饒宗頤國學院院刊　創刊號
2014 年 4 月
頁 27–54

Zhou Bronze Workshops and the Creative Work of Design and Decoration

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The questions addressed in this article concern foundries, designers, and artistic creation in the Zhou period. First foundry debris and the location of bronze workshops are briefly reviewed. Their growing size in association with the early development of a "market" suggests that patrons may have been less influential in the Warring States period than before, when workshops were located close to the palace and worked mainly for the court. The chronology of the Zhou ritual vessels reveals a very slow artistic evolution.The main factors that may help to explain why significant changes in the development of bronze ritual art did not occur very often are reviewed. It appears that during this development, the ritual vessels that were mostly representative of the owner's status like the *ding* and *gui* vessels rarely departed from conventional models. However these two types of vessels were inscribed more often than any other types. By contrast, ever since the late Shang period, the vessels which were most innovative on an artistic level, such as *gong* 觥 and *he* 盉 ewers, belonged to the water container category. A hierarchy existed among the bronzes, therefore, which was expressed either by their number (when they belonged to series like the *ding* tripods) and by the presence or absence of an inscription, or by their décor through the contrast between simplicity and originality, not to say eccentricity, as in the case of the water ewers. Whereas the former expressed status or rank, the latter seem to have been more related to personal choices by the patrons as an expression of wealth. Indeed, this article shows that some bronze types were more prone than others to stimulate artistic innovation. The last part of the article tries to identify one particularly innovative workshop, and to determine specific motifs and decoration techniques that may reveal the individual imprint of a bronze designer, or more broadly of a workshop.

Keywords: Zhou Dynasty, bronze vessels, foundry technique

In this paper, the questions I would like to address concern foundries, designers, and artistic creation.[1] Bronze casting was a major artistic activity in Early China. Numerous scholars have focused their studies on Shang and Zhou bronzes, and now several in-depth studies on Chinese bronzes provide a fairly good knowledge of their chronology (including the earliest period), shapes, religious and ritual functions, decoration and motifs, inscriptions, styles, regional peculiarities, alloys, raw material sources, casting, and decoration technology.[2] Many scholars have additionally addressed problems related to these themes in very detailed studies focusing on one particular period[3] or

1 I wish to express my deep gratitude to the three anonymous reviewers whose comments have been very helpful, and to Jonathan Hay, Ailsa Mellon Bruce Professor, Institute of Fine Arts, New York University, who has polished my English and made valuable suggestions to me.

2 Some of the most comprehensive surveys testify to the vast amount of knowledge that has been accumulated over the recent years since the pioneering works by Rong Geng 容庚 , Guo Baojun 郭寶鈞 and Hayashi Minao 林巳奈夫 . See Rong Geng, *Shang Zhou yiqi tongkao* 商周彝器通考 (Beijing: Harvard-Yenching Institute, 1941), Rong Geng and Zhang Weichi 張維持 , *Yin Zhou qingtongqi tonglun* 殷周青銅器通論 (Beijing: Wenwu chubanshe, 1958), Guo Baojun, *Shang Zhou tongqi qun zonghe yanjiu* 商周銅器群總合研究 (Beijing: Kexue chubanshe, 1959), Hayashi Minao, *In Shû jidai seidôki no kenkyû* 殷周時代青銅器の研究 (Tokyo: Yoshikawa Kôbunkan, 1984), *In Shû jidai seidôki mon'yô no kenkyû* 殷周時代青銅器紋様の研究 (Tokyo: Yoshikawa Kôbunkan, 1986), *Shun Jû seidôki mon'yô no kenkyû* 春秋青銅器紋様の研究 (Tokyo: Yoshikawa Kôbunkan, 1989). The more recent studies are in particular the Sackler Bronze catalogues by Robert Bagley, Jessica Rawson and Jenny So. See Robert W. Bagley, *Shang Ritual Bronzes in the Arthur M. Sackler Collections* (Cambridge: Harvard University Press, 1987), Jessica Rawson, *Western Zhou Ritual Bronzes from the Arthur M. Sackler Collections* (Washington, D.C./Cambridge, Mass.: The Arthur M. Sackler Foundation/ The Arthur M. Sackler Museum [Harvard University], 1990) and Jenny So, *Eastern Zhou Ritual Bronzes from the Arthur M. Sackler Collections* (New York: The Arthur M. Sackler Foundation, in association with the Arthur M. Sackler Gallery, Smithsonian Institution, 1995). Besides *The Great Bronze Age of China* edited by Wen Fong (New York: Alfred A. Knopf, 1980), two more important syntheses need to be mentioned here, by Ma Chengyuan 馬承源 (*Zhongguo qingtongqi yanjiu* 中國青銅器研究 [Shanghai: Shanghai guji chubanshe, 2002]) and Zhu Fenghan 朱鳳瀚 (*Zhongguo qingtongqi zonglun* 中國青銅器總論 [Shanghai: Shanghai guji chubanshe, 2009]).

3 See, for example, the remarkable study by Wang Shimin 王世民 , Chen Gongrou 陳公柔 and Zhang Changshou 張長壽 (*Xi Zhou qingtongqi fenqi duandai yanjiu* 西周青銅器分期斷代研究 [Beijing: Wenwu chubanshe, 1999]) following Hayashi Minao's pioneering work.

question.[4] However, they have not paid much attention to questions related to bronze designers and workshops. The exception is Robert Bagley, who has been the scholar most interested by the question of work organization in bronze workshops. His efforts have led to astonishing results as exemplified by his studies of Houma bronze decoration techniques.[5] For later periods like the Qin and Han dynasties when sufficient information is available in textual sources, whether those transmitted by the literati tradition or inscriptions on artifacts, it becomes possible to study in depth both state and private manufacture.[6] By contrast, for the period under review, the Zhou dynasty, the main information comes from the bronzes themselves and a small number of foundry sites.

Foundry debris and the location of bronze workshops

Important discoveries of clay models and molds have enabled archaeologists to identify the location of Shang and Zhou bronze foundries. In particular, several thousand pieces of clay casting debris have been excavated at Houma 侯馬 in southern Shanxi where the capital of Jin 晉 was located in the sixth and fifth centuries B.C. This discovery made between 1957 and 1965 not only gives us the location of the workshops where a certain style of bronzes flourished at that time, but also supplies information on the scale of the production, the types of vessels and objects, and finally the array of motifs that the local casters invented (Fig. 1).[7] Moreover, comparisons of the molds and models from Houma with the style of bronzes owned by museums have

4 Specific studies are innumerable. For example, they may concern regional styles or one specific shape.

5 See Robert W. Bagley, "Replication Techniques in Eastern Zhou Bronze Casting," in *History from Things: Essays on Material Culture*, edited by Steven Lubar and W. David Kingery, 234–241 (Washington, DC: Smithsonian Institution Press, 1993); "What the Bronzes from Hunyuan Tell Us about the Foundry at Houma," *Orientations,* January 1995: 46–54; "Debris from the Houma foundry," *Orientations,* October 1996: 50–58.

6 As exemplified by Anthony Barbieri-Low in his *Artisans in Early Imperial China* (Seattle and London: University of Washington Press, 2007).

7 Shanxi sheng kaogu yanjiusuo 山西省考古研究所 , *Houma zhutong yizhi* 侯馬鑄銅遺址 (Beijing: Wenwu chubanshe, 1993), Shanxi sheng kaogu yanjiusuo (introduction by Robert W. Bagley), *Art of the Houma Foundry* (Princeton: Princeton University Press, 1996).

allowed Bagley to reconstruct the mold-making procedure used in the Houma foundries. The identification of vessels or objects cast by the Houma foundries among bronzes discovered in Shanxi, Henan, Hebei and Shaanxi has revealed the widespread diffusion of the production within the principality of Jin and beyond. More recently, however, new discoveries have evidenced the location of earlier bronze foundries, like Anyang Xiaomintun Dongnandi 安陽孝民屯東南地 and Zhouyuan Fufeng Lijia 周原扶風李家 (Fig. 2).[8] With the Anyang discovery, it has become possible to assign an earlier date to bronzes that had previously been considered as dating from the early Western Zhou period. As regards foundries postdating Houma, in 1998–1999 a Qin 秦 cemetery was excavated at Beikangcun 北康村 near Xi'an 西安 . Twenty-five clay models or matrices from a bronze workshop were brought to light in tomb 34 dating to the late third century B.C. (Fig. 3). These objects demonstrate the existence in the Qin capital of bronze (or gold) production intended for two separate groups of customers: Chinese on the one hand, and nomadic or semi-nomadic peoples living to the west of Qin on the other. This may be inferred from the fact that the decoration of some of the models perfectly reflects the animal style of the steppes.[9]

