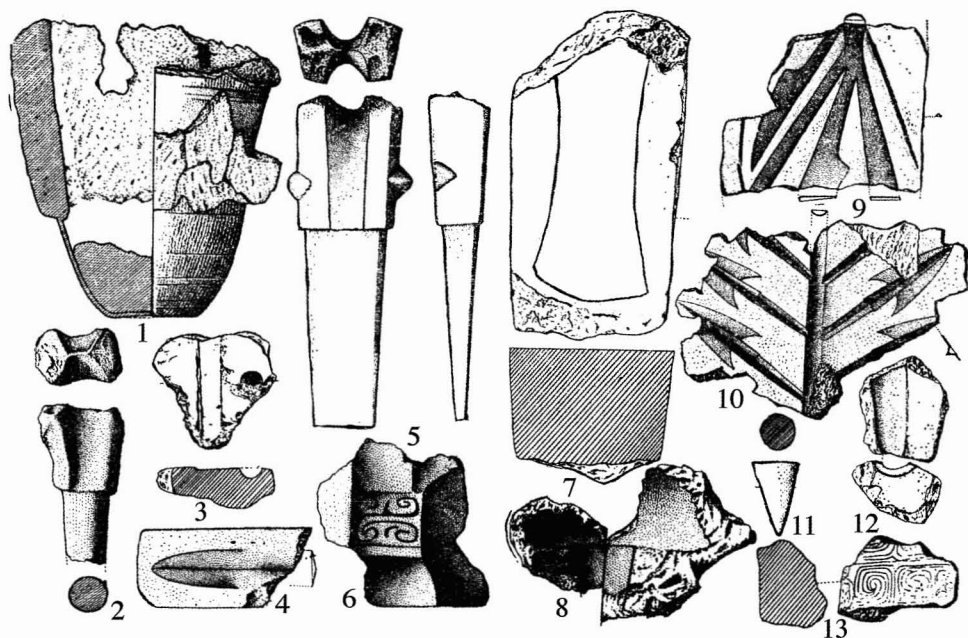


Fig. 10. Clay molds from Nanguanwai bronze foundry at Zhengzhou, indicating that ritual vessels and tools were cast at the capital of the early Shang: 1: *Dakouzun* vessel; 2: clay mold; 3: *ding* outer mold; 4: dagger mold; 5: pick inner mold; 6: *jue* outer mold; 7: axe outer mold; 8: *jia* outer mold; 9: knife mold; 10: arrowhead mold; 11: *li*'s foot mold; 12: *ding*'s foot outer mold; 13: surface decoration mold (not to scale; after Henan Institute of Cultural Relics 1989: fig. 6).

sites, and the bronze production for making tools and weapons, which started during the Erlitou period, continued to be carried out (Institute of Archaeology et al. 1988:208–209; National Museum of Chinese History and Shanxi Institute of Archaeology 1996:146–147). Several sites in more remote peripheral regions, which felt the Shang material influence but may not be necessarily Shang territories, have also yielded stone molds of tools and weapons. These include Shihuishan in Jiangxi (Jiangxi Cultural Relics Working Team 1989), Zaoshi in Hunan (Hunan Institute of Archaeology 1992), and Zhukaigou in Inner Mongolia (Inner Mongolia Institute of Cultural Relics and Ordos Museum 2000: pl. 22.1)⁶ (Fig. 11). Some archaeologists have argued for regional production of ritual bronzes during the Shang dynasty, based on the presence of molds for casting ritual vessels in several provinces (e.g., Xu 1998:231; Yang 1998), but it is important to note these molds all date to periods later than Erligang (for more detailed discussion see Liu and Chen 2002).

