By the eastern Zhou and imperial eras of Chinese history, a legend had grown celebrating the *ding* 鼎 bronze vessel as the preeminent symbol of state authority and divine power. The mythic theme of “The First Emperor’s [Qin Shi Huangdi’s] Search for the Zhou *Ding*” or “The First Qin Emperor’s Failure to Discover the *Ding*” decorate the main gables of more than several Eastern Han funerary shrines, including Xiaotangshan and Wuliang in Shandong province (Wu 1989: 138, 348). Pre–Han records in the *Zuo zhuan*: *7th year of Duke Zhao* (左传: 昭公七年) as well as the “Geng-zhu” chapter in the *Mozi* (墨子: 耕柱篇) record the significance of this mythic representation. The *Mozi* passage states:

> In ancient times, King Qi of the Xia [Xia Qi Wang] commissioned Feilian to dig minerals in mountains and rivers and to use clay molds, casting the *ding* at Kunwu. He ordered Wengnanyi to divine with the help of the tortoise from Bairuo, saying: “Let the *ding*, when completed, have a square body and four legs. Let them be able to boil without kindling, to hide themselves without being lifted, and to move themselves without being carried so that they will be used for sacrifice at Kunwu.” Yi interpreted the oracle as saying: “The offering has been accepted. . . . When the nine *ding* have been completed, they will be ‘transferred’ down to three kingdoms. When Xia loses them, people of the Yin will possess them, and when people of the Yin lose them, people of the Zhou will possess them.” [italics added]

As maintained in this article, the inspiration for this popular legend of mythic power most likely originated during dynastic Shang times with the first casting in bronze of the monumental, four-legged *ding*. The name *fangding* 方鼎 (square *ding*), traditionally used to refer to four-legged *ding* bronze vessels, is only known in extant Eastern Zhou received texts. The name tetrapod or four-legged is used to distinguish this *ding* type from its other variation and prototype, the tripod or three-legged round-bellied *ding*. The four-legged version was initially square, but evolved into the primarily rectangular shape by late Shang times.
The purpose of this article is not to trace the evolution of big ding from Shang through Eastern Zhou and Han times but to clarify the function of the monumental tetrapod as a symbol of power and divine authority for the king during the Shang era c. 1640–1046 B.C.E. Leaving aside disputes about the existence and characteristics of a preceding “Xia dynasty,” Shang was the earliest undisputed dynastic state in China. It had an extensive territory and ruled from a series of semipermanent capital cities that functioned as centers of political, military, and socioreligious power. Power in the Shang state was transmitted dynastically, with ruling authority passing in hereditary succession from kings to their brothers or sons (Chen 1956; Shima 1975: 78–80; Yang 1976; Yang 1992: 1–14).³ Shang was the name of the ruling house, as documented by references in late Shang bone inscriptions and corroborative archaeological discoveries.⁴ Later Eastern Zhou and Han literary texts sometimes refer to the Shang as Yin, after Yinxu 殷墟 (meaning Yin ruins), the location of the last Shang capital near present-day Anyang.

The Shang period is currently divided archaeologically into early, middle, and late phases. Early Shang is dated to c. 1640–1400 B.C.E. and refers primarily to the Erligang period as represented by site finds at Zhengzhou (Henan 1999, 2003) and related ones such as at Yanshi Shangcheng (Du 2003; Zhang et al. 2005). As clarified by Tang Jigen (1999: 393–420), the middle Shang period (1400–1300 B.C.E.) may be identified with newly excavated material from the northern suburbs of Anyang municipality, known by the type-site Huanbei Huayuanzhuang or Huanbei Shangcheng (Shang City North of the Huan River). Late Shang belongs to c. 1300–1046 B.C.E., the time when Yin served as the dynasty’s last capital.⁵

BACKGROUND

There have been virtually no analyses of big ding in particular or their general cultural context using Shang period evidence to demonstrate how they were used, who used them, and what they signified during Shang times.⁶ In the early 1990s, Yang Baocheng and Liu Semiao brought together various Shang tetrapod ding (fangding) and analyzed them typologically (Yang and Liu 1991: 533–545; Yang 2002: 160–180), but their conclusions did not extend beyond the observation that the largest ones probably belonged to royalty and those of medium and small size probably belonged to other ranking elite. Much earlier, Hayashi Minao assembled a mammoth typological study of bronze vessels throughout the Bronze Age, including tripod and tetrapod ding and their nomenclature (1964: 34–35).

Others have used the five large-scale ding from excavations of the last Shang capital near Anyang as a means of dating and setting straight the chronology of the Shang. For example, Virginia Kane (1976) theorized long ago that one of the large Anyang ding, the Hou Mu Wu tetrapod ding, stylistically postdated the two other large tetrapod ding from the royal M1004 burial at Anyang, accounting for a burial that could postdate King Wu Ding in identifying another late Shang king’s (Wu Yi’s) queen. However, no scholar has looked at the Shang material holistically, utilizing bone inscriptive data together with archaeological and art historical data to put these significant receptacles into perspective regarding Shang cultural interests and belief systems.
Tetrapod *ding* were first cast in bronze during the Shang period by Shang or other peoples under Shang jurisdiction or cultural influence. They first appear in excavations at the early Shang type-site of Erligang in Zhengzhou, Henan (Fig. 1). These vessels are big and heavy and vary in weight and wall thickness; they are the largest type of cast “ritual” objects known thus far from the early Bronze Age (c. 1900–1100 B.C.E.). Traditionally, it has been assumed that bronze vessels were always used ritually because by the end of the Shang period they carried brief inscriptions referring to the owner (a clan or individual) or object of the sacrifice—not a living person, but a deceased royal ancestor known by a posthumous title. Data that have not been used before to document the ritual use of vessels, but are illuminating and well known to oracle bone specialists, come from a series of ongoing *zhouji* 周祭 ancestor cult rites divined about in Shang bone inscriptions. Repeated throughout the year, the rites were addressed to high ancestors, deceased rulers, and consort queens (Chang 1987; Hsü 1968; Tung 1964). “Rituals” and “rites” discussed here thus refer to the use of *ding* and other specialized vessel types for sacrifices during these cyclical rites. Although in this article the *zhouji* will not be comprehensively reviewed, representative inscriptions relating to the use of the *ding* vessel will be introduced to clarify the primary function of bronze vessels in these ongoing cyclical ancestor cult rites during the Shang era. After reviewing the data, other archaeological and paleographic data will be analyzed to reach the principal conclusion that the monumental tetrapod *ding* were produced for the exclusive use of Shang kings and Shang princes eligible for succession to the throne. Thus, their function and primary role were as symbols of divine
authority and royal power that constituted the foundation of the Shang patriarchal system. This symbolic role was the stimulus for the later myth linking ding and dynastic power.

Ding were used for meat offerings for the same reason that jue beaker tripods were used to offer fermented spirits to dead ancestor spirits (Childs-Johnson 1987). The ding had a special function as the only vessel specifically used to prepare and offer meat sacrifices. Below are listed representative inscriptions documenting the rite of offering the flesh of wild and domesticated animals (as well as prisoners of war) in the ding vessel to dead spirits of the Shang royal house:

1. Heji 1306: On the yichou day Bin divined: If the [King] offers meat cut by the yue axe in the ding bronze vessel to Tang [the 7th Shang king], will we [the king and people] encounter danger? 乙丑卜宾贞唐升岁不我鼎亡来鼓?
2. Heji 27529: Crack-making on the xinchou day: Should bundled sacrifice be offered to Ancestress Geng? Should it be meat sacrifice in the ding? 言西卜其束妣庚，其鼎？

3. Heji 30765: Crack-making on the bingyin day: Should . . . the [King] make an offering of [hunted] stag in the ding vessel? Should it be that . . . obtained on the hunt . . .? 病寅卜又 . . . 鼎鹿？其 . . . 获 . . . ?

4. Heji 32125: Crack-making on the jiayin day: Should [the King] on the coming dingsi day offer 30 oxen prepared according to the zu-method in the ding to Fu [Father] Ding? 甲寅贞来丁巳奠鼎于父丁俎三十牛？

5. Heji 38243: Crack-making on the yichou day, Quan divined: Should Qiang [tribesmen] be used in the ding offering to Bi Xin during the Ji ceremony ? 乙丑犬贞鼎羌其用比辛？

Inscriptions involving cyclical sacrifices to the royal registry of kings and queens were typically yes or no inquiries regarding type or number of sacrifice and whether one or the other sacrifice would bring divine assistance or divinely enacted danger. The ding graph 鼎 acts as a verb of sacrifice as dictated by the graph typically having a subject, an indirect object, and a direct object. The subject is usually the king and sometimes another royal house member, the indirect object a deceased king or queen, and the object a sacrifice. The inscriptions above reveal that the royal dead receiving the ding sacrifice included: Tang, the 7th Shang king (no. 1); Fu (Father) Ding, probably Wu Ding, the 27th Shang king (no. 4); Bi (Ancestress) Xin, the consort and first queen of King Wu Ding (no. 5); and Bi (Ancestress) Geng, the consort of the 26th King Xiao Yi (no. 2). These dead kings and queens received sacrifices of various flesh offerings ranging from Qiang prisoners of war to oxen or hunted stag and meat cut and prepared with the yue axe. The various methods of preparing the sacrifices and cooking them over charcoal or fire are revealed in bone inscriptions in connection with the ding sacrifice and archaeological findings of the remains of burnt animal bones in ding bronzes excavated from burials. In inscriptions 1 and 4 above, meat may be hacked with the yue axe or meat may be cut on the zu cutting board.

Although ritual sacrifices to royal ancestors utilizing bronzes can only be documented epigraphically from late Shang bone and bronze inscriptions, the likelihood that such sacrifices and rites originated long before the late Shang period is based on the typological continuity of Erlitou bronze vessel shapes into the early, middle, and late Shang periods. Erlitou or pre-Shang (Xia) (c.1900–1600 B.C.E.) bronzes, representing the first casting of any ritual vessel used in sacrifice, include four types: jue, jia, he, and tripod ding. All four types continued to evolve during Shang times. Studies of one of the vessel types, the jue tripod beaker by Du (2007a) and Childs-Johnson (1987), demonstrate this continuity.

HIGH RADIOGENIC LEAD FROM THE SICHUAN/YUNNAN BORDER AND OTHER METAL SOURCES FROM SOUTHERN YANGZI RIVER VALLEY SITES DURING THE EARLY SHANG PERIOD OF ERLIGANG

In comparison to Shang period bronzes, Erlitou period vessels are relatively small in number and scale. Compared with the explosion in production of bronzes in the immediately succeeding Shang centuries, they seem to represent an experimental phase in bronze casting. According to Li Liu and Xingcan Chen (2003: 36–56), cop-
paper, tin, and other metal resources in the western vicinity of the Yellow River Plain (Zhongtiao Mountains of south Shanxi) were sufficient for the metallurgical needs of the Erlitou state based near Luoyang. As production of bronze vessels rapidly expanded in both number and scale during the Shang era, however, metal resources were sought from far more distant mines, as demonstrated in metal ore types found in the newly discovered Shang-era copper and lead-zinc mines in the northeastern fin-

ger of Yunnan 云南, just across the Sichuan 四川 border south of Chongqing 重庆 near Yibin (Chen et al. 1980; Jin 1990:287, fig. F1.3; Jin 2000:169–194; 2002, 2003:164; 2008:27–29; Zhu and Chang 2002:278). Furthermore, bronzes are scattered at sites along the Yangzi River valley and west up the Han River as far as southern Shaanxi. Clearly, Erligang citizens were seeking natural sources for creating bronze far from their capital in central Henan.

Metallurgy specialists have pointed out distinctive differences in lead radioisotope content between Erlitou and Erligang bronze alloys. High radiogenic lead found at the Sichuan border and mining site near Yibin is an alloy found in bronzes of early Shang date from sites scattered throughout the Yellow and Yangzi River valleys. That this specialized lead type is only found in one place in East Asia, at the Sichuan border site, makes it evident that the early Shang had extensive influence and control far south of their capital in Henan.

The southwestern mines reveal an abundant supply of copper and high radiogenic lead that can be traced metallurgically in bronze vessels that stretch from metropolitan Zhengzhou 鄭州 in Henan south as far as regional Sanxingdui 三星堆 in Sichuan (Jin et al. 1995; Jin et al. 1997:245–252). The deposits are located at several sites in the Yongsan Jinsha 永善金沙 region in northeastern Yunnan, on the southeast bank of the Yangzi River, just southeast of Yibin 宜宾 in Sichuan. The region lies on a road known in later Qin and Tang dynasty accounts as the Wuchi 五尺道 or Shimen 石门路 Road. Running from Yibin to Gejiu 个旧, it passed “through Qingfu 庆符, Yunlian 筠连, Yanjin 盐津, Daguan 大关, Zhaotong 昭通, and Qujing 曲靖” (Jin 1991:287–288, fig. F1.3). By late Neolithic times, cultural exchange between these areas, as well as those farther north in Sichuan and farther south in Yunnan and Southeast Asia, was in full operation (Tong 1983:79). It is clear that by the late Neo-

lithic Longshan and early historic Erlitou periods, cultural exchange in jade and cer-

amic works of art thrived between northern and southern centers, as represented in south Sichuan and ancient Yuenan (modern Vietnam) (Childs-Johnson 1995, 2010; Du 2007b:188–189). Such exchange profoundly stimulated further exploration of natural resources in south China during the subsequent Erligang period.

Exemplary bronzes containing high-radiogenic lead include not only those found at the metropolitan Erligang site, and to a certain extent the late Shang burial of Fu Zi—M5 at Xiaotun, Anyang in the north Yellow River valley—but also southern Yangzi River valley finds located in Anhui 安徽 (Du 2007b:185–187) and Hunan 湖南 (Lu and Liu 1993), at Panlongcheng 盤龍城 in Hubei 湖北, Xin’gan 新干 in Jiangxi 江西 (Barnes et al. 1988; Jin et al. 1995, 1997; Peng 1985), and Sanxingdui in Sichuan (Jin 2000:169–174; 2008:27–29; Jin et al. 1995, 1998a, 1998b; Young et al. 2010:1034–1039).14

In addition to the southwestern mines, copper and lead sources were available at other southern Yangzi River valley sites farther east, including Daye 大冶 in Tonglushan 銅綠山, Hubei; Ruichang 瑞昌 in Tongling 銅陵, Jiangxi; and Tongling 銅陵 in Anhui.15
Erlitou/Xia phase and early Shang period (Jiangxi 1997; Jiangxi et al. 1997; Liu and Chen 2003: 116–130; Lu 2006; Lu and Liu 1993: 118–121; Peng 2010: 25–28; Yang 1992: 364–387; Yang 1998: 238–245). A ceramic potsherd of Erligang date is known from Tonglushan in Hubei (Huangshi 1999) and a ceramic jia of Erligang date, and a $^{14}$C date obtained from a wooden support in the mineshaft are known from Tongling, Ruichang, Jiangxi (Jiangxi and Tongling 1990: 159). Other Erlitou and Erligang period mine remains have been identified at several sites in the Yangxin region near Panlongcheng in Hubei (Hubei 1992). Shang date mining techniques can be reconstructed at several of these sites, including Tongling in Ruichang, Jiangxi and Tonglushan in Daye, Hubei (Lu 2006: 13–31).

Lu (2006) examines shaft construction, tunnel support techniques, mining pit structures, evidence for pulley and lifting techniques, techniques related to underground tunneling and accessing water, and the remains of copper digging tools. Lu and many other scholars maintain that archaeological data from the middle and lower Yangzi valley strongly document Shang state expansion to the southeast during the Erligang early Shang period (Hubei 2001, 1: 501–504; Liu and Chen 2003: 116–130). Trade in metal ores evidently flourished in the southern stretch of China along the Yangzi River valley by the early Shang period, extending well beyond the middle Yangzi River valley, reaching west and south as far as Sanxingdui, Sichuan, just north of Chengdu and farther southwest to Yibin and Yangshan along the Yangzi River. This explosion in mining for copper and lead across southern China was evidently due to a large-scale expansion in the demand for metals at the end of the Erlitou period and very beginning of the Shang (Hubei 2001: 503–504; Jin 2008: 64–71; Lu 2006: 23–29). The exploitation of ores, particularly copper and lead at sites throughout southern China during the early Shang period, was directly connected to heightened military dominance. The sudden extension of the sphere of influence of the early Shang kingdom and its widening access to metal resources parallel the first casting of monumental bronze vessels, in particular four-legged square ding bronzes. As argued below, these came to signify the divinity and authority of the Shang whose hegemonic reign extended throughout the kingdom.