In the abovementioned four examples, Shang, Western Zhou, Spring and Autumn, and Warring States workshops have been identified through archaeological discoveries. However, the sites are sparse and together they cover a very long period during which the material and human conditions of

8 For Anyang foundries, see Li Yongdi (Li Yung-ti) 李永迪 , Yue Zhanwei 岳占偉 , and Liu Yu 劉煜 , "Cong Xiaomintun Dongnandi chutu taofan tan dui Yinxu qingtongqi de ji dian xin renshi" 從孝民屯東南地出土陶範談對殷墟青銅器的幾點新認識 , *Kaogu* 2007.3: 52–63, Li Yung-ti, "The Anyang Bronze Foundries: Archaeological Remains, Casting Technology, and Production Organization" (PhD diss., Harvard University, 2003). For Zhouyuan foundries, see Zhouyuan kaogudui 周原考古隊 , "2003 nian qiu Zhouyuan yizhi (IV B2 qu yu IV B3 qu) de fajue" 2003 年秋周原遺址 (IV B2 區與 IV B3 區) 的發掘 , *Gudai wenming* 古代文明 , 3, 2004: 436–90. See also: Song Jiangning 宋江寧 , "Zhouyuan Zhuangli zhutong yizhi taofan de kaoguxue guancha" 周原莊李鑄銅遺址陶範的考古學觀查 , in *Shang Zhou qingtongqi de taofan zhuzao jishu yanjiu* 商周青銅器的陶範鑄造技術研究 , edited by Chen Jianli 陳建立 and Liu Yu 劉煜 (Beijing: Wenwu chubanshe, 2011), 162–72.

9 Shaanxi sheng kaogu yanjiusuo 陝西省考古研究所 , *Xi'an Beijiao Qin mu* 西安北郊秦墓 (Xi'an: San Qin chubanshe, 2006), 120 and following.

bronze production changed dramatically. In the three former cases of much earlier dates, workshops worked for a limited number of patrons and were entirely controlled by court administration. The earlier workshops were probably attached to the palace as dependencies with a production mainly intended for the court. The models deposited in the Qin tomb near Xi'an, however, presumably belonged to a foreman from a private workshop. Trade was the main purpose of the Qin workshop even though its production may have been state controlled. Although we have no evidence about control in this particular case, several existing Qin objects inscribed with artisan's names, whether bronzes, earthenware or lacquer ware, suggest that most artisanal products were controlled by Qin officers. This is consistent with the manuscripts on laws and regulations about craftsmen's work discovered in Tomb 11 at Yunmeng Shuihudi 雲夢睡虎地 (Hubei).[10]

The changing relationships between patrons, designers and artisans are probably a key to understanding how bronze art evolved during the Zhou period. In particular, if we compare the size of the Houma foundry with earlier foundries, it appears that production dramatically expanded in order to supply a much larger clientele. In terms of style, the Houma bronzes are rather homogenous. The considerable quantity of bronzes produced there is demonstrated by the pieces of debris, about 30,000 in total, found over an area covering several square kilometers. Moreover, the workshops within the foundry specialized in making different types of bronzes. Furthermore, if we take into account the fact that bronzes of matching decoration have been found across Shanxi, Shaanxi, Henan and Hebei, it seems that patrons may have been less influential than before when workshops were located close to

10 On the Laws and regulations concerning the quality of the products, see A. F. P. Hulsewé, *Remnants of Ch'in Law: An Annotated Translation of the Ch'in Legal and Administrative Rules of the 3rd Century B.C. Discovered in Yün-meng Prefecture, Hu-pei Province in 1975* (Leiden: Brill, 1985). On Qin bronze inscriptions related to the workshops, see Sumiya Sadatoshi 角谷定俊 , "Shin ni okeru seidô kôgyô no ikkosatsu: kôkan o chûshin ni" 秦における青銅工業の一考察 ——工官を中心に , *Sundai shigaku* 駿台史學 55 (1982): 52–85, and concerning the inscribing technique, Xiuzhen Janice Li, *et al.*, "Inscriptions, filing, grinding and polishing marks on the bronze weapons from the Qin Terracotta Army in China," *Journal of Archaeological Science* 38 (2011): 492–501.

the palace and worked mainly for the court. On the other hand, competition among the states and the regional cultural interaction may have had an impact on the evolution of styles. For example, on some Houma bronzes the addition of small commas, volutes, and scrolls in variable high relief to the usually flat interlace patterns seems to have been directly or indirectly borrowed by Houma workshops from Chu bronzes. At one point interlace disappears under the scrolls. These small elements spiraling in three dimensions were added to motifs that we immediately identify as proper to the style created by the Houma casters.[11]

The genesis of this Houma style is now quite well understood. To the traditional dragon interlace and decoration arranged in continuous flat horizontal bands that were two important Late Western Zhou ideas, at least two more key elements were added. One was the revival of the *taotie* 饕餮 and the other was the borrowing and reinterpretation of foreign themes from the art of the steppe nomads.[12] Although it is obvious that the introduction of a particular motif such as the *taotie* into the repertory of the Houma workshops had a strong impact on their whole production, it has proved impossible to discover how it was introduced or why it so stimulated artistic innovation, with such great effects on the design process. We do not know whether the stimulus came from the patrons who commissioned the first bronzes with the reinterpreted *taotie* motif in the early fifth century (probably they played an important role in its revival), or from the creators of the designs themselves.

The weight of tradition in bronze artistic creation

In early China, the ancestral cult was the pivot of aristocratic society and bronze vessels played a primary role in the cult. Since possession of a ritual apparatus was of the utmost importance for the elite, bronze casting conferred power and exerted a dominant influence on artistic creation in general over

11 See, for example, the models from the Houma foundry debris reproduced in Shanxi sheng kaogu yanjiusuo, *Art of the Houma Foundry*, fig. 412, 414, 421, and molds in fig. 424, 434, 654, 670, 671.

12 Bagley, "What the Bronzes from Hunyuan Tell Us about the Foundry at Houma," 55–57.

several centuries. Art historians commonly describe the evolution of bronze art according to a threefold chronology, distinguishing an initial, middle and final phase for each of the three periods of the Zhou dynasty: the Western Zhou, the Spring and Autumn, and the Warring States periods. The individual phases are each about one hundred years long. Even though it is possible to refine this chronology by subdividing each phase into two sub-phases of about fifty years (more or less two kings' reigns in the Western Zhou period),[13] the sub-phases are still very long since they correspond approximately to two succeeding generations of craftsmen, with a length of about twenty-five years per generation. The assumption is that a son would have produced almost the same bronzes as his father a generation earlier, apart from a few details of shape and decorative style. The relative crudeness of this chronology contrasts with the much finer chronology that modern scholars have established for Greek vases between the eighth and third centuries B.C. Based on the shapes of the vases, painting techniques (black-figure versus red-figure for example), iconography, and styles of the artists, the specialists are able in the best cases to identify them by their names or individual style.[14] Most of the vases may be dated either to around a precise date, like ca. 470 B.C., or to a quarter-century period, like "second quarter of fourth century B.C.," even though they follow earlier models. In the case of Zhou bronzes we are not able to achieve such accuracy.

Although it is difficult (and possibly unnecessary, as suggested by one of the reviewers of this article) to evaluate the speed of change during the Zhou period, it appears that bronze art was mostly based on replication, with few or slight changes in the use or re-use of pre-existing images, formulae, etc. At least four different factors may explain these limitations of the artistic evolution of ritual bronzes, seen equally in their shapes and decoration:

13 For the Western Zhou period, a more interesting chronology has been proposed by Chen Gongrou and Zhang Changshou for the bird motif following the reigns of the Zhou kings, composed of four phases: Late Shang-early Zhou, Kings Cheng and Kang's reigns (ca 1042–978 BC), Kings Zhao and Mu's reigns (ca 977–918), Kings Gong and Yi's reigns (917–873) and later. See Wang, Chen, and Zhang, *Xi Zhou qingtongqi fenqi*, 194–215.

14 See Tom Rasmussen and Nigel Spivey eds., *Looking at Greek Vases* (Cambridge: Cambridge University Press, 1991).

1. The sets of bronze vessels were comprised of containers that each had a precise function during the sacrifices and rituals: the cooking of offerings, presentation and consumption of meals and beverages, storing of liquids (water or wine), presentation of water for ablutions, etc.[15] The function of a vessel determined its shape and thus as long as neither the functions nor the rituals changed there was no specific reason to create new shapes. Even though artists did redesign vessel shapes, their work faced many constraints

2. Besides the slow evolution of the vessel shapes, another factor may account for the standard decoration on a large number of vessels. Corresponding to the status of the owner, the ritual sets contained pairs of vessels such as the *fanghu* 方壺 , and series of vessels made upon the same model, for example the *ding* 鼎 tripods, up to nine but sometimes in decreasing sizes, and *gui* 簋 food containers, up to eight of the same size (Fig. 4).[16] The casting of standardized sets of identical vessels means repetition, as opposed to artworks conceived as unique pieces.[17] In early China, the making of copies and multiples was therefore deeply rooted in the art of bronze casting.[18] In this perspective, imitation was a key principle of the bronze vessel production.