Different from Erlitou, however, bronze ritual vessels became much more widespread over many regions during the Erligang period. These vessels appear to be uniform in style, and may have been made at one location—Zhengzhou. Therefore, the primary political centers probably monopolized the production and redistribution of ritual vessels during both the Erlitou and Erligang periods. Such a highly centralized enterprise indicates that the production of bronze ritual vessels may have been state-controlled. From Erlitou to Erligang we also observe a significantly increased scale in the production and distribution of bronze vessels,

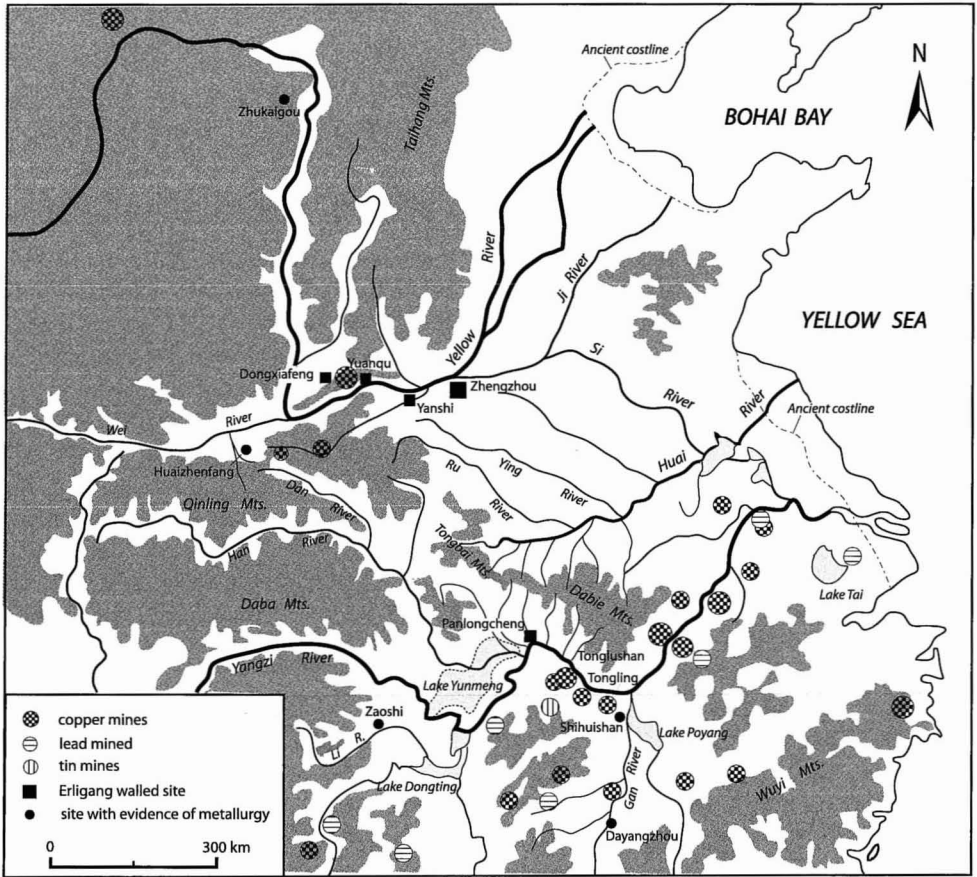


Fig. 11. Locations of sites where bronze production took place during the early Shang–Erligang period. Zhengzhou may have been the only locale for casting bronze ritual objects, while other sites near metal resources may have mainly produced bronze tools and weapons.

relating to a greater control over metal resources, especially those in the middle Yangzi River region, by the state rulers (Liu and Chen 2000, 2002, n.d.).

Similar to Erlitou, Zhengzhou was far from mineral resources, such as copper, tin, and lead, which could be found in the Zhongtiao Mountains in southern Shanxi, Tonglushan in Hubei, Tongling in Jiangxi, and the Qinling Mountains in southern Shaanxi. Near these metal resources, medium-sized regional centers for procuring and transporting the metals have been found at major water transportation nodes. Most of these sites, such as Dongxiafeng, Yuanqu Shangcheng, and Panlongcheng, yielded evidence for bronze metallurgy, as discussed above. Material remains from these sites resembled those from Zhengzhou, suggesting a new expansion of culture, population, and territory from the core to the periphery during the Erligang period (Liu and Chen 2000, 2002).