**THE TRIPOD (THREE-LEGGED) AND TETRAPOD (FOUR-LEGGED) DING IN CULTURAL CONTEXT**

The earliest evidence for what would become a link between monumental ding and royal power derives from humble black and gray three-legged (i.e., tripod) ceramic ding. Ceramic tripod ding were made in substantial numbers in the late Neolithic Longshan 龍山 and Yueshi 岳石 periods and throughout the early historic Erlitou period. Most are small, individually sized vessels averaging 14–28 cm tall with 12–25 cm in mouth diameter (Fig. 2, left). During the late Neolithic period the ceramic tripod ding changed from a primarily utilitarian, domestic function to a ritual function, as it began to be used for presenting sacrifices of cooked meat to dead ancestors. The version in bronze (Fig. 2, right), first created during the Erlitou period, was designed for use in the ceremony of feeding meat to dead royalty, as documented in late Shang bone inscriptions listed above. In inscriptions, the ding graph is used as a verb meaning “to offer meat prepared or cooked in the ding vessel” (Fig. 3).

How do we know the tripod bronze ding and not the ceramic prototype is related to the graph for the ding sacrifice? During the Erlitou and Shang periods, bronze tri-
pod ding have two primary variations that differ from their ceramic prototypes—a triangular leg (sometimes in decorative dragon or bird form) and solid in cross section, or tubular and solid (sometimes with a clay core) in cross section. More importantly for our purpose, the major difference between the ceramic and bronze versions of ding vessels is that the former typically do not have prominent handles, whereas the latter typically do (Fig. 2).

The graph that simultaneously signifies the ding 鼎 vessel and meat sacrifice is consistently written pictorially as a vessel with two upright handles attached to a round-shaped bowl on legs. Various early ways of writing the ding graph are shown in Figure 3. Since upright handles do not appear on ding until their adaptation in bronze and the oracle-bone graph pictures a bowl with legs and two vertical handles, it is evident that the Shang bone graph is based on the bronze vessel rather than its utilitarian
ceramic prototype. This points to the importance of the material bronze and the ding type of vessel in the earliest phase of historical Shang.\textsuperscript{19} It also implies that the bronze tripod ding and its monumental tetrapod version were intimately connected with the rise and legitimation of the royal family.

Several small gray clay cups in square and rectangular shapes with four legs survive in the archaeological assemblage of ceramics at Erlitou during Erlitou periods III–IV (c. 1800–1600 B.C.E.), the time during which large-scale architectural halls were constructed and a major bronze casting center was exploited (Du and Xu 2005). Three small square cups vary in measurement from 6 to 9.5 cm tall; another is 25.4 cm tall.\textsuperscript{20} These cups should not be associated or confused with meat-offering ding of the Shang period, however. Although one of the Erlitou cups has upright handles (83YL IV T18 [3]:1, PIII) (Kaogusuo 1999:229, fig. 144:7), it and the others (Henan 2001, 1:134, fig. 84:8; Kaogusuo 1995:363, no. 242; 1999:229, fig. 144:8) are too small to be related to the massively larger (averaging 54–133 cm in height) four-legged ding vessel type from the Shang period. Although tetrapod ding vary in size from large to small, the small size of these cups, their limited number, ceramic material, and probable utilitarian function as a drinking vessel indicate that they were not prototypes of the large-scale bronze tetrapod used for meat sacrifices. In addition to the lack of a typological prototype amidst Erlitou remains, there are no extant large-scale vessels in bronze known archaeologically from the Erlitou period. The origin of the tetrapod ding type in bronze thus may be securely dated to the earliest (Erligang) phase of the Shang period, when such vessels first appear on a massive scale in the archaeological record.

THE SACRIFICIAL VESSEL IN CONNECTION WITH THE SHANG KING’S ROLE AS DIVINE INTERMEDIARY

Not only does the monumental tetrapod ding appear to be a Shang invention, the possession and use of such vessels seem to have been concrete symbols of the divine right to rule granted by Di 帝 (‘‘God,’’ a supreme deity that may be identified with the later Zhou deity Tian 天, ‘‘Sky Power’’).\textsuperscript{21} The Shang king’s divinity is based on his role as diviner or intermediary supreme; he had primary power to identify and communicate with the spirit world of nature, including Di and Di’s especially favored humans, the ancestral Shang queens and kings, as related in late Shang bone inscriptions.\textsuperscript{22} The king alone could bin 宾 or ‘‘receive spirits’’ of Di and dead royalty (Childs-Johnson 1995:82–88; 2008:29–37).\textsuperscript{23} The power to bin is intimately tied to the singular power of the king to communicate with Shang Di and deceased spirits of past rulers. The king ruled as a surrogate for Di throughout the four quarters.\textsuperscript{24} He presided over all rites and administrative affairs, covering divination and sacrifices and all military, political, and economic issues (Chang 1970:263–264; Chen 1956; Shima 1975; Shirakawa 1977; Yang 1992:57–83). There was no distinction between politics and religion in Shang times: the Shang king was the link between that above and that below.\textsuperscript{25} His divine right was affirmed not only by his role as supreme spirit communicator and interpreter but also as chief executioner of all rites addressed to powerful spirits, both natural and human (Chang 1970; Chang 1987; Hsü 1968). As one who ruled from the top of the pyramid, the Shang king was endowed with the most valued commodity of the land—metal resources and the ritual bronze vessel.
Below is presented data to support the hypothesis that only the Shang king and eligible male heirs could possess such royal power symbols as monumental tetrapod ding and use them in sacrifice to royal ancestor spirits. Four types of data are analyzed to corroborate the king’s divine status in association with the monumental tetrapod ding. First, the singularly large size of tetrapod ding and the fact they are associated with royal tombs and related royal contexts is evidence of royal status. A second argument for their royal status is based on evidence that their production was limited to the most elite class of Shang society; this is determined by comparison with bronze vessels excavated from tombs of other ranking elite. Third, inscriptional data provide two more corroborations of royal use of ding, including the presence of the title “Hou Mu 后母” or “Honorable Queen Mother” inscribed on three of the known extant tetrapod ding and the presence of the specialized binome “yiding 異鼎” in bone and bronze inscriptions, with yi (“divinely endowed”) being applied to monumental tetrapod ding.

Tetrapod Ding: The Largest and Heaviest Shang Bronzes Associated with Royal Burials and Caches

Early Shang: Erligang Period (c. 1640–1400 B.C.E.)—Tetrapod ding from the earliest Shang phase, known as the Erligang period, are of very large size and substantial weight. Significantly, the majority derive from the site of Erligang 二里岡 itself, currently recognized as the first capital of the Shang dynasty (Guojia 2001: 142). Monumental tetrapod ding are known from three different caches at the Erligang site in Zhengzhou, Henan. All three cache pits with bronzes seem to have been carefully selected for the purpose of preserving their contents. Excavators have pointed out that preexisting structures such as abandoned wells, storage pits, and refuse pits were adapted for burying (jiaocang keng 窖藏坑) these treasures (Henan 1999: 96, fig. 1-3). Each roughly rectangular pit was designed to contain the ritual bronzes, carefully aligned next to each other, with their mouths facing upward and feet downward. The ding are of different sizes, but all are larger than any other vessels found at these sites (see measurements in Table 1). These earliest known tetrapod ding do not appear individually but as pairs or possibly graduated sets. They may have been paired from their inception, reflecting the Shang penchant for dualistic representations of the balance of power.

Two tetrapods were discovered in 1974 at South Zhangsai 張塞南 Street (also known by the site name Duling) (Fig. 4). This pit was a rectangular cavity 6 m deep designed to contain two large tetrapods (Henan 1999: 75). As noted by the excavators, their placement next to each other with mouths facing upward was intentional (Henan 2001: 513).

Another two, almost identical in size and weight, were discovered in 1982 at the Moslem Grocery, Xiangyang 向陽回族食品厂 (Fig. 5). The Moslem Grocery pit H1 with bronzes was a wide and almost square (1.7 × 1.62 m) cavity, dug 4.6 m deep to accommodate the large pair of tetrapod ding and eleven other bronze vessels (Henan 1999: 83, fig. 58). As emphasized by the excavators, the design of pit and placement of ritual bronzes in this cache was purposeful (Henan 1999: 93).

The pit at South Shuncheng Street had two periods of usage. The early period level was filled in with earth containing ceramic potsherds datable to an early Erligang Lower Level period. The later period (Erligang Upper Level) use of the pit was dug at
Fig. 4. Two large-scale tetrapod ding from South Zhangsai St. (Duling), No. 1 (left) and No. 2 (right) from Erligang.
Source: Henan 1999: colorpl. 9 (No. 1); 24 (No. 2).

Fig. 5. Two large tetrapod ding from Erligang Moslem Grocery, H1:2 (left) and H1:8 (right).
Source: Henan 1999: colorpl. 11:1 (H1:2) and pl. 28 (H1:8).
the base of the pit to store the ritual bronzes (Henan 1999: 6–8). At the bottom of this reused pit, in the sixth strata, lay a well-designed wood-constructed lid and base covered with cinnabar to enclose the ritual bronzes (Henan 1999: 8, fig. 5).

Four monumental ding different in size and weight were discovered in 1996 at South Shuncheng 南順城 Street (Figs. 6 and 7). It has been suggested that these four are either two different pairs or a size-graduated set of four (Figure 1 shows them ordered by size). The two measuring 64 and 59 cm (Fig. 6, left and right) are closer in size (6 cm difference) and form to each other than the pair measuring 83 and 72.5 cm (9.5 cm difference) (Fig. 7, left and right). The first two are almost identical in form and make in that they are similarly cast, are light in weight (between 21.4 and 20 kg), have extremely thin walls and lips, are nearly square in shape, vary from 42.5 to 38 cm tall, and have similar decorations of framing bands with raised nodules, awkwardly aligned vertically along four corners and horizontally in bands on four sides (Fig. 6). That these two were experimental is suggested by their lightweight thin walls and imbalanced décor; they may therefore be identified as the earliest examples of monumental tetrapod ding cast during the Erligang period.

Shang ritual bronze vessels were individually cast in separate molds (never the same mold); they typically were never exactly the same in size or in weight (Gettens 1969:119; Karlbeck 1935). Nevertheless, they often appear in pairs. Monumental tetrapod ding that have been excavated intact from tombs (e.g., M5 and M1004 in Anyang) appear together, suggesting they may have been designed as pairs despite differences in size and weight. Similarly, the two larger ding from South Shuncheng Street are more formally refined than the smaller versions from the same site, and in style and form create a pair. The larger two share the decorative format of a body band.
with a centralized animal mask motif framed by vertical and horizontal bands of raised nodules (Fig. 7).

All the tetrapod ding found in cache pits outside the inner city wall of Erligang were associated with the occupation of this capital center. That they were found in caches underscores their treasured value and supports the theory that they belonged to high-ranking members of early Shang society, probably rulers (Henan 2001: 520). Another corroboration of the high regard for the bronzes in these three Erligang pits is the evidence of sacrifices having been made nearby at the time these cache burials were dug and completed (Henan 1999: 102). For example, after the South Shuncheng Street cache was constructed with a wooden lid and base, it was covered with a layer of ground cinnabar (mercuric sulphide), a symbolic attribute of Shang ritual elsewhere at the time of burial.30 Directly adjacent to the Moslem Grocery cache were two pits (H2 and H4) with animal bones and ceramics suggesting sacrifices offered and buried at the same time the large-scale bronzes were buried (Henan 1999: 83–86, fig. 58; 2001: 518–519, fig. 345).

Since the caches date late in Erligang Period III, the bronzes cannot postdate this period. Pinpointing whether the bronzes belong to Erligang Period I, II, or III is difficult due to the lack of extant royal bronzes excavated from strata or burials elsewhere at the site.31 These bronzes were not inscribed, however, this is typical of early Shang bronzes. Bronzes do not begin to carry inscriptions until the middle and late Shang periods.

Height and corresponding weight measurements are based on a comparison of published and excavated tetrapod ding. Based on known examples, tetrapod ding

Fig. 7. Second pair of large tetrapod ding, from Erligang South Shuncheng St. H1:3 (left) and H1:4 (right).
Source: Henan 1999: colorpl. 5 (H1:3); pl. 6:1 (H1:4).
bronzes fall into three different categories according to size (and weight and wall thickness when published): monumental, medium, and small. Monumental tetrapod ding range from 54 to 133 cm tall (Table 1); medium-sized ding range from 21 to 43 cm tall; and small-sized tetrapod ding range from 12 to less than 21 cm tall (Table 3). Compared with the many examples of other bronze vessel types (i.e., tripod ding, jue, gu, jia 銀 he, gui 簋, zun, li 鬠, you) from the early Shang period, only a limited number of monumental tetrapod ding have been excavated. This is due to their association with the highest ranks of Shang society.

Another Erligang period monumental tetrapod ding was unearthed in 1990 from early Shang remains at Qianzhuang, Pinglu municipality, Shanxi (Table 1 and Fig. 8). Unfortunately this site has not been formally excavated. Site strata measuring 0.5–1.2 m thick occupied a large-scale raised mound approximately 10,000 sq m (Wei 1992:18–19). Collected ceramic potsherds include zun, li, and gui vessel types, all of which are comparable to early Shang types represented at metropolitan Erligang. Ceramic kiln remains were also identified. Ritual bronze types recovered comprise one monumental tetrapod ding, two large tripod ding, one lei, and two jue. Although the tetrapod ding was found alone rather than in a pair or set, its original context as coming from either a burial or cache is unclear because the finds were collected rather than formally excavated. Nonetheless, in size the tetrapod fits the monumental category.

In 1991 six tetrapod ding of large, medium, and small size were recovered from a burial at Dayangzhou in Xin’gan, Jiangxi, a site located as far as 600 km east and south of Zhengzhou. Although Xin’gan was considerably farther away from the early Shang capital at Zhengzhou, like Qianzhuang both were settlements of early Shang metropolitan peoples. The largest (97 cm) tetrapod ding and another measuring 54 cm tall from Xin’gan fall within the monumental category (Fig. 9 left and right). Although their regional site location has no apparent connection to royalty, the size, weight, and style of the ding indicate they were owned by royalty.
There has been debate about whether the Xin’gan find is a burial or a cache (Peng 2010: 57–58; Peng 1997: 137). Excavators have argued that the 1,374 bronze and other artifacts found with the monumental tetrapod were part of an elite burial (Jiangxi et al. 1997: 1–7). Although the site sits in a flooded area that has left little evidence of any burial apparatus such as a wooden coffin or chamber and there is no evidence of a corpse, the surviving remains are laid out in a way typical of a burial. Two rectangular pits were identified as an outer coffin chamber measuring 8.22 m long × 3.60 m wide and an inner coffin measuring 2.34 m long × 0.85 m wide. Erceuengtai 二层台 (side platforms) of packed rammed earth were identified on western and eastern ends; they lay above the coffin area as would shelves holding sacrificial utensils. The ledges and rectangular orientation of pit and coffin typify burial practices from as early as the Longshan Neolithic in Shandong and Henan (Chang 1986: 250, fig. 206; Underhill 2002: 100, 150–151) and elite burials throughout the Erlitou and Shang periods.37 The many bronzes and related artifacts were contained either within the context of the rectangular coffin or within the coffin chamber; weapons and personal items were located within the coffin pit near what would have been the corpse of the deceased. Bronze vessels and additional weapons were placed on top of the coffin, chamber roof, and erceuengtai platforms at eastern and western ends. Remains of teeth belonging to one female and two youths found in the vicinity of the coffin pit identify human sacrifice at the time of burial (Jiangxi and Ruichang 1997: 1–9). Sacrifice, coffin and chamber forms, and the intentional arrangement of burial bronzes match burial practices of the Shang period. Although the site is an exotic mix of local and metropolitan styles, there is reason to associate this find with a royal Shang burial.