3. The use of ritual sets was defined according to social status in a strict pyramidal hierarchy, with the king at the top, lower-ranked nobles at the bottom, and all kinds of intermediary cases in between. The regulations may

15 For a comprehensive typology of vessel shapes, see Zhu, *Zhongguo qingtongqi zonglun*, 77–324.

16 Yu Weichao 俞偉超 and Gao Ming 高明 , "Zhoudai yongding zhidu yanjiu" 周代用鼎制度研究 , *Beijing daxue xuebao (shehui kexue ban)* 北京大學學報（社會科學版）, 1978. 1: 84–98, 1978. 2: 84–97, and 1979. 1: 83–96. Reproduced in Yu Weichao, *Xian Qin liang Han kaoguxue lunji* 先秦兩漢考古學論集 (Beijing: Wenwu chubanshe, 1985), 62–114; Lothar von Falkenhausen, *Chinese Society in the Age of Confucius (1000–250 BC). The Archaeological Evidence* (Los Angeles: Cotsen Institute of Archaeology, University of California, 2006), 49–50.

17 This remark about copies vs. unique pieces has no derogatory implications. In ancient times when famous artworks were copied some time after their creation, the copies could be appreciated as deeply as the originals, even though they were acknowledged as copies.

18 The production of series of identical or nearly identical vessels was already well established at Anyang, as evidenced in the tomb of Fu Hao (ca. 1200 B.C.). Among the vessels for wine, *gu* are present in amazing numbers: 53 drinking cups of 6 different kinds, of which 22 were cast for Fu Hao herself.

have been applied more or less strictly since in addition to status a few other specific factors may have played their own roles, such as the personal prestige of an aristocrat, or historical events (for example, bronzes confiscated as war booty might be added to a set of vessels). During the Western Zhou period the royal casting workshops played the dominant role in the diffusion of models over Zhou territory. The bronzes cast in the capital foundries set standards for the shape and decoration of the vessels. Subsequently, vessels imitating these models were cast in the principalities. However, the places of manufacture of Western Zhou bronzes are difficult to locate even when inscriptions give the names of donors outside the capital, since in those cases bronzes could have been cast in the Zhou capital, not necessarily in the fief of the donor. One possibility, but this is a mere hypothesis on my part requiring further research, is that when an inscription records a gift of bronze material made by the king to reward someone, this gift implied that the recipient would also be given access to the royal foundries to cast bronzes in honor of his ancestors. It was only after the dramatic events of 771 B.C., when the Zhou court had to flee its motherland, that regional traditions began to develop in the principalities situated not too far from the metropolitan area. From that time on, royal models became less influential on local bronze casting.

4. Another factor, not the least important, may help to explain why significant changes in the development of bronze ritual art did not occur very often during the Zhou period. Although we currently have no precise understanding of the relationship between the patrons who commissioned ritual sets and the designers and workshops responsible for manufacturing the bronzes, the role of patrons may have been decisive in stimulating or limiting innovation. As a case in point, Zeng Hou Yi 曾侯乙 , the marquis Yi of Zeng, was certainly one of the patrons who actively encouraged innovation.

In this historical context, what kind of freedom did bronze designers enjoy for their own creative work? Is it possible to identify the production of any individual bronze designer or foundry among the thousands of bronzes that were cast during the early centuries of the Zhou period? Under certain conditions, it seems that the workshops would have been able to create new designs, and even to renew completely the principles of design composition, so the answer should be yes.

Vessel types and artistic creation

To address these problems, it is necessary to examine the bronzes by categories, since a sort of hierarchy existed among the vessels according to their shapes and functions. Some of them like the *ding* tripods and to a lesser extent the *gui* food containers were markers of status. As such, one would expect that *ding* tripods would stand out among all the other vessels in a ritual set, and that these more important vessels would have benefited from a specific artistic treatment from the designers. In fact, this was not the case. In particular, the majority of *ding* tripods have simple decoration lacking inventiveness (Fig. 5). The most conspicuous case is the Mao Gong *ding* 毛公鼎 , which has the simplest decoration but the longest inscription. Nothing in the shape and decoration of a large majority of tripods seems to make them depart from conventional models. However, bronze inscriptions are more numerous on *ding* vessels (1858) than on any other vessel type.[19] The second greatest number of inscriptions appears on *gui* vessels (1433), whose shape and decoration became standard from the middle of the Western Zhou period onwards.

By contrast, ever since the late Shang period, the vessels that had been the most innovative on an artistic level belonged to the water container category,

19 The calculation of the number of inscriptions by type of vessel for the Shang-Zhou period is based on the compendium published by the Chinese University of Hong Kong in 2001. See Zhongguo shehui kexueyuan kaogu yanjiusuo 中國社會科學院考古研究所 , ed., *Yin Zhou jinwen jicheng shiwen* 殷周金文集成釋文 (Hong Kong: Chinese University Press, 6 vols., 2001). Although numerous inscribed vessels have been discovered since the 1990s, their inclusion would probably not change the results very much: *ding* tripods (1858), *gui* (1433), *you* (733), *zun* (576), *hu* (279), *pan* (168), *yi* (109), *fu* (163), *xu* (126), *he* (153), *lei* (92), *gong* (54), *fangyi* (74). Bells also have to be taken into account (358 inscriptions for the Zhou period including all types). During the Shang period, the largest number of inscriptions appear on wine vessels such as the *jue* 爵 , *gu* 觚 , *zun* 尊 , *zhi* 觶 , and *you* 卣 . I have omitted the vessels whose shapes disappeared rapidly in the early Zhou period.

such as *gong* 觥 and *he* 盉 ewers.[20] For example, the recent excavation of a large cemetery at Pingdingshan in Henan has brought to light a *he* pourer that was cast in the early ninth century, judging from its shape and bird surface decoration (Fig. 6). As it is often the case with provincial bronze workshops, the designer took some distance from the metropolitan style: the shape of a duck was given to the container, and a rare male figure serves to link the lid to the container. One sees here that workshops located far from the Zhou metropolitan area could be highly innovative.

Traditional bronze decoration was organized in rectangular units, each containing a single *taotie* or dragon or bird. The horizontal registers and vertical axes formed a kind of grid that divided the entire vessel surface. All the figures were paired, and confronted each other across a vertical axis down the centre of the vessel. This mode of decoration was particularly well suited to regular shapes. During the Western Zhou period the decoration of the bronze surface changed when the vertical axes disappeared and the motifs were organized in continuous horizontal registers. This new composition of

20 For example, the pair of Si Mu Xin *gong* 司母辛觥 , the pair of Fu Hao *gong* 婦好觥 , from Yinxu Tomb 5. See Zhongguo shehui kexueyuan kaogu yanjiusuo 中國社會科學院考古研究所, ed., *Yinxu Fu Hao mu* 殷墟婦好墓 (Beijing: Wenwu chubanshe, 1980), 59–64. In the early Western Zhou period, several *gong* were cast in different styles but in a line of development following these earlier models. See Zhongguo qingtongqi quanji bianji weiyuanhui 中國青銅器全集編輯委員會 , ed., *Zhongguo qingtongqi quanji*, Vol.1 of *Western Zhou* 中國青銅器全集・西周 1 (Beijing: Wenwu chubanshe, 1996), nos. 99–107. As for *he* ewers, examples are numerous, like the X *he* 宅盉 from Fufeng Qijiacun 扶風齊家村 , the *he* from Tomb 31 at TianmaQucun 天馬曲村 (Shanxi), the Lai *he* 逨盉 from Meixian Yangjiacun 眉縣楊家村 (Shaanxi), the Bu *he* 匍盉 from Tomb 50 of the Ying 應 cemetery at Pingdingshan 平頂山 (Henan). See Zhongguo qingtongqi quanji bianji weiyuanhui, ed., *Zhongguo qingtongqi quanji*, Vol.1 of *Western Zhou*, 1996, no. 116, *Wenwu* 1994.8, front cover and fig. 4–4, p. 25;*Wenwu* 2003.6, fig. 49, p. 38; Henan sheng wenwu kaogu yanjiusuo 河南省文物考古研究所 and Pingdingshan shi wenwu guanliju 平頂山市文物管理局 , *Pingdingshan Ying guo mudi* 平頂山應國墓地 (Zhengzhou: Daxiang chubanshe, 2012), 350–51. In the category of wine vessels, since the Shang period animal-shaped *zun* had been among the most original or eccentric vessels, for example the pair of owl shaped Fu Hao *zun* from Yinxu Tomb 5. See Zhongguo shehui kexueyuan kaogu yanjiusuo,ed., *Yinxu Fu Hao mu*, 55–59. Animal shaped *zun* from the Western Zhou period are comprised of several different shapes, such as elephant, birds, tapir *mo* 貘 , rabbit, and even fish. See Zhongguo qingtongqi quanji bianji weiyuanhui, ed., *Zhongguo qingtongqi quanji*, Vol.2 of *Western Zhou* 中國青銅器全集・西周 *2* (Beijing: Wenwu chubanshe, 1997), nos. 53, 54, 152, 170–72.