Copper may have been smelted near the mining areas in the periphery, and elites in the regional centers may have played the major role in obtaining copper ingots. Copper ingots have indeed been found near Daye Lake, which is close to

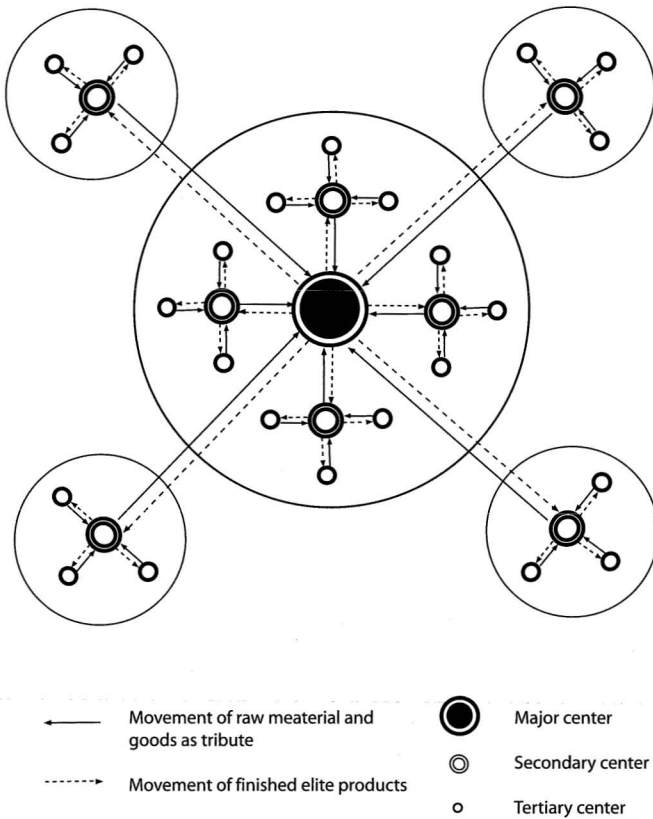


Fig. 12. Tributary model of the political-economic system in the Erlitou and early Shang periods. This system involved the procurement of resources and exotic goods from resource-rich regions and the redistribution of prestige goods from the primary center. Shared trans-regional art styles in prestige goods may have been attributable to such a tribute-redistribution system.

the copper mines at Tonglushan in Hubei (Huangshi City Museum 1999:154). Regional elites may have played the main role in obtaining metal and other prestige goods from the resource-rich periphery, and in transporting them as tribute to Zhengzhou.

Similar to Erlitou, the Erligang royal elite at Zhengzhou may have monopolized not only the production but also the distribution of ritual bronzes. Such control appears to have become increasingly centralized through time, as bronze vessels replaced white pottery as the most prestigious status symbol. When the early Shang rulers expanded their political and economic power to other regions, bronzes became distributed in broader geographic dimensions. Elite burials dating to the Erligang period at Panlongcheng (Hubei Provincial Museum and Beijing University 1976; Wang and Chen 1987) and Yuanqu Shangcheng (National Museum of Chinese History and Shanxi Institute of Archaeology 1996) have yielded bronze vessels that resemble the examples found at Zhengzhou, suggesting that these vessels were derived from the primary center. Bronze vessels were probably redistributed to the regional elite as gifts or reward for tribute. The regional elite, in turn, may have used these goods to construct power networks at a local level. The entire process of production and distribution of bronze ritual objects may have formed a tributary system of early states (Fig. 12) (Liu and Chen 2002). The Erligang bronze production–distribution system may have developed from the preexisting system of the Erlitou Culture, although the Erligang system

had become a much larger operation on a transregional level in terms of geographic area and population involved. In contrast to the shared art forms as a result of diffusion of religious elements in the Neolithic period (Fig. 3), the shared transregional art styles in the early Bronze Age may be attributable to such a tribute-redistribution system employed in prestige-goods production, as well as similar ritual practices involved with ancestor worship.