The hypothesis that large-scale tetrapod ding belonged to Shang kings or their heirs may be argued initially from size and weight alone. They are the most monumental art form of the period, so could only have been cast and used by members of the ruling

Fig. 9. Two large tetrapod ding from Xingan, Jiangxi, Nos. 8 and 9. Source: Jiangxi et al. 1997: colorpl. 8 and fig 11.1.
elite who controlled significant power and material resources. Early Shang kings were fixated on access to valuable bronze ores that resulted in military expansion and economic hegemony far south of their northern metropolitan center.

Late Shang (c. 1300–1046 B.C.E.).—Although no tetrapod ding of middle Shang date (c. 1400–1300 B.C.E.) has yet been discovered, monumental tetrapod pairs or graduated sets were probably produced during that period because they continued to be produced in late Shang times. Pairs of monumental tetrapod ding of late Shang date are represented by examples from what are identified as three royal burials at the late Shang capital of Yin 殷, in present-day Anyang 安陽 in northern Henan province. One pair comes from Queen Fu Zi’s 妇子 tomb (M5) at Xiaotun 小屯 (Fig. 10). Another pair is from the royal burial M1004 at Xibeigang 西北岗, identified with one of King Wu Ding’s sons (Fig. 11). Another ding that might originally have been part of a pair comes from M260, theorized to be the tomb of Queen Mother Wu (Hou Mu Wu 后母戊), east of Xibeigang, Anyang near Wuguancun 武官村 (Fig. 12).

The huge cruciform-shaped tomb M1004 has long been known to be a royal burial belonging to a late Shang king. Although isolated due to looting, the two monumental tetrapod ding found within, at the very bottom of the tomb, may also be identified with royalty. The latter two tetrapods from M1004 are well known because of the large images of animal heads of wild Sika deer and wild buffalo set in relief on their outer walls and complete figures of stag and buffalo in profile engraved in the center interior of each (Fig. 11). This pair of ding most likely belonged to Fu Ji 父己, the first heir of King Wu Ding 武丁 and Queen Fu Zi, who died before ascending the throne (Cao 2007:113–122; Childs-Johnson 2003:626; Huang 1989:31). As heir-apparent, Zu Ji had the right to be buried in a royal tomb (i.e., Xibeigang M1004) with a pair of royal-sized tetrapod ding vessels.

The stag ding from M1004 is the smallest late Shang example at 60.8 cm tall, while the tetrapod ding from M260 is the tallest and heaviest of all Shang examples. The latter tetrapod was discovered in 1939 during the Sino-Japanese War within burial no. 260 (M260), a large tomb with a long, narrow southern ramp, located south of royal burial M1400 and the Wuguancun Large Burial in the eastern section of the royal cemetery at Xibeigang (Guojia 2001:26; Kaogusuo Anyang Gongzuodui 1987,
1:99–117). The tomb was emptied of all other burial goods, so whether another tetrapod *ding* or other sacrificial bronzes were originally supplied cannot be verified. With a height of 133 cm and weight of 875 kg this massive tetrapod *ding* is the largest and heaviest of all extant examples. As discussed next, size, weight, and shape made a difference in the sumptuary laws of the Shang elite, particularly in relation to hierarchical position within the elite stratum of society.

**Monumental Tetrapod Ding Belonged to the Ruling Class; Tripod Round Ding Belonged to All Elites**

In addition to the large size and weight of the tetrapod *ding* and their context in association with royal burials and royal caches, other characteristics support the contention that they were owned by the rulers of Shang society. The late Shang elite was highly stratified; regulations governed which subgroups could employ which type, number, and size of bronze vessels. Monumental tetrapod *ding* seemed to have been
restricted to royalty, while all elite classes could own tripod ding. This is also true for early and middle Shang elite, as demonstrated through size and number and types of bronzes found in burials. Most elite burials of members of the top three ranks of society (i.e., Jia, Yi, Bing) were filled with pairs or sets of ritual bronze vessels similar in shape and décor.

Based on Zou Heng’s (1980) pioneering work identifying status and rank of Shang society through size and shape of burials, it is possible to assign rank in Shang society from ritual bronze vessel assemblages. Song and Liu (2006:253–261) and others stratify elite Shang society into “royal family members,” “aristocrats,” “military,” and “retainers” (Song 2005; Yang 1980, 1992). These ranks are reflected in types of burials classified from top to bottom using formal Chinese day names per Zou Heng (1980): Jia A and B, Yi, Bing, Ding, Wu, Ji, and Geng (Table 2). We assign all Jia A type burials to kings and Jia B type burials to queens.41

The late Shang M5 burial was excavated intact and has been clearly identified as the tomb of Fu Zi (a.k.a. Hou Mu Xin), the first queen of King Wu Ding (Kaogusuo 1980). It is the richest burial known thus far from the entire Shang period. The vessels from her burial can be compared with those excavated from other burials to corroborate vessel type distribution. It should be noted, however, that the form and size of the M5 burial is atypical of royal types of the late Shang period (Childs-Johnson 2003:222; 2007). The size is small in scale in comparison to the cruciform-shaped burial of M1004 or the large rectangular pit burial with a single southern ramp represented by M260. Queen Fu Zi (Hou Mu Xin) and her son Fu Ji died prematurely during Wu Ding’s reign. This is presumably the reason why, despite her fame as a heroine, mother, and warrior, Fu Zi was not buried in a large tomb or within the royal cemetery at
Xibeigang (Childs-Johnson 2007: 23). The large number of bronzes (210) and other gifts buried with her and the various inscriptions on these bronzes nevertheless underscore her rank as queen.42 Thus, despite its small size, both the M5 burial of Fu Zi and the M260 burial of Wu Ding’s third wife, Hou Mu Wu, are tentatively classified here as Jia B queen burials until more comparative excavated and measurable data become available.

Yi type burials belong primarily to other royal family and high-ranking military leaders, such as Chang Zi Kou. Bing type burials belong primarily to aristocrats and lesser ranking military members such as Ya Chi and Ya Chang, and Ding to retainers and related elite. Wu type burials belong to various professional classes. Ji type burials most likely identify soldiers, and Geng type burials, laborers. Representative early and middle Shang tombs include Lijiazui M1 (Bing type) and Lijiazui Nan M1 (Ding type) at Panlongcheng, Hubei of early Shang date and M333 (Ding type) at Xiaotun, Anyang, Henan, Baijiazhuang West M3 (Ding type) at Zhengzhou, Henan, and Pingguxian, Hebei of middle Shang date. Representative late Shang tombs include M5 (Jia B type) of late Shang period II at Xiaotun; Ya Chang M54 (Bing type) at Huayuanzhang, north of the Huan River at Anyang, Henan, of late Shang period II; Ya Chi M160 (Bing type) at Guojiazhuan of late Shang period III; and Chang Zi Kou M1 (Yi type) at Luyi, Henan of late Shang period IV.

Based on research correlating these ranks according to burial type, size, and shape, and according to number and type of ritual bronze vessels, it is evident that major differences existed during the Shang between who could or could not own monumental tetrapod ding, medium- and small-sized tetrapod ding, and tripod ding (Table 3). Monumental tetrapod bronze ding were made and employed in limited numbers compared with the tripod version, common in burials throughout the early, middle, and late Shang (Table 3). Although tetrapod ding also exist in medium and small sizes and tripod ding exist in large sizes (replacing monumental tetrapod ding during the tenth/ninth centuries B.C.E. of the Western Zhou era), scale is significantly different between large tripod ding and large tetrapod ding. Monumental tetrapod ding are always larger than their tripod counterparts during the Shang era. Smaller tetrapod ding

<table>
<thead>
<tr>
<th>BURIAL TYPES</th>
<th>DESCRIPTION</th>
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<tbody>
<tr>
<td>Jia A type</td>
<td>Burials approx. 250–350 sq m (l × w) in ya shape; over 200 bronzes including a large-scale tetrapod ding pair</td>
</tr>
<tr>
<td>Jia B type</td>
<td>Burials approx. 150–250 sq m in a zhong shape; over 200 bronzes including a tetrapod ding pair and 10 jue and gu to a set</td>
</tr>
<tr>
<td>Yi type</td>
<td>Burials approx. 40–80 sq m in a zhong-shape; approx. 100 bronzes (?)</td>
</tr>
<tr>
<td>Bing type</td>
<td>Burials approx. 10–30 sq m in a zhong/rectangular pit with southern ramp; 20–30 bronzes with 5 jue/jiao and 5 gu to a set</td>
</tr>
<tr>
<td>Ding type</td>
<td>Burials approx. 5–10 sq m in a rectangular pit shape; approx. 10 bronzes with 2–3 jue/jiao and 2–3 gu to a set</td>
</tr>
<tr>
<td>Wu type</td>
<td>Burials approx. 2–7 sq m in a rectangular pit shape; under 10 bronzes including a pair of 1 gu and 1 jue</td>
</tr>
<tr>
<td>Ji type</td>
<td>Burials approx. 1–4 sq m in a rectangular pit shape; no ritual bronzes, usually 1 bronze weapon</td>
</tr>
<tr>
<td>Geng type</td>
<td>Rectangular pit burials with flexed corpses and no burial goods</td>
</tr>
</tbody>
</table>

* With the exception of the M5 burial discussed in the text.
Table 3. Tripod and Tetrapod Ding in Elite Burials of Early, Middle, and Late Shang Periods

<table>
<thead>
<tr>
<th>Site and Context</th>
<th>Tetrapod Ding</th>
<th>Tripod Ding</th>
<th>Other Bronze Vessels</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lijiazui M1 (Bing type) at Panlongcheng, Hubei, early Shang (rectangular)</td>
<td>0</td>
<td>2</td>
<td>1 gui, 5 jia (set), 5 jue (set), 3 gu (set), 2 ki, 1 you, 1 pan</td>
</tr>
<tr>
<td>Lijiazui Nan M1 (Ding type) at Panlongcheng, Hubei, early Shang (rectangular)</td>
<td>0</td>
<td>1</td>
<td>2 jue, 2 gu, 1 jia, 1 lei</td>
</tr>
<tr>
<td>M333 (Ding type) at Xiaotun, Anyang, middle Shang (rectangular)</td>
<td>0</td>
<td>2</td>
<td>2 jue, 2 gu, 2 jia, 1 pou</td>
</tr>
<tr>
<td>Baijiazhuang West M3 (Ding type) at Zhengzhou, middle Shang (rectangular)</td>
<td>0</td>
<td>1</td>
<td>2 jue, 2 gu, 2 jia, 1 lei</td>
</tr>
<tr>
<td>Pingguxian, Hebei burial (Ding type), middle Shang (rectangular)</td>
<td>2 medium</td>
<td>2</td>
<td>1 jue, 1 jia, 2 he, 1 pan, 1 pan, 1 you, 1 lei, 1 pou</td>
</tr>
<tr>
<td>Fu Zi M5 (JiaB type), Xiaotun, Anyang, late Shang PII (rectangular)</td>
<td>2 Hou Mu Xin large set, 2 Fu Zi medium set, 1 Fu Zi small</td>
<td>1 Ya Bi large, 6 Fu Zi medium set, 6 Fu Zi medium set, 2 small set, 1 medium, 2 medium set, 2 Fu Zi small set</td>
<td>1 Fu Zi 3 linked yan on table; 2 Fu Zi zeng on yan; 2 Fu Zi yan (set); 1 Zi whorl-shaped steamer tube; 2 Fu Zi small gui (set); 1 gui; 1 double-eared gui; 1 Fu Zi fangyi; 3 Fu Zi fangyi (set); 1 Ya Qi fangyi; 2 Fu Zi lidded fangyi (set); 1 Fu Zi without lid fangyi; 1 Ya Qi lidded fangyi; 1 Fu Zi fangzun; 2 large Hou Tu Mu Gui fangzun (set); 2 large Hou Tu Mu round zun (set); 2 Zi Shu Quan zun (set); 2 round zun; 2 Fu Zi owl-shaped zun (set); 2 Hou Mu Xin 4-legged gong (set); 2 Fu Zi gong (set); 2 loop-handled gong; 2 Hou Tu Mu fanghu (set); 2 Fu Zi hu (set); 2 Fu Zi pou (set); 1 large pou; 2 you (set); 2 Fu Zi fanglei (set); 3 large Fu Zi jia (set); 1 small fangjia with lid; 1 Fu Zi large jia; 2 Hou Tu Mu large jia (set); 2 Ya Qi large jia (set); 1 Zi Shu Quan jia; 2 jia; 2 Fu Zi he (set); 1 tripod he; 1 Fu Zi he; 1 Fu Zi flat bottom he; 1 he; 2 zhi; 6 Fu Zi gu (set); 6 Fu Zi flanged gu (set); 3 Fu Zi (1 Zi) flanged gui; 3 Fu Zi tall gu (set); 4 Fu Zi gu (set); 11 Hou Tu (Mian?) Mu gu (set); 10 Ya Qi gu; 10 Shu Quan gu (set); 2 Fu Zi large jue; 10 Fu Zi flat bottom jue (set); 9 Hou Tu (Mian?) Mu flat bottom jue; 9 Ya Qi flat bottom jue; 9 Hou Quan egg-shaped jue; 1 Guan X egg-shaped jue; 5 Fu Zi fangdou (set); 3 Fu Zi round dou; 1 Fu Zi large yu; 2 Fu Zi pan (only 1 inscribed); 1 Fu Zi guan; 1 Hou Mu Xin square-shaped footed vessel stand; 1 Fu Zi wide ladle; total: approx. 210 vessels</td>
</tr>
</tbody>
</table>

(Continued)
<table>
<thead>
<tr>
<th>Site and Context</th>
<th>Tetrapod Ding</th>
<th>Tripod Ding</th>
<th>Other Bronze Vessels</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ya Chi M160 burial, Guojiazhuang (Bing), late Shang PIII (rectangular)</strong></td>
<td>2 Ya Chi small set</td>
<td>1 Ya Chi large, 2 Ya Chi medium set, 1 Ya Chi medium set</td>
<td>10 Ya Chi jiao (2 sets); 10 Ya Chi gu (2 sets); 1 Ya Chi yan; 2 Ya Chi gui; 2 Ya Chi fangzun; 1 Ya Chi round zun; 1 lu stove; 1 Ya Chi kui; 1 Ya Chi you; 1 Ya Chi he; 2 fangjia; 1 Ya Chi round jia; 1 Ya Chi zhi; 1 Ya Chi dou; 1 pan; total: 43 vessels</td>
</tr>
<tr>
<td><strong>Ya Chang (hereafter YC) M54 at Huayuanzhang, late Shang PII (Bing) (rectangular)</strong></td>
<td>1 YC small w/collar</td>
<td>2 YC medium (set)</td>
<td>5 YC gu (set); 5 YC jue (set); 1 YC xian; 1 YC fangzun; 1 YC fang jia; 4 YC gu; 4 YC jue; 1 YC gong; 1 YC fangyi; 1 YC kui; 1 YC large-scale yu; 1 YC handled yu; 1 YC gong; 1 YC shao; 3 YC nao (set); total: 43 vessels</td>
</tr>
<tr>
<td><strong>Chang Zi Kou (hereafter CZK/ZK) M1, Luyi, Henan (Yi/Bing type), late Shang PIV (zhong-shape)</strong></td>
<td>2 Xi Zi Sun medium, 2 Zi medium mingqi set, 5 small w/lids set</td>
<td>1 large, 1 CZK small, 5 small dragon-leg w/lid, 1 ZK medium dragon-leg, 5 CZK medium crotch-leg w/lid</td>
<td>2 li (set); 2 Zi four-eared gui (set); 1 CZK two-eared gui; 2 CZK yan (set); 1 CZK square base zeng; 4 fanggu (mingqi set); 4 round gu (set); 2 Fu Xing gu (set); 2 short gu (set); 4 fangjue (mingqi set); 2 CZK round jue (set); 2 CZK round jue (set); 2 CZK lidded jiao (set); 1 Ge Ding round jia; 2 CZK fangjia (mingqi set); 3 CZK round zun (set); 2 CZK fangzun (mingqi set); 2 CZK fanggong (mingqi set); 1 CZK gong; 2 CZK round you; 1 CZK you; 2 CZK fangyou (mingqi set); 1 CZK small-scale you; 1 hu; 3 hu (half lacquer, half bronze); 1 zhi; 2 zhi (set); 1 Qin (p. 116) zhi; 1 CZK zhi; 1 round lei; 1 CZK fanglei (mingqi); 2 fangdou (mingqi set); 2 other dou; 1 pan; 1 ZK he; 3 nao (set); 3 nao (set); total: 85 vessels (19 mingqi vessels)</td>
</tr>
</tbody>
</table>

1. Set refers to vessels of similar form, size, and décor.
are never found in burials below the rank of Ding, although tripod ding are ubiquitous at all levels of elite burials: Jia, Yi, Bing, Ding, Wu, and Ji. Bronze vessels are consistently absent in Geng laborer and slave burials.