the décor could have allowed innovation, but on the existing evidence did not, at least immediately. Few motifs such as the wave pattern were invented to fit with the new composition of the décor, but once they had entered into the vocabulary of the bronze artisans they were replicated over a long period of time. Given the "conservatism" associated with regular shapes, it seems justified to ask whether vessels having irregular shapes (such as water containers) were not more prone to stimulate artistic innovation. Without excluding the possibility that this was generally true, the contrast between vessels with regular and irregular shapes already confirms how strict was the framework within which the designers worked. Any possible freedom was exploited, which they certainly did when making vessels with irregular shapes. However, the difference of treatment between regular and irregular shapes concerns not only decoration but also inscriptions. When shape and inscription are both taken into account, this seems to indicate the existence of "innovation-prone" and "innovation-free" types not solely based on shape.

A hierarchy existed among the bronzes, therefore, which was expressed either by their number (when they belong to series like the *ding* tripods), by the presence or absence of an inscription or by their decor, through the contrast between simplicity and originality, not to say eccentricity, as in the case of the ewers for water. Whereas the former expressed status or rank, the latter seems to have been more related to personal choices by the patrons as an expression of wealth. Bronze objects that do not belong to ritual sets like weapons, chariot garments or boxes likewise reveal the most innovative decoration (Fig. 7).[21] For example, the small box from Wenxi Shangguocun 聞喜上郭村 (H. 8.9 cm, L. 13.7 cm) is not a ritual vessel, and for this particular reason the designer could feel free to invent something very different from what he usually did.[22] The square box alludes to a two wheel chariot. It opens both on the upper part and on one side. A guardian holds the lock of the side door and allows it

21 See Zhongguo qingtongqi quanji bianji weiyuanhui, ed., *Zhongguo qingtongqi quanji*, Vol.2 of *Western Zhou*, no. 52 (cylindrical box from Tomb 33 at Tianma Qucun, Shanxi), nos. 58–61 (box in the shape of a chariot from Tomb 63 at Tianma Qucun), no. 182 (axe from Tomb 13 at Baoji Zhuyuangou 寶雞竹園溝), no. 180 (chariot fitting from Tomb 1 at Baoji Zhujiazhuang 寶雞如家莊).

22 Zhongguo wenwu jinghua bianji weiyuanhui 中國文物精華編輯委員會 , ed., *Zhongguo wenwu jinghua* 中國文物精華 (Beijing: Wenwu chubanshe, 1990), no. 52.

to be opened. This man's lower position in the society is indicated by his cut leg and naked body. The knob on the top has the shape of a monkey and it is surrounded by birds. Obviously, there is a strong contrast between the way of representing the monkey and the man on one side, and the birds, dragons and tigers on the other side. The former motifs, new to the artists, are naturalistic; they take their models from living beings. The latter, meanwhile, follow the traditional conventions used to represent zoomorphic motifs. Apparently, the freedom allowed to artists or craftsmen in their creative work depended on the ritual function of the vessel or object.

During the evolution of bronze ritual vessels, a small number of new shapes were invented in order to follow or adapt to new prescriptions in the rituals. Such are the bronze *xu* 盨 (and *fu* 簠 likewise) containers that appeared in the late Western Zhou period, and the *dui* 敦 spherical vessels.[23] If we consider for example the *xu* vessels, they are composed of two rectangular halves that are identical (Fig. 8). Their surface decoration is entirely governed by symmetry. Their shape inspired the development of a new kind of design that required a complete change in the nature of the motifs themselves. From the Shang period until the first half of the ninth century B.C., symmetry had always been used in relation to a vertical axis. Motifs to the right side of the axis faced mirror-reversed motifs to the left side. By contrast, from about the mid-ninth century B.C. on, in order to enliven the surface decoration of the vessels, there were experiments with symmetrical effects in relation to horizontal axes. The experimentation continued at the level of the motif designs, with a change in motif composition implying symmetry in relation to a central point. Organizing symmetrical effects based on a central point instead of a vertical axis had dramatic consequences for the overall decoration. The Bo Gong Fu *fu* 伯公父簠 , for example—a *fu* that is identified in its own inscription as "*gu* 匜"—has a sophisticated motif on the top of the lid and the bottom of the container.[24] The eye of the dragon is located at the center of the motif, and each part of its head and body can be viewed symmetrically in

23 Zhu, *Zhongguo qingtongqi zonglun*, 138–46.

24 Zhongguo qingtongqi quanji bianji weiyuanhui, *Zhongguo qingtongqi quanji*, Vol.1 of *Western Zhou*, no. 83.

relation to the centre of the design. This new principle of symmetry meant that a creature such as a dragon could be represented upside down. Thus, it was no longer necessary to give dragons a position that seemed natural to the viewer. Likewise, two-headed dragons could replace traditional dragons. Put another way, with this revolution in the designs dragons became pure ornament, since they could be represented upside down without any concern for a physical aspect that would look "natural." I note in passing that such decoration based on dragon motifs symmetrically arranged around a central point is best evidenced by this new type of vessel, the *fu*. Like its decoration, the shape of this food container is based on perfect symmetry. Each half of the vessel could be used as a container. With this new principle in mind for the vessel designs, the bronze designers invented interlacing and opened the path to a completely new mode of decoration.

Another case involving the appearance of a new shape is found in the Chu 楚 area with the sheng *ding,* 升鼎 . In contrast to the traditional Zhou *ding* tripods, these tripods not only have a distinctive shape, but also elaborate decoration and long inscriptions. In this particular case, vessels with special features were created for a small elite within the aristocracy of Chu in order to show that their owners belonged to a different sphere of social privilege. In the ritual sets, they were part of a group of ornate vessels that complemented the more ordinary set of ritual vessels.[25]

25 Lothar von Falkenhausen, who has noticed a "difference not only in magnitude, but also in quality, typology, and style" in a small number of bronzes from Tomb 2 and Tomb 1 at Xichuan Xiasi, is inclined to think that they compose "a special assemblage" within the set of vessels of each tomb owner. The possession of this assemblage would have conferred on its owner a special level of prestige and rank, allowing him to participate in special kinds of rituals. See von Falkenhausen, *Chinese Society in the Age of Confucius (1000–250 BC)*, 340 ff. For a different viewpoint, see my review of Falkenhausen's book: Alain Thote, "Note critique. Archéologie et société. Nouvelles perspectives sur la Chine des Zhou," review of Lothar von Falkenhausen*, Chinese Society in the Age of Confucius (1000–250 BC)*, *T'oung Pao* 96.1–3 (2010): 202–30.

The identification of a Chu royal workshop

In certain cases, a specific type of bronze production may be identified by unusual features as the work of a group of artisans at a particular moment. Probably the highest level of originality in Chu foundry production is exemplified by the bronze altar table from Xichuan Xiasi 淅川下寺 Tomb 2 (Henan). Modeled on a wooden prototype, it can be dated to some time before the mid-sixth century B.C.[26] The casting of the relief decoration probably required the use of the lost wax process which was rarely used in Chinese antiquity and only in the Chu area. The table is supported by ten dragons and ornamented by twelve larger dragons whose wide open mouths and protruding tongues give the impression that they are starving for the food that will be put on the table. Both the upper part of their heads and their tails are a maze of intertwined snake or dragon bodies. The panels are composed of curls and interlace in three dimensions that look independent from each other. Even if it embodies the Chu artistic tradition, this piece remains unique to date and may be a product of the Chu royal workshops. Bronzes that are stylistically close to the table are rare. A *zun* vessel and a basin in the same style were found in a later tomb, at Suixian Leigudun 隨縣擂鼓墩 , dating to ca. 433 B.C., that belonged to Zeng Hou Yi (Fig. 10).[27] The decoration of these vessels follows the same principles and same technique as the altar. Since the vessels show some improvement in the technique, which is more elaborate and complex, we may surmise that the zun *pan* 尊盤 was probably cast some time during the fifty years following the cast of the altar table. These two rare bronzes are among the most spectacular pieces excavated from the tomb of Zeng Hou Yi. Nonetheless, they were not made for the marquis on his order but were inherited by him from one of his ancestors, as indicated by a previous inscribed name that was erased and replaced by the name of Yi. Both the altar table

26 Henan sheng wenwu yanjiusuo 河南省文物研究所 , Henan sheng danjiang kuqu kaogufajuedui 河南省丹江庫區考古發掘隊 , and Xichuan xian bowuguan 淅川縣博物館 , *Xichuan Xiasi Chunqiu Chu mu* 淅川下寺春秋楚墓 (Beijing: Wenwu chubanshe, 1991), 126 and fig. 104, 128.