The quest for bronze alloys seems to have functioned as a driving force underlying the territorial expansion of the Erlitou and Erligang polities. Bronze ritual vessels, in particular, were employed as status symbols that constituted social hierarchy, wealth, and power, and used as the material for ancestor-worship ceremonies, which asserted political legitimacy for the elite (Chang 1983). The symbolic power of bronzes may have been much greater than that of traditional prestige materials such as jade and pottery. Not only were the properties of bronze extremely appealing, as bronze was referred to as “beautiful metal” (*meijin*) in ancient China, but the production processes of bronze ritual objects involved more complex technological and managerial skills, and much more manpower than needed for making other types of elite goods. Therefore, more political, economic, and religious power was associated with this new type of wealth.

This centralized system of production and distribution of ritual bronzes seems to have diminished in the late Shang, when regional bronze styles developed and bronze ritual vessels were cast at several regional centers. This situation can be exemplified by the bronze assemblages unearthed at Dayangzhou in Jiangxi (Jiangxi Institute of Cultural Relics 1997) (Fig. 11) and Sanxingdui in Sichuan (Sichuan Provincial Institute of Archaeology 1999; Zhao 1996) (Fig. 1:15), where locally made bronze artifacts dating to the late Shang showed primarily regional characteristics.

CONCLUSION

The mode of prestige-goods production, which changed through time, was closely related to changes in power structure and belief system, and to the availability of raw material and development or limitation of technology and production processes. From this perspective, prestige goods were “the products of minds as well as of hands,” as Helms (1981:215) has said.

Jade was commonly used for making prestige items in many Neolithic cultures. In several cases jade sources were available within a regional culture, so that production and distribution mainly took place at a regional level, and the elite were directly involved in the production, at least in the final stages. Each of those regional cultures had its own tradition of symbolic style in the use of jade, while particular motifs and shapes were widespread. These shared art forms may have resulted from interregional interaction among ritual practitioners who were both the craftsmen and chiefly figures. Such regionally oriented systems of production and distribution of prestige goods seem to correspond to the segmentary political landscapes of pre-state or chiefdom societies.

This pattern changed when white pottery and ritual bronzes appeared, coinciding with the development of the Erlitou Culture. Jade, white pottery, and bronze formed a multifaceted system of prestige-goods production, which facilitated the construction of a complex sociopolitical hierarchy. No evidence has

been found to suggest that the elite group with the highest social status was directly involved in crafting prestige goods. The producers, therefore, may have become attached craftsmen who were directly controlled by the elite. These craftsmen may have had various social statuses depending on their tasks in the production processes. The extent to which high elite groups monopolized the production and distribution of prestige goods may be used as an indicator for measuring degrees of political centralization. During the Erlitou period, jade and bronze were mainly distributed within the primary center, probably because of the scarcity of the material available to the Erlitou elite. The white pottery ritual vessels, as second-rate prestige goods, may have been used as gifts for awarding the lesser regional elite in order to build broad power networks. The power-building strategy in the Erlitou polity seems to have been closely related to the procurement of key resources for producing prestige goods.

The new mode of production, based on control of resources, transportation routes, technology, and production and distribution processes, was a transregionally oriented tributary system centered at the core during the Erlitou period. This change strongly suggests the development of an administrative system of political-economic control, which was operated in a state-level society.