Large-scale tetrapod ding are limited to Jia A and B burials belonging to kings and queens, and thus clearly rank as royal status symbols. This artificial data needs to be emphasized. Medium- and small-sized tetrapod ding are also distinguished according to rank, because they appear in Jia through Ding class burials but are limited in number. Tripod ding, on the other hand, are numerous and found in all elite burial types ranging from Jia through Wu and Ji ranks (Table 3). Thus, the tripod ding was a staple of Shang society whereas the tetrapod ding was a specialized type owned according to clear-cut rules of rank.

Fu Zi’s burial bronzes may be used to analyze several enigmatic aspects of bronze use by rank. Her burial contained three types of ritual vessels: 1) those used by her, indicated by inscriptions with her living name (Fu Zi) or with her mother’s posthumous name, Hou Mu Gui; 2) those dedicated and given to her by other royals, inscribed with her posthumous ritual name (Hou Mu Xin or Mu Xin); and 3) those given to her by nobility, inscribed with their various names of ownership. As is evident from her burial goods, during her lifetime she owned 18 medium-sized and small-sized round tripod ding, all inscribed with her living name, Fu Zi (Kaogusuo 1980: 38, 41–44; Fig. 13 and Table 3). She also owned and used two medium-sized tetrapod ding with dragon-shaped legs (Nos. 812–813) and one small-sized (no. 834), by evidence of inscriptions with her living name, Fu Zi (Fig. 13) (Kaogusuo 1980: 34–35, 38).

All 28 medium- and small-sized tetrapod and tripod ding belonged to her, but the monumental tetrapod ding pair belonged to her son, Fu Ji. He apparently bestowed them at her funeral before his own untimely death. This difference represents the major distinction in rank between a future king and a living queen. Queens were not entitled to own or use monumental tetrapod ding, whereas kings and their heirs apparently were. Monumental tetrapod ding were the property of the highest-ranking males in Shang society.

No monumental tetrapod ding has been found in burials ranking below the top Jia rank (Table 2). Only medium- and small-sized tetrapod ding are found in Jia and ranks below Jia, underscoring that vessel size and type differed dramatically between royalty and lesser elite. Contrasts in terms of size (medium and small) and of number of ding in the Yi, Bing, and Ding ranks of burials corroborate the special status of square tetrapod as opposed to round tripod ding. Tripod ding as a rule are more numerous in burials of all these types, although their number decreases along with the status of the deceased. Tetrapod ding are typically outnumbered by tripod ding in burials (Table 3).

Medium- and small-sized square tetrapod ding appear during late Shang times in burials of Yi through Ding ranks, but were significantly outnumbered by round tripod ding. Medium- or small-sized tetrapod ding are found in all Yi through Ding burials of late Shang periods II, III, and IV, including Ya Chang’s M54 at Huayuanzhuang, Ya Chi’s M160 at Guojiazhuang, and Chang Zi Kou’s M1 at Taiqinggong, Luyi, respectively (Table 3). A pair of two small-sized tetrapod ding belonged to the high-ranking military leaders Ya Chi and Ya Chang.

In the latest dated tomb, belonging to Chang Zi Kou, two different sets of medium-sized tetrapod ding are mingqi versions created for burial alone (revealed by the low and soft quality of the bronze alloy used); five others were small in scale and
Fig. 13. Tetrapod and tripod ding sets from M5, Fu Zi’s burial, Xiaotun, Anyang.
1st row: Hou Mu Xin inscribed tetrapod ding set, 80 cm tall (Nos. 789 and 809)
2nd row: a small tetrapod ding (No. 834), pair of dragon-legged tetrapod ding over 40 cm tall (Nos. 813 and 812), a large tripod ding over 70 cm tall (No. 808)
3rd row: set of 6 tripod ding, each just under 30 cm tall (Nos. 821, 756, 814, 762, 758, 755)
Two other medium-sized tetrapod ding inscribed Xi Zi Sun 林子孫 were evidently gifts to the deceased. This high-ranking royal son of the Chang clan was evidently entitled to employ a set of five small-sized tetrapod ding and was provided with an additional set of two mingqi medium-sized tetrapod ding for the afterlife. This example again demonstrates that possession of tetrapod ding was distin-
guished on the basis of rank. Yi through Ding ranking members of Shang society could own medium- and small-sized tetrapod ding. The large-scale tetrapod ding belonged strictly to the Jia class of rulers and their heirs, although they could be bequeathed to queen mothers after death. The smaller number of large-scale tetrapod ding produced in contrast with the more numerous tripod ding underlines the highly stratified social system of Shang bronze users.

Rulers were of course limited in number compared with members of other elite classes. This explains why fewer large-scale tetrapod ding exist. The number of royal tombs at Xibeigang identifies nine kings who ruled at Yinxu during the late Shang period (Soper 1966: 26–27). This limited number of kingly burials sharply contrasts
with the approximately 1500 graves from the Western Sector cemetery at Yinxu of late Shang date. Yang Xizhang (1983: 55–59) identifies these graves as belonging to lineage cemeteries forming eight burial groups divided into two by an empty area. Clearly 1500 people who belonged to lineage burial groups differ dramatically in number from only nine ruling kings during the late Shang period at Yinxu in Anyang. None
of the Western Sector burials were equipped with tetrapod ding, but tripod ding were found in most Ding and Wu status burials. This again underscores the difference between the few ruling elite and the population living under that royal Shang house.

_**Hou Mu 后母 and Mu 母: Day-Names Designating Queens with Royal Male Offspring**_

In addition to this evidence of monumental size, royal burial context, and monumental tetrapod ding use restricted to royalty, inscriptive data provide more evidence for the royal ownership of monumental tetrapod ding. The inscriptions on bronzes from the M5 and M260 burials are particularly instructive. Many of these inscriptions include the characters Hou Mu 后母 or Mu 母 alone. These day-names were used by queens who had produced royal male heirs.

In his study of burial inscriptions from Fu Zi's tomb, Cao Dingyun (2007:94–98) demonstrates that Hou 后 was an official title. In Shang bone inscriptions, Hou 后 (translated “Honorable” in this article; see Childs-Johnson 2013a) referred to royal house women who appeared to have been in charge of sacrifices. Hou is used similarly to the highest ranking title, Ya 亞, which identified male officials serving the royal Shang house. Other scholars have tried to equate the Hou title to various other roles such as queen (bi 妃), consort (peiou 配偶), wife (furen 夫人), or post-Shang female official (junhou 君后), but Cao argues that the bone evidence clearly indicates that Hou was the official title of a high-ranking woman, possibly in charge of sacrifices. Hou was used to refer to these female officials both while they were living and after death.46

Mu 母 and shi 祭 were terms used posthumously to refer to royal queens and consorts in Shang times. Mu, here translated as Queen Mother, was a Shang period title primarily used by male offspring of kings and queens to address their biological mothers during royal rites of sacrifice (Chen 1956:447–451; Li X. 1977:161–163; Shima 1975:46–51; Song 2005:230–234). “Mu mother” in bone and bronze inscriptions specifically refers to a dead queen who gave birth to male offspring who would inherit the throne (Cao 2007:92–94; Childs-Johnson 2004, 2007; Zhu 1990:422–429). For example, Prince Fu Ji had cast and inscribed with his authorship a pair of monumental tetrapod ding that he bequeathed to his biological mother Fu Zi, calling her Mu after her death.

Two facts concerning queen mother (Hou) Mu Xin and crown prince Xiao Wang Fu Ji are clear from the oracle bone and bronze vessel records of Shang times. First, both Fu Ji and his mother died during King Wu Ding’s reign. Second, Fu Ji was the first successor of King Wu Ding. He is known in the royal registry of Shang times, in transmitted texts, and in bone inscriptions of Period I (King Wu Ding’s era) as the Small King (Xiao Wang 小王), Crown Prince (太子), or King β. He is referred to as Xiong Ji (Brother Ji) in inscriptions from Period II (reign of Zu Geng and Zu Jia) and as Small King Father Ji (Xiao Wang Fu Ji) in bone inscriptions from Period III (reign of Kang Ding). Obviously the concept of heir apparent or crown prince was operative in the hereditary titles of Shang times.47 Representative inscriptions include:

6. Heji 5570 Period 1: Should [I, the king] command the Small King . . . official . . .? 令 . . .小王 . . .臣 . . .?
7. Heji 31546 Period I: Crack-making on the jichou day Zi divined: Should the Small King p go hunting [at] Fu? 己丑子贞: 小王田夫?

8. Heji 23354 Period II: Crack-making on the jichou day Xing divined: If the King visits on high Brother Ji with meat [sui] and bundled sacrifice [shu] will there be no otherworldly harm? 己丑卜行贞: 王宾兄己岁束亡尤?

9. Heji 23120 Period II: Crack-making on the jichou day divined: If the King receives the spirit of Brother Ji with Xie rite sacrifices will there be no otherworldly harm? Crack-making on the [gengchen] day Xing divined: If the [King] receives the spirit of Brother Geng with Xie rite sacrifices will there be no otherworldly harm? 己丑卜(行)贞: 王宾兄协, (亡尤)? . . . (更辰)卜行(贞): (王)宾兄更叠, 亡尤?


The above inscriptions demonstrate that the Small King of Wu Ding (Period I) inscriptions (nos. 6 and 7) is the same as Small King Fu Ji of Period III inscriptions (no. 10) and Brother Ji of Period II inscriptions (nos. 8 and 9). The posthumous day-name Ji己 used in Period II agrees with references in Periods III–V to Father Fu Ji and Grandfather Zu Ji, as well as with numerous transmitted texts that refer to a Ji as Xiao Zi Xiao Ji (Filial Son Filial Ji), the filial crown prince who belonged to the High Ancestral House of Yin (Cao [1995] 2007: 114–115).48

That Fu Ji died during Wu Ding’s reign is evident in a variety of inscriptions:

11. Heji 20023: Crack-making on the jiwei day: Should Prince Bi carry out exorcism to the Small King or not? Should Prince Bi carry out exorcism to the Middle Royal Son or not? 己未卜: 子辟禦于小王不? 子辟禦[于]中子不?

12. Heji 5030: . . . crack-making [on x-x day] the King divined: Should [I] make sacrifice [you] to the Small King? . . . 卜王贞: (侑)小王?

13. Heji 20022: Crack-making on the wuwu day: Should Shao make sacrifice [you] to the Small King? 戊午卜勺 (侑) 小王?


Sacrifices were seldom offered to living royalty, only to those that had died. Sacrifices offered to this Small King during Period I, including禦yu exorcism and侑you-sacrifice, document that Fu Ji was deceased (Cao 2007: 116–118).

Cao Dingyun (2007: 117–122) has discovered other evidence demonstrating that Small King Fu Ji died during Wu Ding’s era. Another name in bone inscriptions for this heir apparent is written with the graph 鼎. The name p appears in the term “Wang/King or Royal p name” or simply as “p name.” Based on comparative inscriptional data, this alternative name p for the Small King Ji may be identified as his place of enfeoffment and place name:

15. Heji 4222: If Shi Pan provides [X?] at Wan should King p be summoned? 師船獻萬呼王?

16. Heji 40859: Crack-making on geng- . . . day: Will King p net 30 [hunted animals]? 戌 . . . 捕三十 . . . ?

17. Heji 10655 front: Crack-making on the renyin day Ke divined: Should King p [make offering] to Father . . . ? 王寅穂贞: 王p于父 . . . ?


19. Qianbian 8.72.1: On the bingshen day I [the King] cracked the bone: Should [Crown Prince/King] p shackle and trap wild boar? On the guisi day I [the King]
cracked the bone: Should [Crown Prince/King] ṁ shake and trap wild boar (?) on this day? 丙申余卜 余/?。癸巳余卜 余?。

20. Heji 40689: ṁ sent in four prepared tortoise plastrons for altar use. ṁ示四。

23. Heji 20706 front: . . . the King divined: Should [I] not go out to King ṁ to catch tiger? . . . 贞王：勿止在王?虎擒？

By Period IV, the Crown Prince, heir apparent is still called King ṁ in receiving worship on ji 己 days in the schedule of royal house sacrifices in concordance with his posthumously assigned name:

24. Heji 3538: Crack-making on the jisi day: Should on this coming jimao day fermented spirits be offered to King (Wang) ṁ? 己巳卜：来己卯酒王?。

25. Heji 34560: [Crack-making] on the jisi day: Should fermented spirits be offered to King (Wang) ṁ? 己巳卜：酒王?。

Apparently, the Small King Ji was not only addressed as Fu Ji but also addressed as King ṁ in royal house rites of sacrifice.

Finally, proof that Small King Ji was given the name ṁ at birth includes two key inscriptions from Wu Ding’s era (Cao 2007: 123):

26. Heji Tie 127.1: Crack-making on the gengzi day. Que divined: Would Fu Zi have a child? 2nd month. 庚子卜殻贞：妇子有子？二月。

27. Heji Yi 620: Crack-making on the xinchou day Que divined: Will Fu Zi have a child? 3rd month. Crack-making on the xinchou day Huan divined: The King prognosticated, saying, [Fu] Zi will have Royal Son [or child named] ṁ?. 辛丑卜殻贞：妇子有子？三月。辛丑卜亘huan 贞：王占曰：子其有子? 三月。

Inscriptions nos. 26 and 27 demonstrate that ṁ was not only an alternate name for Xiao Wang Fu Ji, but was also a place name in Period I inscriptions. Number 27 shows that his father, King Wu Ding, bestowed the name upon his firstborn son. During Wu Ding’s era, Fu Ji (Xiao Ji/Filial Ji of later texts) was not only referred to as Small King (Crown Prince Xiao Wang), but as King (Wang) ṁ or simply ṁ, and by his living father, as Zi ṁ or Royal Son ṁ. 

The evidence that Fu Ji died after his mother during Wu Ding’s era is based on inscriptions associated with the Shi named diviner group that can be dated after the Bin named diviner group. Fu Zi was worshipped as Hou Xin in Bin group divinations, which Cao (2007: 126) dates earlier than certain Shi group divinations. Since Xiao Wang had died by the era of recorded Shi group divinations (Cao 2007: 115–116), he succeeded his mother in death.

Although the precise dates of their deaths are difficult to pinpoint, Fu Zi and Small King Ji are known to have died during the middle or late period of Wu Ding’s reign. That Fu Zi died at this time is well documented in several studies of inscriptions relating to her activities and death during a royal hunt (Wang 1979; Wang et al. 1977). Inscriptions show that King Wu Ding mourned her death and divined about the potential for her divine marriage to Shang Di (God on High) or another of the highest ancestors from Shang history and myth (Childs-Johnson 2003: 637–638). Since Small King Ji was the only heir apparent she produced and because Zu Geng and Zu Jia did not assume the throne until after Wu Ding died, the vessels in Fu Zi’s burial M5 at Xiaotun inscribed Hou Mu Xin or Mu Xin could only have been offered by Small King Ji.