27 Hubei Sheng Bowuguan 湖北省博物館 , *Zeng Hou Yi mu* 曾侯乙墓 (Beijing: Wenwu chubanshe, 1989), 228–34.

and the zun *pan* set seem to have come from the same workshop, probably located close to the Chu court and in activity during the sixth and early fifth centuries B.C. Also related is the bronze stand for a set of bells found in the tomb of Zeng Hou Yi, which has bronze fittings consisting of curls, interlace mixed with five-petal flowers. These fittings were also probably cast in the same workshop, but about a century later. Finally, the bronze *hu* vessel from Xuyi Nanyaozhuang 盱眙南窑莊 (Jiangsu) may have been cast in the same workshop, testifying that the workshop was still active in the late fourth century B.C. Judging by these examples, it appears that specific techniques may help in identifying foundries. Presumably microscopic and chemical analyses will in the future contribute to the identification of individual technical traits and consequently help assign groups of objects to an individual artisan or workshop.

In search of bronze artists and workshops

Beyond this very general observation, a small number of bronze shapes and decoration reveal the individual imprint of a bronze designer, or more broadly of a workshop. The inventiveness in bronze decoration can be seen in specific motifs or motifs rendered in a particular style;[28] or in vessel components like the vessel handles; or even in a particular decoration technique. The following examples may be offered:

— Specific motifs: the bird motif with spiky (hooked) outlines (Fig. 11).[29]

— Motifs rendered in a particular style: the *taotie* of the Ri Ji *fangyi* 日

28 A rare motif of a small snake holding a ring in the convolution of its body appears on twelve bronzes from the tomb of Zeng Hou Yi. This rare motif can be considered as a signature of a workshop.

29 See Rawson, *Western Zhou Ritual Bronzes from the Arthur M. Sackler Collections*, no. 38 (*gui*), Zhongguo qingtongqi quanji bianji weiyuanhui, *Zhongguo qingtongqi quanji*, Vol.1 of *Western Zhou*, no. 100 (Zhong Zi X Y *gong* 仲子𠂤宧觥). Both belong to American collections. A *fangding* discovered in 1927 at Baoji Daijiawan has the same bird pattern. See Zhongguo qingtongqi quanji bianji weiyuanhui, *Zhongguo qingtongqi quanji*, Vol.2 of *Western Zhou*, no. 149.

己方彝 , Ri Ji *gong* 日己觥 and Ri Ji *zun* 日己尊 (Fig. 12).[30] Although it is generally agreed that the Western Zhou casters formed a homogenous group of people in the workshops without any pre-eminence of artists over craftsmen, it seems logical that a few prominent figures would have created original artworks that stand out from the more conventional bronze production. Among the cases reviewed, the bronzes discovered in 1963 at Fufeng Qijiacun 扶風齊家村 are noteworthy. The hoard was composed of two sets of three bronzes each that possess clearly contrasting features, even though the two groups of vessels were cast at the same time and were then both highly innovative. In this case it seems that the individual character of an artist is manifested either in the reinterpretation of earlier forms and decors or within the aesthetic frame of reference of his time. Although his freedom was limited by cultural traditions and artistic conventions, his design is immediately recognizable as singular, not to say unique.

— Handles: the bird-shaped handles of the Jie *gui* 諫簋 , X *gui* 豦簋 .[31]

— Decorative technique: a group of bronzes with wave pattern decoration draws our attention to an unusual decoration technique. The outlines of the wave motifs are in low relief and seem to come out of the bronze surface. The technique used to get this effect turns out to be uncommon. One may imagine that the craftsman started with a clay model on which he carved the main decoration. Then he used the traditional method to make the mold sections by applying fine wet clay to the model. This clay was then removed and cut into sections. Once the clay mold sections had dried, he recarved the outlines of the wave motifs so that they would rise from the surface once the bronze had been cast. Only a few vessels have this pattern in common, in particular the Da Ke *ding* 大克鼎 , the X *yu* 逋盂 , the pair of Ji Fu *hu* 幾父壺 , and a pair of bronze

30 Zhongguo qingtongqi quanji bianji weiyuanhui, *Zhongguo qingtongqi quanji*, Vol.1 of *Western Zhou*, nos. 135–36, 128–29; nos. 107–08, 102–3; nos. 162–63, 154–55 (hoard at Fufeng Qijiacun 扶風齊家村 , 1963).

31 Zhongguo qingtongqi quanji bianji weiyuanhui, *Zhongguo qingtongqi quanji*, Vol.1 of *Western Zhou*, no. 54, 51 (tomb at Chang'an Huayuancun 長安華園村 , 1981), no. 59, 56 (tomb at Fufeng Zhuangbai 扶風莊白 , 1975).

yu from Fufeng Qijiacun (1958) (Fig. 13).[32]

With these few examples I have tried to show that particular stylistic or technical features and rare motifs may be diagnostic of a single bronze designer or group of designers or workshop. In my opinion, it is time to pay more attention to these specificities and consider them as markers or signatures. Contrary to the case of ancient Greece, we do not know the name of any artist in early China. Ancient Chinese art is entirely anonymous. However, the distinctive characteristics of some bronzes may help to identify the artistic style of some individuals or their workshops. It seems to me that we should be able to isolate the artworks of a few workshops when they share a certain number of features in common and to determine the period of activity during which they produced these artworks.

For the Qin and Han periods, inscriptions on bronzes and lacquer wares list the names of individuals involved in the production of objects, showing the complex hierarchy of specialized craftsmen and their supervisors employed in the workshops. Undoubtedly, such specialization already existed in the Western Zhou period, and probably in a sophisticated way. However, the relationship between the artistic designers and those who actually made the moulds and cast the bronzes in the foundries cannot be clarified. It seems that in ancient China it is difficult to make a clear distinction between the respective functions of "artists" and "craftsmen." However, the artistic developments that occurred in the late Zhou period, especially from the fourth century B.C., suggest that the status of the artists changed, as evidenced by the florescence of more individual creations.[33]

32 Zhongguo qingtongqi quanji bianji weiyuanhui, *Zhongguo qingtongqi quanji*, Vol.1 of *Western Zhou*, nos. 31–33, 28–30 (*ding*); no. 74, 70 (*yu*); nos. 138–39, 131–32 (*hu*); and Cao Wei 曹瑋 , ed., *Zhouyuan chutu qingtongqi* 周原出土青銅器 (Chengdu: Sichuan chuban jituan/Ba Su shushe, 2005), 1: 350.

33 Alain Thote, "Artists and Craftsmen in the Late Bronze Age of China (Eighth to Third Centuries BC): Art in Transition," in *Proceedings of the British Academy*, 154 (2008), 201–41.

Conclusion

As the power of the Zhou kings over their kingdom gradually weakened, the principalities that were initially placed under their sovereignty tended to become independent political entities. This process was more or less complete by the late seventh century B.C. Likewise, the arts that had been so dependent on the Metropolitan workshops during the Western Zhou period tended progressively to gain autonomy. This evolution was not the result of a deliberate choice on the part of the artists and their patrons, but was marked by conflicting artistic currents. On the one hand, the relations that closely linked the elites of different states caused the maintenance or adoption of common models, with the result that the artists refrained from making major innovations. On the other hand, the constitution of ever more autonomous states and the control these states exerted over regions inhabited by non-Chinese populations led to the blending of elite culture with local cultural traits. By the sixth century B.C., this evolution shaped strong regional cultures. At that point and for some time, the production of individual designers became less visible within the regional productions. This was just before the sudden artistic blossoming that happened in the Warring States period.