The Erligang political-economic system was a further integration and elaboration of the Erlitou model. The Erligang Culture witnessed the decline of white pottery and jade, but it developed a highly centralized tributary system in production and distribution of bronze ritual objects, involving many regions stretching from the Yellow River to the middle Yangzi River. Such an increasingly integrated political-economic system, beginning in the Erlitou and reaching its height in the Erligang, can be best described as a territorial state, as defined by Trigger (1993). The decline of such a system in the late Shang indicates the weakening of political power in the core and the rise of regional polities in the periphery.

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NOTES

1. For some general descriptions of jade-making techniques, see Needham (1959:663–669) and Zhou and Zhang (1984).
2. Since jade mining in the lower Yangzi River region was mentioned in later historical records (Zheng 1983), jade resources may not have been exhausted, but became more difficult to obtain.
3. It is not clear exactly where the jade wasters were unearthed from the site, since the report is very brief.
4. It is specified in the Dongxiafeng excavation report that the *jue* and *he* from a burial, which were finely crafted and fired at high temperatures, are the best quality ceramics found dating to Erlitou Phase III at the site (Institute of Archaeology et al. 1988:81–82).
5. A gray *jue* and a black *jia* found in an Erlitou burial at Rangdong were dated to Erlitou Phase II by the excavators (Henan Institute of Cultural Relics 1999a). However, the style of both vessels, especially the knobs on the rims, resemble the bronze *jue* and *jia* dating to Erlitou Phases III and IV (for comparison with Erlitou bronze styles, see Ma 1996:8, 13). Based on their form and color, these two Rangdong ceramic vessels, therefore, should be dated to Erlitou Phase III or IV.

6. Zhukaigou, located on the northwestern frontier of the Shang, demonstrates distinctive regional traditions in material culture with strong influences from the steppes, dating from the late Longshan to the early Shang periods (Linduff 1995). During the early Shang period (Zhukaigou Phase V), however, Zhukaigou was characterized by local cultural traditions mixed with material from the Central Plains in terms of architecture, pottery vessels, clay molds with spiral patterns (*yunleiwun*) for making pottery, and bronze weapons and ritual vessels (Inner Mongolia Institute of Cultural Relics and Ordos Museum 2000:278–286). A considerable proportion of Shang material remains at the site points to close contacts between the local and Shang populations. The Erligang-style remains include both elite and nonelite goods, some occurring in burials. These are likely to manifest the intrusion of an Erligang population into this region, and Zhukaigou may have been a regional center involved in the Shang expansion, which was nevertheless short-lived. The stone mold dating to the early Shang period suggests that this site was a bronze-casting center, which may explain the purpose of the Erligang expansion toward this region.

Zhukaigou may have also functioned as a trade center for communities on the northern frontier to exchange goods with the Central Plains, as Linduff (1998:634–643) has argued. Erligang materials occur in significant proportions at the site, however, and cannot be explained as a few prestige items displayed by the local elite to demonstrate their success in trading with the Shang, as Linduff (1998:634–643) suggests.

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ABSTRACT

This article examines the production of prestige goods in the Neolithic and early Bronze Age (Erlitou and Erligang Cultures) of China, focusing on procurement of raw material, and on manufacture, redistribution, and consumption of ritual objects made of jade, white pottery, and bronze. During the Neolithic period elite groups in several regions may have been directly involved in jade manufacture, which facilitated the formation of interaction networks based on shared cosmological concepts and aesthetic values. The elite enhanced their personal status by controlling ritual power, which was based on access to prestige goods and esoteric knowledge. During the early Bronze Age ritual vessels made of white pottery and bronze entered the inventory of prestige goods. These new types of ritual objects best facilitated the ancestor-worship ceremony, which was the ideological basis for politically legitimizing the ruling lineages. The process of bronze production and distribution, monopolized by the highest elite in the primary center (core), formed the backbone of the political hierarchy, enabling the development of a centralized political economy. These fundamental political and economic changes taking place in the Erlitou Culture indicate the transition from pre-state to state societies in north China. KEYWORDS: prestige goods, ritual objects, Neolithic, Bronze Age, state formation, China.