The honorific title Hou Mu (Honorable Queen Mother) along with her posthumous day-name is inscribed on the pair of monumental tetrapod ding (Fig. 10), a pair of refined gong vessels, and one tall square footed vessel from Fu Zi’s tomb M5 (Kao–gusuo 1980: 37, fig. 25). All of these vessels had been owned and used by Small King
Ji 小王己 before he gave them to her after her death (Cao 2007:118–122; Childs-Johnson 2003, 2007). Although Hou is a title of official office, most likely the highest ranking one for royal house females (Childs-Johnson 2013a), Hou Mu Xin (Honorable Queen Mother Xin) is clearly the object of sacrifice; Mu Xin is Fu Zi’s ritual and posthumous name, a name for a queen who has produced an heir to the king.

Fu Zi could not herself have inscribed a vessel with her own posthumous title. Nor would her husband have addressed her with the title Mother (Mu 母). Ritual posthumous nomenclature observed strict rules. Wu Ding used the terms Hou Queen Xin (Hou Xin 后辛), Noble Lady Xin (Fu Xin 妇辛), Honorable Noble Lady Zi (Hou Fu Zi 后婦子), or Noble Lady Zi (Fu Zi 妇子) to address his wife (Qian 5.9.6; Heji no. 2672; Childs-Johnson 2003:n11; 2007:19–20). None of these terms include the graph for Mother. Queen Mother Xin (Hou Mu Xin) can only be a posthumous title used by her son during worship of her as a royal ancestor, although Fu Ji’s brothers also used it after they became kings. The large-scale tetrapod ding pair in M5 clearly had a specific ritual use as Small King Ji honored his mother by making sacrifices to her.

Another significant point concerns specification of the dead ancestor to whom sacrifice is made. Some ritual bronzes apparently could be used during multiple sacrifices on different days, as illustrated by the well-known examples unearthed from burials in the Western Sector cemetery at Anyang. Two large zun (M93:1,4) from burial M93, for example, are inscribed with three short dedicatory inscriptions including three different clan emblems followed by three different “day (ri 日) + day-names,” as in “clan emblem ri yi 日乙,” “clan emblem ri xin 日辛,” and “clan emblem ri jia 日甲,” all of which are enclosed within a large ya graph (Kaogusuo 1979:81, fig. 58). However, if a dead person to whom sacrifices were made was specified, then the vessel became limited in use to that single ancestral spirit (Fu Ji’s mother in this case). A gu goblet inscribed “Hou Mu Xin” would only be used to offer alcoholic sacrifices to Hou Mu Xin; on the other hand, a jue tripod beaker inscribed “Fu Zi,” the queen’s living name, would imply that Fu Zi used the vessel while she was alive to make sacrifices to one or more ancestral spirits.

The second example of a Hou Mu inscription identifying a queen mother by posthumous title is the name Hou Mu Wu 后母戊, or Honorable Queen Mother Wu, on the monumental tetrapod ding from M260 (Fig. 12). Based on the data from Fu Zi’s burial and the fact that her son Fu Ji alone could use this form to address the queen mother who bore him, it is theorized that this other large-scale tetrapod ding similarly inscribed Honorable Queen Mother, followed by a posthumous day-name, Wu (Hou Mu Wu), was also restricted in use to a son in line to the throne. Hou Mu Wu was most likely the mother of Wu Ding’s third son, known posthumously as Zu Jia 祖甲. Just as Fu Zi’s son placed two large tetrapods in her tomb to placate her spirit in perpetuity, so Fu Jia (30th Shang king) probably put the largest monumental tetrapod ding known into the tomb of his mother. The so-called Wuguancun Tomb (M260) was entirely looted except for the 875 kg tetrapod ding, which was evidently too heavy to carry away. It is highly likely that the large-scale tetrapod ding inscribed Honorable Queen Mother Wu is another example of a ritually prescribed royal tetrapod cast by a Shang king (Zu Jia). His mother, King Wu Ding’s third wife, was known posthumously in the royal ancestor cult as “Mother Wu (Mu Wu)” or “Ancestress Wu (Bi Wu)” (Shima 1975:551–552, 450–451). The most obvious scenario is that Zu Jia was alive at the time of his mother’s funeral since he, like his brother Zu Ji, made a gift of a royal-sized rectangular tetrapod ding to his mother. It may have been a ritual rule
that all queen mothers of Shang date were to be buried with monumental tetrapod ding gifted by their royal sons.\(^{54}\)

The royal title Honorable Queen Mother inscribed on monumental tetrapod ding is evidence that these vessels were strictly owned and used by heirs apparent or kings. The next section presents further inscriptional evidence supporting this contention.

**Yiding 異鼎: Metamorphically Empowered Tetrapod Ding in Shang and Western Zhou Inscriptions**

Shang period oracle bone inscriptions often describe ding with the binome yiding 異鼎 (Fig. 15).\(^{55}\) This inscriptional term is one of several pieces of evidence to identify the meaning of Shang ritual imagery as metamorphic (Childs-Johnson 1998, 2008).\(^{56}\) “Metamorphic” is also a term used elsewhere but with a completely different meaning, in describing, for example, artistic style of representation, not religion or belief (Wu 1995: 50–52). The specialized term "yi 異 in bone and bronze inscriptions means “‘to be empowered due to (spirit) metamorphosis’ or ‘to cause to undergo metamorphosis’” (Childs-Johnson 2007). The yiding binome thus can be read as “the tetrapod ding invested with metamorphic power” or “the metamorphically empowered tetrapod ding” (Childs-Johnson 2008: 70–78).

Although there is no clear-cut distinction in bone inscriptional terminology between ritual bronze round tripod and square or rectangular tetrapod ding, the yiding binome most likely refers to the largest of the ding, which are tetrapod. Due to the large size and royal burial origins of all late Shang tetrapod ding, it appears that when the power of the ding ritual bronze was invoked, it was in reference to the largest and most powerful manifestation of this ding type. Various inscriptions make it clear that only the Shang king or an heir in the royal line of succession could receive or be invested with a yiding. Three significant bone inscriptions (discussed in Childs-Johnson 2008: 71) illustrate this:

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**Fig. 15. The hewen “yiding” graph in late Shang and pre-Conquest Zhou bone inscriptions from Xiaotun, Anyang, Henan, and Zhouyuan, Shaanxi.**

Sources: Heji 31000 (left); Wang 1984: fig. 14 H11:87 (center); Heji no. 2274 (right) (also see Childs-Johnson 2007: figure 8C, p. 58).
28. Wang Fig. 114, p. 312: Will [I, the king] receive the [tetrapod] ding invested with metamorphic power? 其受異鼎? (H11:87)

29. Heji 31000: The bone was cracked: Should [I, the king] invoke spirit(s) with the new [tetrapod] yiding [ding invested with metamorphic power]? 卜新異鼎祝?

30. Heji 2274 (abbreviated): Crack-making on the bingzi day Bin divined: If Fu Yi (26th king) [Xiao Yi] causes spirit empowerment [metamorphosis], will it mean bestowing the power of the [tetrapod] ding vessel upon the King [his eldest son]? If Fu Yi does not cause spirit empowerment, will it mean not bestowing the [tetrapod] ding upon the King? 丙子卜賓貞父乙異惟鼎王? [貞] 父乙不異惟鼎王?

The last inscription is a specific reference to the dynastic empowerment of King Wu Ding. Dynastic empowerment is represented by the ability to divine. Being able to speak with ancestral spirits supports the king’s royal status. The yiding queried about was likely similar in appearance to the two monumental tetrapods buried with Fu Zi or the pair from M1004 that also belonged to her son, Fu Ji. These inscriptions appear to be clear-cut precursors to the legend of dynastic inheritance that became well known in Eastern Zhou and Han times. The legend says that the possession of nine ding bronze vessels is a sign of state authority and divine power.

The sacred and ritual association of yiding (metamorphically empowered tetrapod ding) with royalty continued during the early part of the Western Zhou period. For example, four identical inscriptions were cast on what is known as the Zuoce Da (Scribe Da) 作冊大 set (Fig. 16). This set consists of four small tetrapod ding that survive in different collections; it is not known how many small tetrapod ding were in the original set. All four are identical in form, décor, and inscription (Pope et al. 1967:190–195). They are also close to the same size at approximately 27 cm tall × 20 cm wide and weighing less than 4 kg. The Freer example shown in Figure 16 is 26.7 cm tall × 19.7 cm wide and weighs 3.77 kg. It is significant that these vessels are so small. They did not belong to a ruler, but to a high-ranking scribe. This again underscores the different rights of royalty and aristocracy to own monumental versus small tetrapod ding.

Zuoce Da or Royal Scribe Da was the name of the owner of the four vessels. He was allowed to commission their manufacture as an award from a duke who was probably the Duke of Zhou, the regent from 1042–1036 B.C.E. Zuoce Da received the reward after witnessing a major royal event: the Duke casting divinely empowered tetrapod yiding to honor King Cheng and King Wu of the early Zhou dynasty (Childs-Johnson 2008:73–74). As royal scribe employed by the Zhou court, Zuoce Da was evidently given the right to cast his own set of four (or more) small rectangular ding as an award for his participation in what must have been an awe-inspiring state ceremony. An identical inscription on all four Zuoce Da tetrapods reads as follows (Fig. 17):

When the Duke came to cast [in honor of] Cheng Wang and Wu Wang a yiding in the 4th month, 2nd quarter of the month, jichou day, the Duke awarded Zuo (Scribe) Da a white horse. Da extolled the August Heavenly Governor Da Bao’s (Great Protector’s) grace. [Da] made for Zu (Ancestor) Ding (this) precious sacrificial vessel. Bird on the Perch (clan sign) Ce (Scribe) 公來鑄成王武王異鼎 (hewen) 惟四月即生霸己丑公商 (賞)作冊大白馬. 大揚皇天使大保. 用作祖丁寶尊彝

Evidently the owner of the vessel had survived the end of the Shang era into the Western Zhou era, since “Bird on the Perch” was a Shang clan sign (Chou et al. 1977:446–451; Zhongguo 1997, 4:3, pl. 9). Most scribes in the early Western Zhou period were elite relatives of Shang clans. They continued to observe sacrifices to
deceased royal Shang kinsmen, in this case to Ancestor Ding, who may have been Wen Ding, the third from the last king to rule at Anyang during the late Shang period.

Early Western Zhou kings evidently perpetuated Shang royal practice of identifying with metamorphic power. We can only ponder the huge scale and appearance of the yiding referred to in the inscription, the magically empowered vessels cast in honor of reigning Western Zhou kings. The inscription on the set of small tetrapod ding during the early Western Zhou period thus documents the continuation of Shang worship and ritual honoring deceased royal ancestors. The fact that large-scale ding pairs and smaller ding sets continued to be associated with elite power throughout the remainder of the Bronze Age (the Western and Eastern Zhou eras) further underscores
the significance of the ding vessel as a symbol of royal power in early Chinese history and myth. Other data supporting this are summarized below.

AN EXCURSUS: MONUMENTAL DING AND DING VESSEL SETS AFTER THE SHANG

Since ding continued to be the largest and most prominent vessel type created in sets in post-Shang times, the practice does not appear to be new but rather a continuation and revision of Shang precedent that prescribed who could own and use what ritual bronze vessels. According to Warring States dated texts, a ranked status system evolved called the ding zhifa 鼎制法 (ritual ding system) or dalao jiuding 大牢九鼎, meaning “great nine ding sacrifice of specially raised animal victims” (Yu 1995; Yu and Gao 1978–1979). Archaeological evidence suggests that the “great nine ding” system solidified sometime in the late tenth or ninth century B.C.E. This was the middle of the Western Zhou period (c. 1045–771 B.C.E.) approximately a century and a half after the Zhou conquest of Shang. According to Falkenhausen’s reconstruction of the Zhou sumptuary system (2006 : 51, Table 4), the number and type of ritual bronzes that could be owned and used by different elite groups adhered to specific rules of “five ranks.” Kings were the top-ranking group and were entitled to use nine ding. The second rank could have seven ding, the third rank five, and the fourth could have three or one. Other vessels, such as gui grain serving vessels, hu liquor containers, jian water containers, chime bells, and other bronze items were also specified by number according to rank. Other vessel types were always subordinate to and smaller in number than the ding allowance.

Burial finds of bronze sets corroborate this ranked use of bronzes during the tenth and ninth centuries and throughout the later Spring and Autumn and Warring States periods (c. tenth–fifth centuries B.C.E.). For example, the M1 burial at Baicaopo 白草坡, Lingtai 灵台, Gansu 甘肃省, identified as belonging to Earl Black (Hei Bo 黑伯) and dated sometime in the eleventh or tenth century B.C.E., included 7 ding, 1 yan, 2 zun, 1 zhi, 1 jiao, 1 jia, 1 he, 2 you, 3 gui (Gansu 1977 : 106–110). M253, a Yan 燕 state burial at Liulilhe 流璃河, Beijing, Hebei in the late eleventh century B.C.E., included
Fig. 18. Four of seven ding from M253, Liulihe, Beijing, Hebei. From left to right, a large Jin 嶏 tripod ding, 62 cm (No. 253:12); a medium Yu 囝 tetrapod ding, 33 cm (No. 253:11); a medium Ya Qi 亚癸 ding, 38 cm (No. 253:24); and a medium Ya Ju Yang 亚拒羊 tripod ding, 25.6 cm (No. 253:21). Source: Beijing 1995: fig. 25, p. 37, 36, 101-105.

Fig. 19. Eight Shi 史 ding (6 tripods and 2 tetrapods) from a medium size tomb, M11 at Qianzhangda, Tengzhou, Shandong. Source: Kaogusuo 2005: 208-217.

6 ding, 2 gui, 4 li, 2 jue, 1 zhi, 1 zun, 1 yan, 2 you, 1 hu, 1 pan, and 1 he (Beijing 1995: 31, 34–36; Fig. 18). Other representative burials include: M11 at Qianzhangda 前掌大, Tengzhou 滕州, Shandong, identified with Shi 史 (eleventh to tenth century B.C.E.) (Kaogusuo 2005; Fig. 19); Guo 虢 state burials at Sanmenxia 三門峽, Henan (ninth to mid-seventh century B.C.E.) (Henan 1999: 601–602) and Shangcunling
During the late eleventh through tenth centuries B.C.E. of the Western Zhou era, the time just after the Zhou conquest of Shang, changes gradually occurred in the bronze vessel repertoire and in the style of vessel shapes as well as in the representation of certain images (Rawson 1990). Nonetheless, ancestor worship continued to be the bedrock of the socio-religious system. Royal Shang ancestors gradually disappear from the sacrificial list of dead spirits in lieu of the ancestral line of the Zhou royal house, beginning with kings Wu and Cheng. An aggressive, savage style featuring dragon forms with spiral tails and feng phoenixes with a fan-shaped display of eyed tail feathers gradually replace the familiar wild animal mask of Shang times on ritual bronze vessels. The tripod jue libation vessel and gu goblet also gradually disappear in the bronze repertoire and the gui grain vessel assumes new importance. The ding meat offering vessel nonetheless continues to stand out as the most significant one amidst bronzes, as corroborated, for example, by the yiding inscription of early Western Zhou date discussed above. The large square or rectangular tetrapods were gradually abandoned, however, as monumental round tripod ding came into favor.

Like their Shang predecessors, the monumental tripod ding of Western Zhou times vary in size, ranging in height from 94 cm to 122 cm tall (Li 1994: pls. 3, 10–11, 16–17, 21). Many of the large tripod ding of the late eleventh through ninth century B.C.E. date have historically well-known inscriptions, including the Yu 盂 ding pair dated to Kang Wang 康王 (1008–98 B.C.E.) (Shaanxi Bronzes: pl. 21); the Yu 盂 ding dated to Kang Wang (Shaanxi Bronzes: pl. 22); (Li 1994: pls. 21–22); the Shi Zai 師 ding dated to Gong Wang 共王 (936–922 B.C.E.) (Li 1994: pl. 26); the 93.1 cm tall Da Ke 大克 ding dated to Xiao Wang 孝王 (899–889 B.C.E.) (Li 1994: pl. 31); and the 51 cm tall Mao Gong 毛公 ding dated to Li Wang 厘王 (871–828 B.C.E.) (Li 1994: pl. 34). Most of the latter vessels were not excavated but were acquired and handed down over the ages and now are found in Chinese museums and collections.