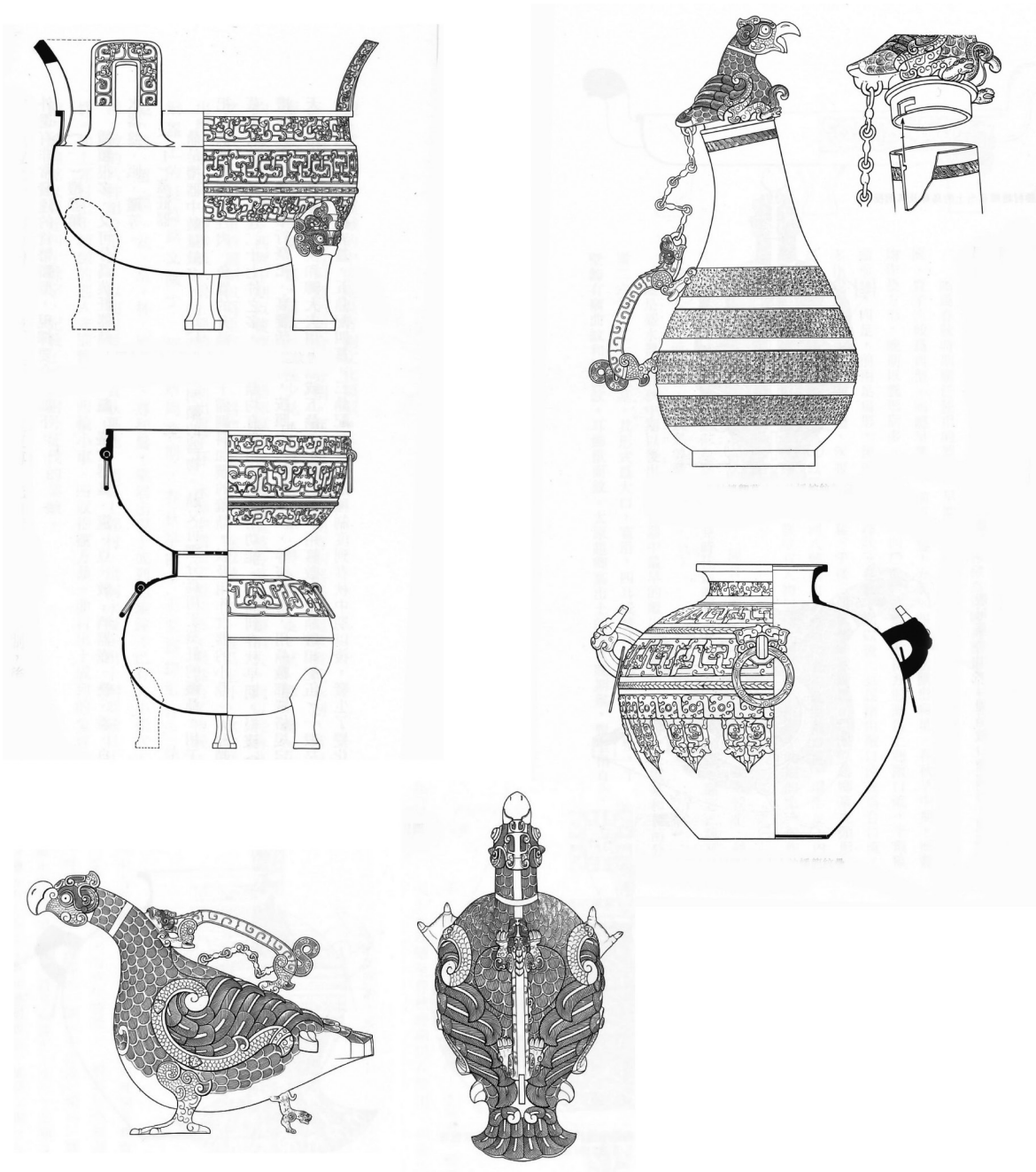

Fig. 1: Bronzes from the Houma foundry, from Tomb 251 at Taiyuan Jinshengcun (Shanxi), fifth century B.C.

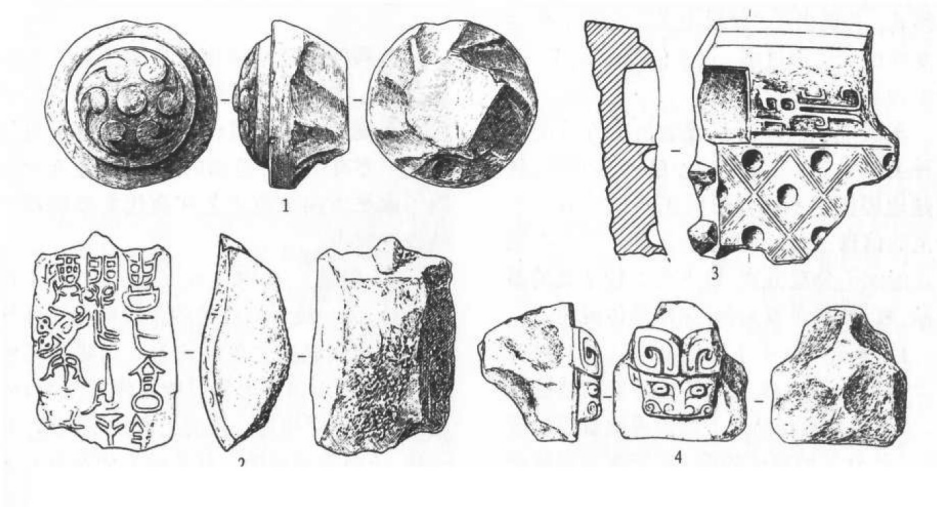

Fig. 2: Bronze molds from Anyang Xiaomintun (Henan), eleventh century B.C.

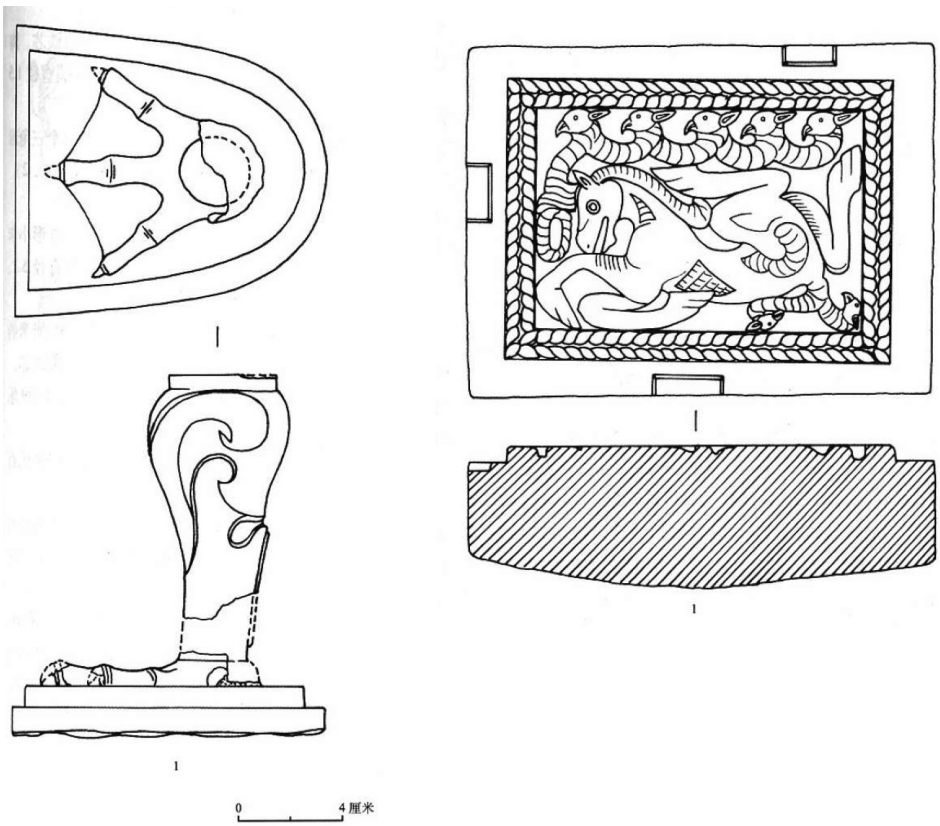

Fig. 3: Models or matrices from Tomb 34 at Xi'an Beikangcun (Shaanxi), third century B.C.

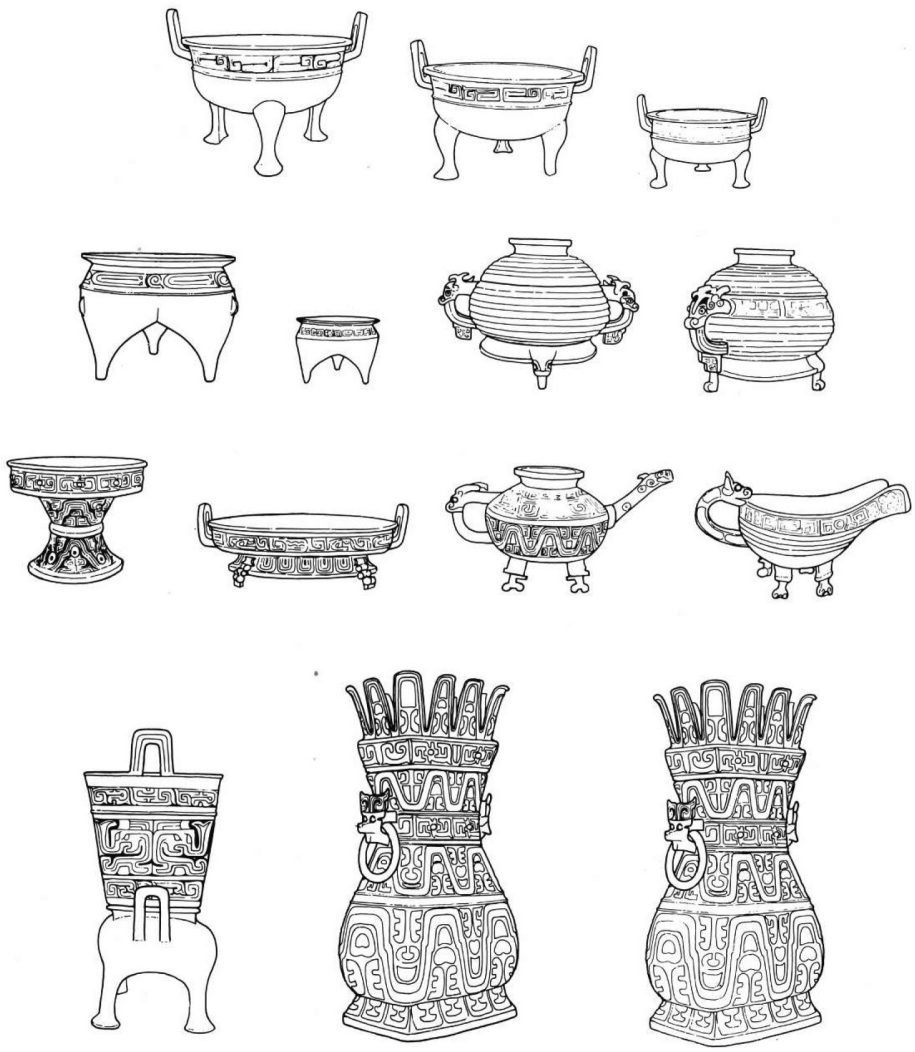

Fig. 4: Set of bronzes from Jingshan Songhequ, eighth century B.C.

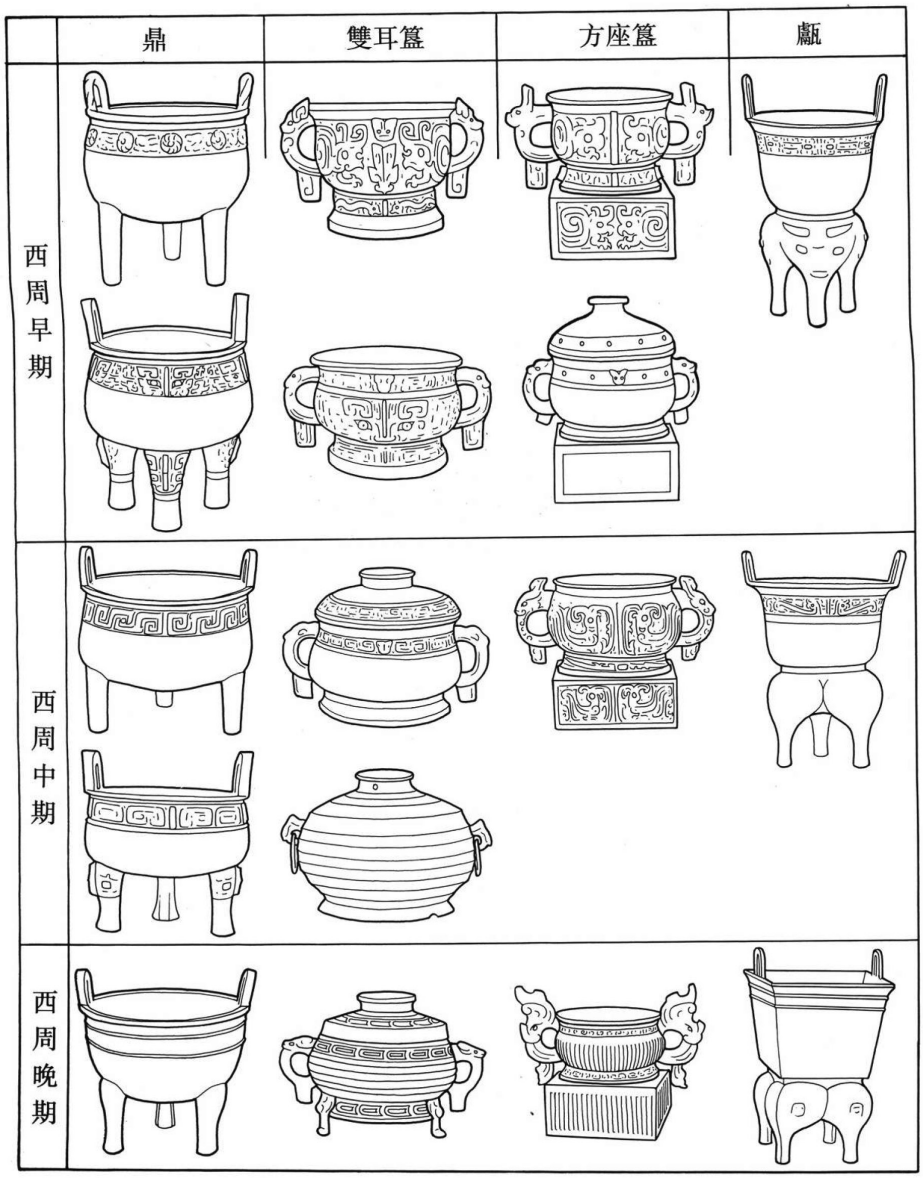

Fig. 5: Bronzes of the Early, Middle and Late Western Zhou period.

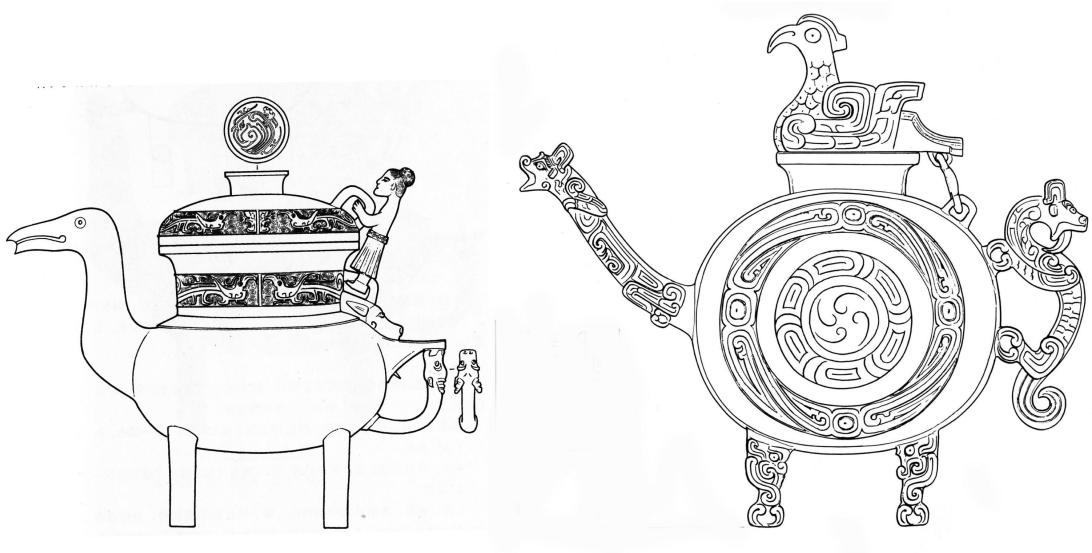

Fig. 6: *He* ewer from Pingdingshan Tomb 50, and from Fufeng Qijiacun (1963), early ninth century B.C.