Although only the Yu ding are known as a pair (Yu 1995: 189), it is probable that the many other large single tripod ding now preserved in museums were originally part of a pair or set. There is increased archaeological evidence for ding continuing to appear in pairs or sets beyond Shang times. Excavated ding usually appear in sets of 5, 7 (second rank below king), or 9 (king status) (Li 1985: 50, 69). Two ding in sets from the richest burials may be singled out in size, as larger than other ding and all other vessels, indicating that pairing was still important to the largest and most elite cast royal ding type. For example, the fifth century B.C.E. set belonging to Marquis Yi of Zeng at Leigudun, Suixian 随县, Hubei, include two that are the largest (57 and 64.6 cm tall) compared to two other sets of 9 ding that are identical in form and décor, though smaller (Hubei 1989: 189–203, pls. 23, 50–54; Fig. 20). Marquis Yi of Zeng (Zeng Hou Yi), a Chu vassal, evidently arrogated to himself the emblems of Zhou kings.

Although no Western Zhou royal burials have yet been excavated, the excavated burials mentioned above and those of the later Eastern Zhou period testify to the
Fig. 20. Zeng Hou Yi 曾候乙 ding sets from Zeng Hou Yi tomb at Leigudun, Suixian, Hubei.
Row 1: The two biggest ding: C96 64.2 cm (left) and C97 50.2 cm (right).
Row 2: Set of 9 ding 35–36 cm tall, represented here by C88 35.3 cm (photograph left) and C89 35.2 cm (drawing center). No images have been published of the other 7 ding in the set (Nos. C87 35.5 cm, C90 36.0 cm, C91 35.0 cm, C92 35.5 cm, C93 35.7 cm, C94 35.3 cm, C95 35.6 cm).
Row 3: Set of 9 ding 39–40 cm tall, represented here by C101 40 cm (photograph left) and C98 39.3 cm (drawing center). No images have been published of the other 7 ding in the set (Nos. C99 39.7 cm, C100 39.2 cm, C104 40 cm, and 4 damaged, unlisted).
continuing tradition, initiated by the creation of bronze vessel sets to identify status and position during the Shang period. The Marquis Yi of Zeng inscribes the two large tripod ding “曾侯乙作持用终” Marquis Yi of Zeng made these vessels to be used forever in sacrifice”; the other sets of nine ding are similarly inscribed (Hubei 1989: 193, 196).

MONUMENTAL TETRAPOD DING AT MILITARY OUTPOSTS CONTROLLED BY ROYAL HOUSE PRINCES

The discovery of royal-sized tetrapod ding at capital and regional Shang sites is geographically significant in suggesting that early Shang rulers extended their economic and military power well beyond their Yellow River valley center in central Henan. Their distribution further implies that the Shang advertised and maintained royal power not only through building large settlements and military defenses, but also by casting major bronzes as symbols of their authority. The tetrapod ding from the capital site of Zhengzhou and regional sites of Pinglu and Xin’gan are all larger in scale and heavier in weight than any other types of extant early Shang bronze vessels (Figs. 8 and 9). All Zhengzhou examples were unearthed from caches. The Xin’gan examples in Jiangxi appear to belong to a burial that was elite, and the Pinglu vessels in Shanxi appear to be associated with a early Shang period settlement that was also significant in status.

In casting technique and artistic form, the bronze vessels from the Pinglu site are entirely consistent with early Shang examples that emanated from the capital center at Zhengzhou. They were cast in one or more pours using the piece mold casting technique (Jiangxi et al. 1997: 293–298; and personal examination). The large Pinglu tetrapod is virtually identical in type to both South Zhangsai (Duling nos. 1 and 2) tetrapod ding at Erligang. Other vessels from Pinglu, such as the lei bronze (37 cm tall) and two jue (16.2 and 18 cm) are comparable with metropolitan Erligang types (Henan 2001: 28–29, pl. 31). Two large-scale round tripod ding from Pinglu are 70 and 73 cm tall, only 10–13 cm shorter than the tetrapod ding (Wei Si 1992: 19); they are otherwise comparable in all respects to the 77.3 cm tall large tripod ding from the Zhengzhou cache at Moslem Bakery in Xiangyang (Henan 1999: 86–87, fig. 61: 3). Although large-scale tripod ding are never as large as the largest tetrapod ding, pairs of differing sizes of the tripods do exist in the Shang bronze vessel repertoire (Figs. 16, 24).63
Because the Pinglu vessels are metropolitan in style and casting technique, it is evident that this area was in direct contact with the capital at Erligang. Based on bone inscriptive and related data, studies of the social and political composition of the late Shang indicate that the kingdom had a complex and sophisticated administrative structure (Cao 2007; Liu 2004; Song 2005; Yang 1992). It had a pyramidal command center and extensive diplomatic connections in all directions that took advantage of six major routes: south and southeast to the Huai River valley and Renfang, then Wucheng, Jiangxi, Hubei, and Hunan; northeast to Yidu, Shandong; northwest to Shaanxi and the Wei River valley; northwest to the Taihang range, Gongfang, and Tufang; and northeast to Liaoning and Hebei (Peng 1988: 269; Song 2005, 1:281–293). Pinglu most likely served as a major nearby outpost protecting the northwest flank of the early Shang capital. The Pinglu tetrapod ding may well have once belonged to a royal prince who transported the vessel there when he was delegated to settle and protect the area. Shang kings and royal house officials were well-honed travelers who frequently left the capital, Da Yi Shang (Great City/Settlement Shang), to hunt, raise troops, conduct military training, make field or crop inspections, collect tribute, attack their neighbors, trade with others, or settle new areas, as related in late Shang bone inscriptions. Noblemen were regularly delegated to inspect and raise troops from friendly yi 邑 cities throughout the kingdom. While traveling, they camped at secure waystations built along frequently traveled routes (Song 2005:195–196, 285–287). The king's delegates or messengers (shi ren 使人) brought back reports from near and far lands (Song 2005:290–294). Messengers and delegates were predominantly zi 子 princes whose status varied depending on whether they held high military rank (indicated by the title ya 亞) or high official rank (the title bo 伯). The Pinglu monumental tetrapod most likely was the royal property of a prince who later became a Shang king at Zhengzhou, possibly Da Ding (8th king) or Yong Ji (14th king), the last early Shang king.

As with the Pinglu bronzes, those unearthed at the Erligang period regional site of Panlongcheng near Wuhan in Hubei are also completely metropolitan in style, indicating direct metropolitan contact and control. This is evidence that these areas were under royal command from the northern capital at Erligang, Zhengzhou. Unlike Pinglu and Xin’gan, Panlongcheng has no burials that include large-scale tetrapod ding. Burial goods and bronzes unearthed from the Panlongcheng burials constitute primarily what is classified as third- and fourth-rank burials, that is, Bing and Ding types identifying elite military personnel (Table 2). Corroborating this is the fact that every excavated burial at Panlongcheng contained some form of bronze, stone, or jade weapon (primarily ge—dagger axes) (Hubei 2001: 502, 505–516, charts 1–3). Bronze vessels and weapons were locally cast at Panlongcheng, as suggested by the remains of bronze workshops at Yangjiawan, Yangjiazui, and Wangjiazui, and remains associated with casting and melting bronze (Hubei 2001:406–409, 499, 503). Since no royal burials or tetrapod ding of the first rank have been found at Panlongcheng and most burials are associated with ranks of third- or fourth-rank status, the site seems to have been subordinate to Pinglu and Xin’gan. It nevertheless occupied a critical defensive location, operating as a fort protecting transport of copper, lead, and tin ingots and other southern goods on the Yangzi River.

The bronze remains at Xin’gan reveal more about Erligang period production of sacred ritual bronze vessels far from the capital at Erligang. As with Panlongcheng, bronzes were cast on site. Yet the large-scale tetrapod ding and bronzes from Xin’gan
differ from the Pinglu example and from Panlongcheng vessels in that although they manifest metropolitan influence in casting technique and typology, they reveal a stylistic and formal whimsy that seems entirely local in expression. Xin’gan appears to have been settled by royalty who exercised more independence than their contemporaries at the Shang period settlements in Hubei (Panlongcheng) and Shanxi (Pinglu) due to their considerable distance from the northern capital at Erligang.

Casting techniques and the formal attributes of the tetrapod ding and other vessels from the large burial at Xin’gan may be used to characterize both differences and similarities with Erligang. Xin’gan tetrapod ding are based on Erligang prototypes and reflect Shang ritual practice and polity, but are set apart by a taste for more cast-on attachments and certain whimsical interpretations of form. Three styles of bronzes have been identified in the Xin’gan burial. One is consistent with early to middle Shang style and casting techniques at Erligang, and may represent imports from the Zhengzhou metropolis. The second involved reworking metropolitan Erligang-style imported or transported vessels by adding new parts such as legs or handles. The third style is entirely local and idiosyncratic (Jiangxi et al. 1997:192–203).

The composition of the bronze alloy and casting technique used at Xin’gan are consistent with the model set in Zhengzhou (Jiangxi et al. 1997:292–300). The Xin’gan vessels contain the high radiogenic lead found in distant Sanxingdui vessels in Sichuan, as well as Hubei, Hunan, Three Gorges, Anhui, Shaanxi, and metropolitan Zhengzhou vessels from Henan sites (Jiangxi et al. 1997:249; Jin 2003; Jin et al. 1994). Furthermore, all of the tetrapod ding at Xin’gan were cast using the piece-mold clay technique composed of inner model parts and outer piece molds first established in Erligang (Jiangxi et al. 1997:289–300). The Erligang method of casting is evident not only in the number of clay molds and models used to cast tetrapod ding but in the number of pourings of metal in connection with casting on or casting in methods. This is illustrated by the four large, square tetrapod ding from South Shuncheng Street in Erligang (Li J. 1999; Li and Guo 1999). Seen in figures 6 and 7 of Li Jinghua (1999), their progression in casting method typifies the manufacture of the same vessel type at Xin’gan. The H1:3 and H1:4 tetrapod ding represent the earliest examples of cast monumental tetrapod ding from the Erligang site; H:2 and H:1 in that order represent successive cast examples of the type. H:1, the largest and most refined, is mimicked in the creation of the two largest examples from Xin’gan, XGM (Xingan Mu):8 and XGM:9 (Fig. 9).

The authors of the Jiangxi Xin’gan report (Jiangxi and Ruichang 1997:258–260, 289–290, 293–298) compare the latter Xin’gan tetrapods to the four tetrapods from Erligang, two almost identical pairs from South Zhangsai Street (Fig. 4), and the Moslem Grocery caches (Fig. 5). The basic process of casting large-scale tetrapods from Erligang, as represented by the example from South Zhangsai Street (Duling), involved two major stages, the creation of molds and the casting of the parts of the ding. Mold pieces totaled 19, with 5 core parts, including: 1) a 2-piece bottom mold carrying a cross-shaped clay core for reinforcement; 2) 4 walls consisting of 5 clay molds and 1 clay core; and 3) 4 legs consisting of 12 clay molds and 4 clay cores. After the molds were made, the parts were cast in 6 separate pours and parts were cast onto each other in 5 separate pours of molten bronze, following a 3-step procedure: 1) the bottom part of the ding was cast; 2) the 4 walls and handles were cast and joined to the base; and 3) the 4 feet were cast and then cast onto the bottom part of the ding (Jiangxi and Ruichang 1997:290; Li and Guo 1999:112–124, figs. 1–7). The creation
of tetrapod ding at Xin’gan involved more molds and separate casts because of the addition of ear ornaments (in the shape of tigers) and flanges (in the shape of curls). Casters at both sites used clay for both mold and model parts and metal for spacers designed to hold the mold and model together at the time of casting. The authors of the Xin’gan report suggest that the common use of metal spacers at Xin’gan demonstrates that this innovation arose in the south (Jiangxi and Ruichang 1997: 294–297; exemplified by XDM: 13, 38; XDM: 38, 57; XDM: 49, 69, 298). However, the earliest use of metal spacers is apparent in the earliest examples of tetrapod ding from the cache at South Shuncheng Street at Erligang. Most of the earliest bronze vessels from the Erligang period found in collections also employed metal spacers (Gettens 1969, 2: 98–106).71

Xin’gan casters sometimes made distinctive local interpretations to the form of ding. One unusual example is XDM: 13, a medium-sized tetrapod ding with a pull-out drawer at the base of its belly (Jiangxi and Ruichang 1997: 38, 45, fig. 24). This drawer appears to have been used for burning coals, as was practiced later during the early Western and middle Western Zhou periods in Shaanxi (Li 1994: pls. 13, 29).72 The most obvious major difference between Zhengzhou tetrapod ding and Jiangxi Xin’gan tetrapod ding is stylistic. This tendency is particularly noticeable in attaching small animals to handles and shoulders of ding and in portraying the animals representationally rather than in the abstract. For example, the two large-scale tetrapod ding XDM: 8 and XDM: 9 shown in Figure 9 are stylistically, technically, and compositionally comparable to early Shang tetrapod types at Zhengzhou in terms of casting technique, alloy, and form, but have added accoutrements such as the recumbent tiger attachments on the upper surface of the handles. The recumbent tiger, recumbent crested bird, and reversed deer head fixtures on handles or rims are distinctive to Xin’gan and not characteristic of metropolitan vessels of the north.73 In short, Xin’gan peoples utilized early Shang technology to cast bronzes according to metropolitan models yet demonstrated an independent flair in creating their own distinctive and idiosyncratic interpretations that typified southern taste.74

Aside from these idiosyncratic local features, Xin’gan also shares certain local cultural features with other southern sites, including Panlongcheng in Hubei and neighboring Wucheng 吳城 in Zhangshu 樟樹, Jiangxi. Ceramics, stonewares, proto-porcelain types, copies of ceramic vessel types in bronze, and certain emblems incised on vessels connect Xin’gan and Wucheng (Jiangxi and Ruichang 1997: 191; Jiangxi and Zhangshushi 2005: 496–498). Ceramics from Panlongcheng are mostly local types and include stonewares, possibly imported from Xin’gan manufacturing centers (Hubei 2001: 496, fig. 348, 497–498). In the early Shang walled site of Wucheng, just 20 km away from Xin’gan (Dayangzhou), there is evidence that the inhabitants were bronze users. Wucheng is therefore frequently cited as a major Shang settlement that defended the route to valuable ores from mines at nearby Tongling in Ruicheng (Jiangxi and Ruichang 1997: 191, 192–203; Jiangxi and Zhangshushi 2005: 420–425, 454–458, pls. 14–15; Peng 2010: 23–26; Song 2005, 1: 284).75

Despite stylistic differences and significant lacuna in the archaeological record, Xin’gan was obviously a major southeastern center of Shang authority. It observed royal practices while exhibiting independence, signified by idiosyncratic stylistic variations in casting bronzes as well as in the creation of local types of stonewares and ceramics. Although the dating of the large-scale burial to early through middle Shang
Monumental tetrapod *ding* vessels represent some of the largest cast ritual vessels known from ancient China. The social stratification of the ruling class as to who may use what type of *ding* strongly corroborates that possession and use of these monumental vessels were the prerogative of kings and royal sons in line of succession to the throne. Oracle bone inscriptions referring to *yiding*, “spirit-empowered *ding*,” also strongly support the theory that such vessels were royal property. Finally, the presence of monumental tetrapod *ding* vessels at distant towns such as Xin’gan suggests not only the presence of Shang royal house family members, especially princes, at distant regional states and city sites, but also suggests that these important centers were under the hegemonic authority of Shang rulers and were pivotal in advertising royal Shang power and divinity (Childs-Johnson 2013b). In short, monumental tetrapod *ding* were the preeminent symbol of royal and divine power during the Shang period.
ACKNOWLEDGMENTS

I want to express heartfelt thanks to the two anonymous readers of this manuscript, as well as to colleagues who generously gave their time to read over the manuscript at every stage of its evolution. I thank Li Feng, Connie Cook, Robert Murowchick, and especially John Major. I am also deeply grateful to the careful reading by the editorial staff of Asian Perspectives, including the Editor, Laura Junker, and Managing Editor, Jaida Samudra.

NOTES

1. The translation is based on Wu (1989: 92–93) with two corrections. Ding 鼎 is usually translated “ding not as tripod,” a misnomer long repeated in scholarly texts. Ding vessels are not restricted to tripods. It is the traditional name for both tripod and tetrapod versions of the vessel type. Wang is translated “king,” not as “emperor.”

2. There is one exception according to Liu (1991) and Yang (2002). A Western Zhou vessel collected in Jiajiacun, Qishan is inscribed “Shi yi zuo fang ding.” No Shang version or other Western Zhou example known to this author is inscribed with that name. Tetrapod and tripod ding were more commonly inscribed with terms such as “旅鼎” “旅鼎” “旅鼎” or “鼎 鼎.”

3. For the chronology and list of posthumous names of Shang queens and kings used here, see Itô and Takashima (1996: table 1 frontispiece). For other lists of kings, see Keightley (2000: 132–133) and Chang (1980: 6).

4. The Shang kingdom is frequently called “Da Yi Shang 大邑商” or “Zhong Shang 中商” in late Shang bone inscriptions (Song 2005: 25–28) and Western Zhou bronze inscriptions such as on the He zun 何尊 (Shaanxi 1976, 1:60–66). “Shang” refers to both the kingdom and its peoples.

5. David Pankenier identifies specific dates for the beginning (1576 B.C.E) and end (1046 B.C.E.) of Shang based on archaeoastronomical data. He discusses what he identifies as “planetary masses” that determined the beginning of China’s first historic dynasties: Xia, Shang, and Zhou (Pankenier 1995: 124, 132). He dates the Zhou conquest of Shang to 1045 B.C.E. and thus the end of Shang to 1046 B.C.E. See Pankenier (1981–1982: 23, table 1) for an earlier reconstruction of the Shang through Zhou chronology. David Nivison (1999, 2009) maintains that the Zhou conquest took place in 1045 B.C.E. Other recent studies include Tang Jigen’s (1999) identification of Middle Shang and the Xia Shang Zhou chronology project (Xia 2000).

6. A recent site report features three cache finds with large-scale tetrapod ding at Zhengzhou (Henan 1999). Although the authors of this report suggest big ding belonged to royalty and may have been used to serve them (Henan 1999: 101), they are primarily concerned with dating the vessels. They demonstrate that the three pits, within which the bronzes were buried, preexisted and were reused during Erligang Period III, making the cache burials transitional in date between Period III and the rebuilding during the last period of occupation, Period IV. The date for filling the pits with bronzes, however, does not correspond to the date the bronzes were cast.

7. Akatsuka Kiyoshi’s (1977) study is still the most thorough attempt to put together what constitutes Shang as opposed to Shang-Zhou vessel inscriptions. For a review of 66 out of 211 clan names in Shang bone inscriptions, see Ding Shan (1956). Also see Ma (n.d.:1–13).

8. Oracle bone inscriptions have been collected into lengthy compendiums that are normally cited by a short version of the title of the compendium rather than by the name of the compiler. Most of the inscriptions listed in this article are quoted from the Heji (1978–1982, 1999a, 1999b) compendiums compiled by Guo Moruo and follow his numbering system. The Qian (1913) compendium compiled by Luo Zhenyu follows a different numbering system.

9. Many tripod and tetrapod ding also carry soot on their underbellies and legs and animal bones in their bellies. Examples include the large-scale tripod ding no. 808 and the Hou Mu Xin tetrapod ding from M5, Xiaotun (Kaogusuo 1980: 34–38), four large-scale tetrapod ding from the three Erligang cache pits (Henan 1999: 10, 17), and various small tripod ding with chicken bones and lower belly soot from Chang Zi Kou’s tomb at Luyi, Henan (Henan 2000: 68, 71). In 1982, an early Western Zhou tripod from a site in Luoyang in the Luoyang Provincial Museum was exhibited with the remains of pig bones. For other remains of animal bones or of soot on bottoms of other ding, see Hayashi (1964: 201ff), Guo (1981: 40, 161), Li (1970: pl. III [R2054], pl. IV [R2049], pl. XVII [R1752, Anyang ding]), and Yang Baocheng (2002: 163). For the remains of different animal bones filling ding from the royal burial at Leigudun, see Hubei (1989: 189–201).

10. Most excavated Erlitou ritual bronzes average between 12 and 20 cm tall and date to Periods III–IV (Kaogusuo 2008: 134–137, 151–158, fig. 14). The tallest are two jia measuring 30.5 and 26.8 cm high (Zhongguo 1996: pls. 13–14). In contrast with Erligang period bronzes, it is noteworthy that
none of Erlitou date are decorated with what was to become the hallmark of Shang ritual bronze imagery: the animal mask. Other bronze artifacts of Erlitou date include zhang 璧 insignia, ge 戈 daggers, dao 刀 knife blades, yue 戈 axes, arrow-points, a few tool types (Du and Xu 2005: 775, fig. 1; 714, fig. 2:3; 665, fig. 9:8; 656, fig. 7:1; 633, fig. 2:1–3) and small bells and small turquoise inlaid plaques (Zhongguo 1996: pls. 20–24). No large-scale royal Erlitou tomb has yet been discovered. Note that many Erlitou metal samples are pure copper; leaded bronze only appears during the last phase of Erlitou Period IV (Jin et al. 1999).


12. As pointed out by Chen and co-workers, most of China’s sulfide mineral deposits and other metallic mineral deposits containing galena were formed during the Mesozoic and a minority during later Palaeozoic, Cenozoic, and pre-Cambrian periods. They are mainly distributed in the middle and lower Yangzi valleys and Yunnan–Guizhou plateau. The chemical composition of these deposits does not change, so these deposits provide a standard for measuring lead radioisotopes (Chen et al. 1980: 215–217; Jin 2002; Peng et al. 2000). In 2002, Chinese geologists and geochemists discovered at Ludian a large-scale native copper mine and nearby lead-zinc mines at Yongshang and Lemachang in northeast Yunnan with high radiogenic lead (Jin 2002). The only other concentrations of this special and rare high radiogenic lead are in the Mississippi river delta and near large-scale native copper mines of Keweenaw in Michigan.

13. Use of this archaeometallurgic technique is prominent in the work of researchers in China, Japan, and the United States (Chase 1996–1997; Jin 2000: 169–174; 2008: 27–29; Jin et al. 1998a, 1998b; Mabuchi and Hirao 1987; Peng et al. 2000; Young et al. 2010: 1034–1039; Zhu and Chang 2002). Pb (lead) isotopes are of interest to the study of ancient bronzes because they provide insight into the geological history of the ore and its mode of formation (Ilonnikov 1975; Jin 1990; Jin et al. 1998a; Mabuchi and Hirao 1987). Peng et al. (2000) examined the geographical origin of Pb isotopes in China and divided the Chinese ore sources into three areas by Pb isotope ratios: high radiogenic lead (208Pb/206Pb less than 2), middle ratios (208Pb/206Pb from 2 to 2.16), and northeastern sources (208Pb/206Pb greater than 2.16). High-radiogenic lead originated from polymetallic ore deposits formed from uranium in southwestern China (Young et al. 2010: 1034). As Chase (1996–1997: 499) points out, “The guiding principle behind the work is that lead used in a particular historic object has a particular set of lead isotopic ratios. . . . The ratios should tell us the source of the lead, as the different ore deposits worldwide each have different characteristic ratios.”

14. For colorplates of these southern bronzes of early to middle Shang date, see Zhongguo 1996: pls. 79 (Feixi, Anhui), 80 and 147 (Luan, Anhui), 115 and 116 (Yueerhe, Anhui), 118 (Zhuzhai, Anhui); Gao 1997: pl. 43 (Dachang, Chongqing [formerly Sichuan, now Three Gorges]); Gao 1990: pl. 44 (Yuyang, Hunan); Sichuan 1999: 239–281 (Sanxingdui). For analyses of some of these bronzes, see Kane (1974), Li (1998: 243–293), Rawson (1994), and Allan (1998).

15. According to archaeometallurgist Jin Zhengyao, Tongling in Anhui was also mined during the Erligang period (personal communication, January 20, 2010).

16. Erligang people exploited the copper-mining sites of Tongling in Ruichang, Jiangxi (Lu and Liu 1993) and Tonglushan in Daye, Hubei (Huangshi 1999; Xia and Yin 1982). Lu Benshan (2006) states that the mines in Jiangxi and Hubei began to be exploited as early as the late Longshan period, as represented by remains at Pingliangtai in Henan. Lu and Liu (1993) maintain that mining or extracting copper at Tongling in Jiangxi began as early as the Xia (also see Liu and Chen 1998: 116, 152n2). Copper smelting (not casting sites of Erligang date) has also been identified at Mianyangdi, Gutandun, and Lihe in Daye, all near the copper mine at Daye (Huangshi 1984; Liu and Chen 1998: 116). There is also abundant evidence for earlier Erlitou period influence in these southern areas, particularly in finds from the far southwestern site of Sanxingdui, Sichuan (Childs-Johnson 1995: 82–85 and Du 2007b: 188–196, 197–198) and at Panlongcheng in Hubei, which was settled as early as the late Erlitou III–IV periods (Hubei 2001, 1: 10–13). Early Shang bronze types from Sanxingdui, particularly zun 鼎, simulate Erligang period types.


18. The use of specialized wares to honor the deceased may be qualified as the beginning of ancestor worship. Specialized wares such as he, gui, and hu pitchers, blackware ding, other blackwares, and hard-fired white wares appear earliest in the Longshan and Liangzhu period burials (c. 3000–2000 B.C.E.). For examples of Longshan blackwares, see Underhill (2002: 127, 150, figs. 5.32 and 6.2); for Liangzhu blackwares, see Huang (2000: pls. 136–139).

19. Liu and Chen (2003: 147) point out that “our” study supports Kwang-chih Chang’s argument that production of bronze ritual objects and weapons for power acquisition was one of the major components of urbanism in early China (Chang 1985). However, our research disagrees with the proposi-
tion that the frequent relocations of the capital cities of the Three Dynasties were directed at chasing after new sources of metal. It was population expansion and the establishment of outposts or fortified towns in the periphery by the political centres in the core . . . that were the strategies for acquisition of key resources. These strategies were practiced as early as the Erlitou period, and continued until the end of the Erligang phase.”
20. The taller one is mislabeled fangding in Kaogusuo (1965:219, fig. 7:10).
23. As a verb of communication, bin in bone inscriptions has long been misunderstood as equivalent with the modern graph, “to entertain or to receive [a guest]” (see Childs-Johnson 2008:51–57).
25. The Shang king’s powers may also be described as extending above and below shangxia 上下, in signifying Di and royal ancestor spirits (Shirakawa 1977:53). Also see relevant bone inscription citations and identifications by Chen Mengjia and Hu Houxuan discussed in Shima (1975:194–195).
26. Remains may be classified as belonging to a capital and city-center site for many reasons. Site remains are large in scale and layout, include massive architectural structures, are surrounded by a pair of city walls and burial grounds, and are replete with their own workshops producing bronzes, jades, and ceramics (An 1999:136–250; Henan 2003).
27. Other monumental examples derive from two regional sites or centers: Qianzhuang 前 stagn northwest of Erligang in Pinglu, Shanxi and distant Dayangzhou in Xin’gan, Jiangxi province.
28. All the pits were filled with dirt containing ceramic potsherds identifiable as Period III in date, indicating that the pits were dug or reused when the site was partially destroyed through burning, probably as a result of warfare followed by reconstruction, at the transition between Periods III and IV, and not when the site was abandoned at the end of Period IV (Du and Xu 2005).
30. Cinnabar (toxic mercuric sulphide) was commonly used to cover tombs, burial goods, and corpses in the late Neolithic and the Bronze Age of China. For cinnabar’s probable association with the color of blood and life in the afterlife, see Needham, Ho, and Lu (1976:3).
31. No bronzes from royal-sized tombs that could be used for typological and stylistic comparisons have yet been excavated at Erligang. The excavators date the cache bronzes to primarily two phases, Erligang Upper Level early and late phases (Henan 1999:99). Based on bronze types and style, there is clearly an evolution that differentiates in date these bronzes from the three caches. For example, the two thin-wall and light-in-weight tetrapod ding from H1 at South Shuncheng Street (H1:3–4) clearly predate the much-thicker-wall and heavier version of tetrapod ding from the same pit (H1:1). The two, H1:3–4, are clearly experimental and representative of the earliest examples of the type cast. Based on a limited number of excavated bronzes from the Zhengzhou site it is not yet possible to date these tetrapods to Erligang Lower Level or Upper Level. Bronze vessel types other than the tetrapod ding found in the Erligang caches are comparable to Erligang Lower Level types known from other burials at Erligang (e.g., Henan 2001, 1:567, C8M7 with bronze jue, jia, and ge; 2: pl.9). The cache bronzes appear to date to a broader time frame covering Erligang Lower Level and Upper Level periods.
32. Measurements of representative medium-sized ding are from tomb M5 of Fu Zi, two dragon leg tetrapod ding measure (in centimeters) 42.4 × 33.3–25.1 × 0.5 thick, 17 kg, and 42.3 × 34.1–24.8 × 0.5 cm thick, 18 kg (Kaogusuo 1980); from the tomb of Chang Zi Kou two (mingqi) tetrapod ding measure 27.6 × 21.2–16.4 × 0.25 thick, 47.2 kg, and 27.8 × 22–16.8 × 0.25 thick, 44.5 kg.
along with two Xi Zi Sun tetrapod ding measuring 21.4 × 16.8–14 × 0.3 thick, 30 kg, and 21.6 × 16.8–3.9 × 0.35 thick, 30 kg (Kaogusuo Anyang Gongzuodui 2004).

33. Measurements of representative small tetrapod ding come from only one early–middle Shang tomb at Pingguxian, Hebei, measuring 14.2 × 11 × 8.7 (Zhongguo, 1: no. 45); two from tomb M5 of Fu Zi measuring 12.2 × 9.2–7.6, 0.7 kg (Kaogusuo 1980); two from the tomb of Ya Chi M160 measuring 21.6 × 16.6–13.5 × 0.65, 3.85 kg, and 18.5 × 12.8–11 × 0.4, 1.6 kg (Kaogusuo 1998:81); two from the tomb of Ya Chang M54 (nos. 170 and 191, scale based on personal examination and as provided in Kaogusuo Anyang Gongzuodui 2004:9, fig. 3); five lidded examples from the tomb of Chang Zi Kou, measuring 19.4 × 14–10.5 × 0.3 thick, 17 kg, and 19.5 × 14.1–10.4 × 0.3, 18 kg, 19.8 × 14.4 × 10.6 × 0.3, 17.5 kg, 19.7 × 14–10.4 × 0.3, 17 kg, and 19.2 × 14.2–10.6 × 0.3, 17.5 kg (Kaogusuo Anyang Gongzuodui 2004).

34. One vessel, a pan steamer, measures 105 cm tall, an exceptionally tall example (Zhongguo 1996:10, pl. 30), slightly larger than the largest monumental tetrapod ding at 97 cm at Xin’gan. This is the exception and Xin’gan is an exceptional site. The tallest tetrapod ding remains the example unearthed from M260 at Xibeigang, measuring 133 cm tall (Table 1).

35. There is still debate about whether the remains at Zhengzhou may be associated with the first or second Shang capital, traditionally called Bo and Ao (Xiao), respectively, in later literature. The late archaeologist in charge of excavations at Zhengzhou, An Jinhui, adhered to his theory that Zhengzhou was the second capital of Shang (see, e.g., An 1986:15; Chang 1980:263–273; and Henan and Zhenghengzhou 2001, 1:5–6).

36. As reported by Wei Si (1992), although damaged on its southern and eastern sides, the site occupies a raised mound area of about 10,000 sq m, an area that approximates that of the middle Shang site of Taixi in Gaocheng, Hebei (1985:2, 209). At the time of road repair 3000 square miles were destroyed.

37. Very few intact royal burials of early, middle, or late Shang date have been identified at capital sites with the exception of Fu Zi’s tomb at the late Shang capital of Anyang (Childs-Johnson 1983, 2007:19–25; Kaogusuo 1980).

38. Wu Hung (1995) makes an excellent case for monumentality and monuments in early China. Although he does not address Shang tetrapods or Shang evidence for monumentality in terms of physical or artistic remains he reviews what he maintains represents monumentality of the Bronze Age: the legend of the Nine Tripods that symbolized political authority and power in the historical tradition. Wu (1995:10) writes, “The story of the Nine Tripods is probably sheer legend: . . . no one ever claimed to have seen them. . . . But to me, their value as historical evidence lies not in their physical form, not even in their existence, but in the myth surrounding them.”

39. No royal-sized tombs have been excavated from the middle Shang site of Huanbei Shangcheng at Anyang or the newly discovered early to middle Shang site, Daxinzhuang, in Shandong.

40. Queen Fu Zi is also known as Noble Lady Zi or Honorable Queen Mother Xin. Fu refers to a female born of or married to royalty or members of the ruling house (Zhu Fenghan 1990:123). “Royal Son” for the zi 子 character is classificatory in referring to a male born of royalty (Zhu 1990:39–67). Past translations of zi include “child” but reference is clearly to a male child, thus son, and because the sons are those associated with the offspring of the Shang king and his brothers, they are royal sons when referenced in Shang bone inscriptions. For an in-depth study of Fu Zi, see Cao (1993) and Childs-Johnson (2003, 2007:19–25) for citations of other relevant studies. Fu Zi is also popularly known as Fu Hao, but as several scholars have pointed out Zi rather than Hao is a more accurate transcription due to the fact the female radical 女 is inconsistently included flanking the surnames of Fu 福, as represented by Fu Zi 福子, which is sometimes written 女 + 子 or simply 子, or by Ji Ji 祖吉, which is sometimes written by combining 女 + 祖 or simply 祖 for the name of Wife Jing or Fu Jing 婦井. The addition of the female radical 女 to surnames of Fu in Shang bone inscriptions functions for emphatic and aesthetic purposes, or for simple clarification that the surname refers to a female (Chang 1986:103–104; Chang 1997:129–130; Childs–Johnson 2003, 2007; Zhang 1985:1119).

41. There are still many unresolved questions concerning the identification of queen and king burials. None have been clearly identified except for the M5 and M260 queen burials.

42. “Gifts” are commonly represented as offerings in elite Shang burials. Fu Zi was honored by many gifts, including five jade ge daggers sent in from the Lufang in addition to many others with named tributaries (Childs-Johnson 2003:630–634; Kaogusuo 1980:131–136).

43. Posthumous day-names were identical to the name of the day, selected from the ten-day week, on which a royal individual would receive sacrifices in the ancestral cult.

44. Fu Ji’s premature death during Wu Ding’s reign is corroborated by abundant bone inscriptive data. Fu Ji, for example, was known as “Xiao Wang 小王 (Small King = Heir apparent)” in Wu Ding period inscriptions; as Brother Ji 兄己 during Fu Geng and Fu Jia Period II bone inscriptions; and as Fu Ji 父己 or as Xiao Wang Fu Ji 小王父己 in Period III bone inscriptions, demonstrating he was the object of royal sacrifices. Both Wang (1979:92) and Cao (2007:125–127) discuss why Fu Ji died soon after his mother, Fu Zi. Both Xiao Wang Ji and Fu Zi were objects of sacrifice in Wu Ding.
period inscriptions, which Wang (1979:92) and Cao (2007:121–122) date to the early to middle late Wu Ding period. Yang clarified why Fu Ji is the patron of the bone inscriptions discovered in 1991 from Huayuanzhuang East pit, H3, at Anyang, and why they date to Yinxu Period I or Dasikongcun Period I (Yang 2004:14–17, 208–209). Received texts refer to Fu Ji’s premature death as taking place after his mother’s yet early in Wu Ding’s career, again underscoring that Fu Ji died as a xiaowang, or heir apparent. For other bone inscriptions documenting the Small King inscriptions see Childs-Johnson (2003:623–626). Cao (2007:117–122) maintains that Fu Ji is identified by another name, Wang 王, as documented by corroborative inscriptions (for further discussion see text pages 190–192).

45. For plundering of the royal tombs see Li Chi (1977:88). As Soper pointed out, “All historical use of the finds from the royal tombs is handicapped by uncertainties of dating... One can perhaps assign a likely date to 1001 by a line of reasoning applicable only to it and its immediate neighbors... this [physical] situation points to two adjacent generations in a royal family, a father and his three sons” (1966:26). Also see Shirakawa (1977:26–30); Song (2005:835–839); and Yang (1981, 1983).

46. For other queens referred to posthumously by the title Hou see Yao and Xiao (1989:846–847). 1-2. Hou 后 (also transcribed si 司) is distinguished from the bone graph 鬱 (yu), often conflated and confused in its reading as hou 舊, descendant (see Hsi 1972:29; Qiu 1985). In Shang bone inscriptions the word for descendant is written differently from the graph for hou; yu is composed of two graphic elements, that for female and for child, of which the latter is written upside down and to the right and rear of the female element (Song 2005:225, 289).

47. I use heir apparent in its traditional meaning: as a person who is first in line of succession and cannot be displaced from inheriting, except by a change in the rules of succession.

48. The so-called “Zi group” divinations identify zi 子, royal sons who were heirs apparent to the throne in at least one clear case. For the identification of one of these zi, Fu Ji, see Yang (2004). As “royal sons,” not ruling kings, none of the zi 子 engaged in cult ceremonies associated with royal prerogative such as the power to bin 兵. For a review of Zi group divinations discovered in pit H3 at Xiaotun, see Smith (2008); for other Zi group divinations, see Song and Liu (2006:181–207).


50. The name for Small King Ji in later received histories such as the Lushi Chunqiu (third century B.C.E.) is Xiao Ji, not the xiao 小 for small but the xiao 孝 for filial (Chen 1956:430–431). As noted by Huang (1989:31), in the Ziben Zhushu Jinian (before third century B.C.E.) it is recorded that in Wu Ding’s 25th year, Royal Son Xiao Ji died in the wild.

51. For a brief account of M260, unearthed in 1984, see Guojia (2001:24, chart, map no. 4, and layout drawing no. 11; note that no. 11 is confused with the other large tomb, no. 12, discovered in 1950 at Wuguanzun—the no. 11 burial should read M260 and no. 12 burial should read 50WGMK1).

52. Other royal sons of Fu Ji’s generation, including successive kings, Fu Geng and Fu Jia, although when they assumed the throne as kings they could also engage in sacrifice to Mu Xin, it would not have been possible for either of them to deposit the tetrapods in her tomb because, as noted above, they had not yet assumed the position of heir apparent or king.

53. Other theories concerning the large-scale burials at Xibeigang associate M260 with Wu Yi’s queen (Kane 1976:105–106). Here it is maintained that Hou Mu Wu refers to Zu Jia’s mother (King Wu Ding’s third wife) rather than King Wu Yi’s wife. This identification follows Alexander Soper’s theory about the occupants of the royal late Shang cemetery at Xibeigang, Anyang. According to his theory, the almost totally looted, central large burial M1001 in Xibeigang West was that of the powerful king Wu Ding; the three others surrounding M1001 (i.e., M1004, M1002, M1550) are identified with his three sons, Zu Ji, Zu Geng, and Zu Jia (Soper 1966:26). In theory, the other five burials at Xibeigang belong to the remaining five late Shang kings who succeeded Wu Ding and his three sons. The incomplete burial M1567 at Xibeigang West is probably that of the last king, Di Xin, who died with the Zhou conquest and was not able to see through the construction of his tomb. For other theories see Yang (1983:930).

54. It should be pointed out that both tetrapod ding inscribed “Honorable Queen Mother” appear in non-cruciform-shaped burials, suggesting that the two queen burials may have more in common than is currently known from excavated data.

55. A binome, or heaven 合文, is a combination of two graphs into one.

56. Wu Hung uses the term “metamorphic” to describe the artistic style of representation on Shang bronzes (1995:50–52), yet not in the religious sense of yi as used in bone inscriptions. Metamorphism is the foundation of Shang belief as is maintained through analysis of paleographic data and standards of representation in art (Childs-Johnson 1995, 2008).

57. They are comparable to the set of five small-scale identical tetrapod ding fashioned by the Shang noble, Chang Zi Kou (Fig. 14 and Table 3).

58. For example, Kern (2007:120) mentions that “Secretaries” and “Makers of Records” during the early Western Zhou were of Shang descent recruited by the Zhou. “Scribe of the Bird on the Perch clan” is also listed by Shirakawa as one of the major “emblems [clan signs]” in Shang bronze inscriptions (cited in Chang 1980:164, fig. 43).
59. Authors differ about precisely when the so-called systemizing of numbers of ding and other ritual vessel types actually began to be significant in the Western Zhou tradition. Yu and Gao (1978) identify the trend as beginning probably in the early and middle phases of the Western Zhou whereas Falkenhausen (2006: 49–52) would trace the beginning much later, during the late Western Zhou period. Because numbers of types of ritual vessels were significant since the Shang period, the tradition of identifying vessel types as sets or pairs continues with stylistic changes yet not as a revolutionary movement with radical change, as once suggested by Rawson (1990: 96–98).

60. Numbers of excavated ding do not always adhere to the ideal numbers formalized in the ding zhifa. This may be due to political choice at the time they were made or different conditions of preservation in the archaeological record.

61. Many ding, gui, and other vessel types forming sets found in Western through Eastern Zhou burials typically have identical imagery and shapes but are commonly distinguished by a pair of two large-scale ding, one of which is usually larger than the other. For example, the Da Yu 大盂 (Large Yu) ding inscription, dated to the Western Zhou king Kang, records that its owner (Yu) cast a large ding and a smaller one. The Da Yu is now preserved in the National Museum of China, Beijing. The inscription of the smaller one, known as the Xiao Yu 小盂 (Small Yu) ding, has been preserved, but not the vessel itself (Yu 1995: 89).

62. Pairing of royal-sized large-scale tripod ding is also represented at other Eastern Zhou elite burials, such as the Marquis Cai 蔡侯 tomb at Shouxian 寿县, Anhui. Those from one Shouxian tomb comprised one large-scale example (55.3 cm tall × 62 cm mouth diameter), a set of seven ding, and another set of ten ding (Anhui 1956: 6–7).

63. One of the more celebrated large-scale tripods ding is the 48 cm tall example dating to the late Shang period that was unearthed from a sacrificial pit at Hougang, Anyang in 1959 (Zhongguo, 2: 14, pl. 28).

64. These routes were already well established by the late Xia and early Shang periods, as is evident from the distribution of late Longshan/Xia and early Shang finds throughout the Yangzi River valley.

65. Song and Liu (2006: 254–276), Yang (1992), Song (2005), and Cao (2007: 26–43) have studied these routes. These routes were already well established by the late Xia and early Shang periods, as is evident from the distribution of late Longshan/Xia and early Shang finds throughout the Yangzi River valley.

66. A large tripod ding discovered in one of the Panlongcheng burials measures 55 cm tall (Zhongguo, 1: 32). It is typologically comparable to the larger 77.3 cm tall example excavated from pit H1 at Xiayang Moslem Grocery at Zhengzhou (Henan 1999: 87, fig. 62: 3).

67. Panlongcheng was located on a tributary of the Yangzi. It was defended by a fortification wall and had a complex scaffolding for a large dock (Hubert 2001: 4–5, maps figs. 3–4; also see 501–504).

68. The earliest dated monumental tetrapod ding are the two from South Shuncheng Street, Zhengzhou. Difficulties met in casting these two stand out in the awkward joining of legs to the bottom piece of the ding as well as in the joins of handles to rim (Li J. 1999: 106–110; Li and Guo 1999: 113–119). In addition, the off-center irregular line of the nodule band of decor of the South Shuncheng Street H1:4 tetrapod illustrates, by comparison to later examples with totally controlled and aligned bands, that these two were the result of experimental casts.

69. Another eccentric form is the cruciform-shaped channel that pierces the belly of the bronze you XGM: 47; this was also designed to hold coals to heat the contents of the vessel (Jiangxi et al. 1997: 30, fig. 37).

70. These are also identifiable as other southern early Shang bronzes from burial sites at Yueyehou and Fangyushan in Anhui and Hunan and farther afield down the Han and Huai Rivers in Qishan and Chenggu counties of Shaanxi province (Li 1994: pls. 38, 92, 100–101, 108, 128, 147, 189, 241–243, 247, 249, 251, 267–268, 253).

71. Other novel interpretations appear to be imports or works made by imported craftsmen from Erligang. These include, for example, a pou ritual vessel, XDM: 30, identical in form to excavated middle Shang period types (see Bagley 1995: 320–332, no. 53). Yet, the base is missing and three new legs added, in addition to two new handles cast onto the rim, creating in appearance a pou-style tripod ding (Jiangxi et al. 1997: 49, 54–57, fig. 25). Similarly three legs and a new lid and handle have been added onto the you vessel XGM: 48, which is otherwise completely standard in type and form.
Other bronze vessel types are completely standard in form and style with Erligang period vessels, suggesting that they were imports, gifts, vessels carried by metropolitan craftsmen, or vessels cast by metropolitan artisans. Representative examples include a gui serving vessel (XDM: 43), a hu liquor container (XDM: 46), and a yan steamer (XDM: 39). The Xin’gan gui is particularly significant as a metropolitan vessel since it is inscribed with the emblem of a tortoise, visible on the inside of the foot (Jiangxi et al. 1997: 61, fig. 33, pl. 85 : 3). Similar emblems are represented elsewhere on Shang bronzes (Bagley 1995: 322, 336, figs. 53.2, 57.2, 103.3) and another was unearthed from M232 at Xiaotun, Anyang (Li and Wan 1972: pl. LIII.2b).

75. Wucheng and Xin’gan sites were settled during the early Shang rather than late Shang period, as mistaken by Li and Chen (2003: 121).

76. This chronological scenario dating Xin’gan to the Erligang period also depends on the dating of certain Xin’gan bronzes that suggest non-Shang styles. These non-Shang types include weapons and one with a long haft extension (XDM: 132 and 133; see Jiangxi et al. 1997: 98, pl. 27 : 2, fig. 49 : 6). These types of weapons are unknown in early Shang metropolitan graves yet are well represented as far afield as Chenggu in Shaanxi province (see, e.g. Li 1994: nos. 241, 243, 246–247, 249, 251, 253), pointing to a southern Yangzi and Wei River valley connection of bronze casting that appears more advanced in weapon making than the Yellow River valley capital site at Erligang. It is maintained here that the settlement at Dayangzhou in Xin’gan, Jiangxi represents a major military outpost built and settled by royal house members to oversee control of trade routes, particularly associated with access to mine sites with bronze ores along the Yangtze River valley.

77. One unexplained difference between Xin’gan and Zhengzhou practices is the absence of gu, jue, jia, and he vessel types in the Xin’gan burial. These vessels are all associated with alcohol used for sacrifice and feasting.

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Paleographic, art historical, metallurgical, and archaeological data are used to identify the monumental bronze tetrapod ding vessel as a preeminent symbol of state authority and divine power during the Shang era of ca. 1640–1046 B.C.E. Paleographic data based on oracle bone terms and inscriptions includes reference to ding as a verb of ancestral sacrifice, and the ding vessel in the specialized compound, yiding, referring to the ritually and metamorphically empowered ding vessel. Art historical data accounts for differences in form and style between ding tetrapod and tripod types. Metallurgical data derives primarily from a unique source of high radiogenic lead in southern China exploited during the early Shang period. Archaeological data derives from excavated Shang tetrapod ding in royal burial or cache burials. KEYWORDS: China, Shang, history, writing, bronze, kings, divine power, oracle bone divination, ritual vessels, ancestor worship, ancestral sacrifices, legend.