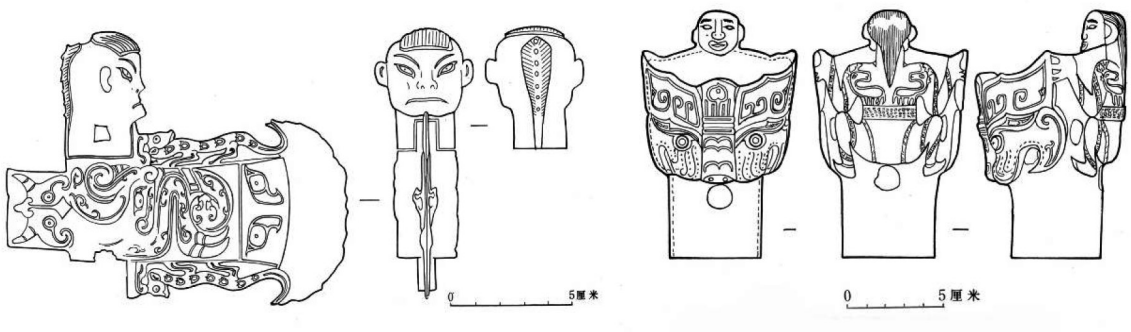

Fig. 7: Bronze axe and chariot fitting from Baoji Zhuyuangou.

Fig. 8: Bo Gong Fu *hu* (also named *xu* vessel).

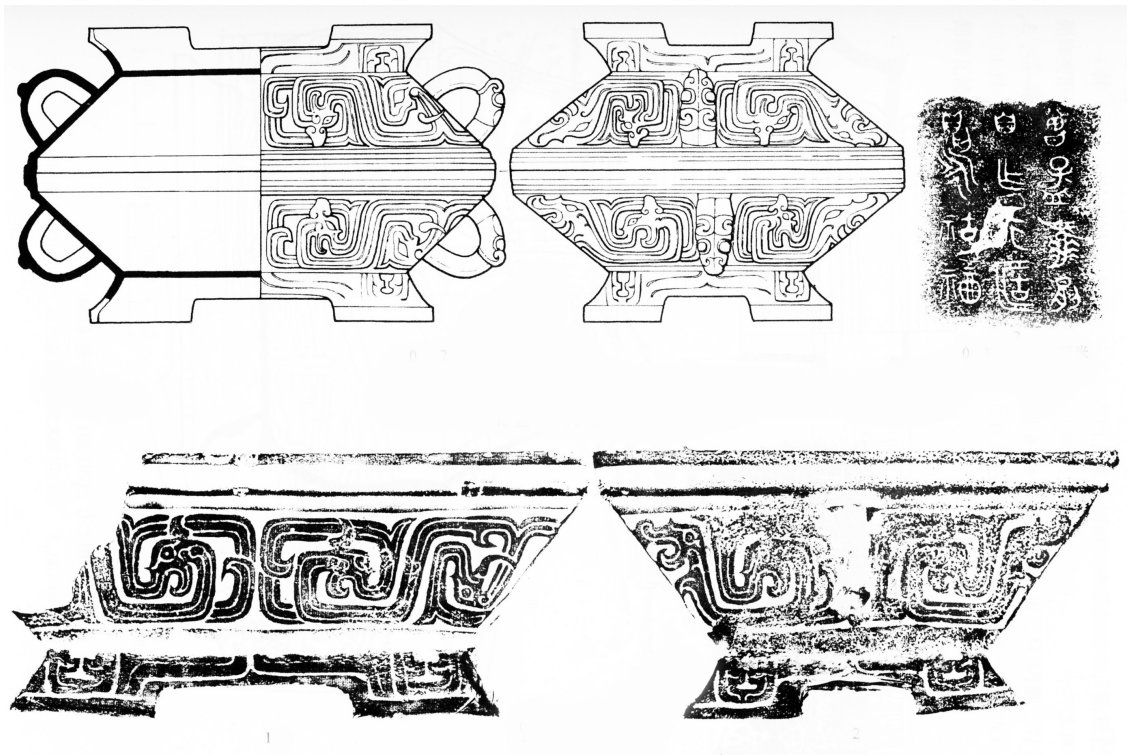

Fig. 9: *Fu* vessel from Zaoyang Guojiamiao MG01, eighth century B.C.

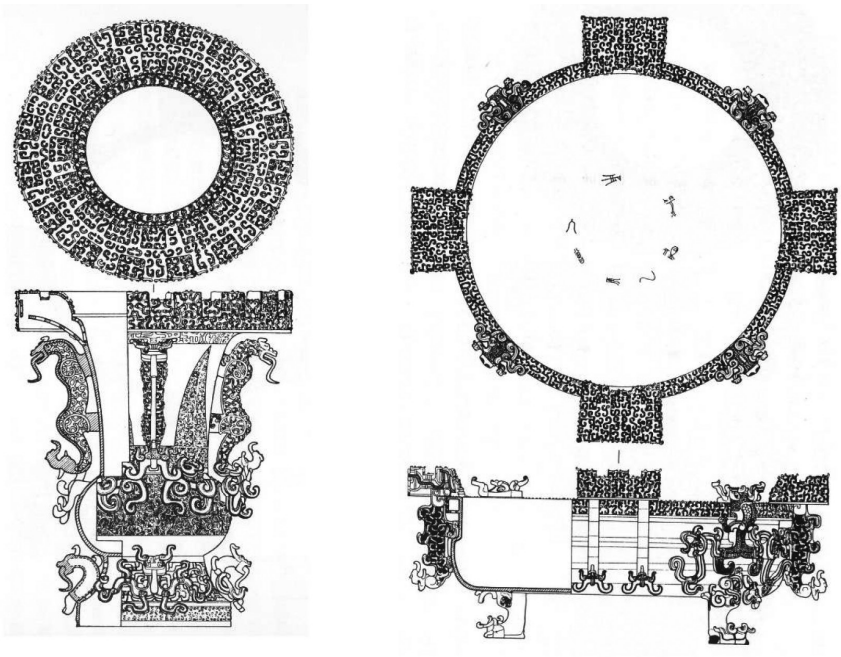

Fig. 10: *Zun-pan* from Suizhou Leigudun.

Fig. 11: Hooked bird.

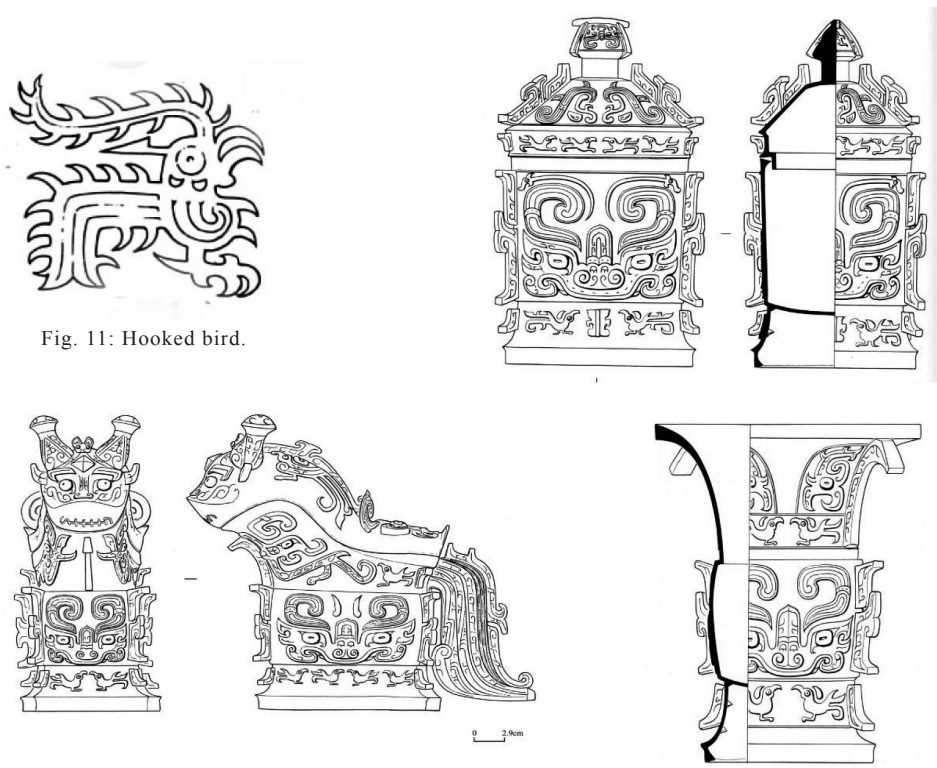

Fig. 12: The Ri Ji *fangyi*, Ri Ji *gong* and Ri Ji *zun*, discovered in 1963 at Fufeng Qijiacun 扶風齊家村 .

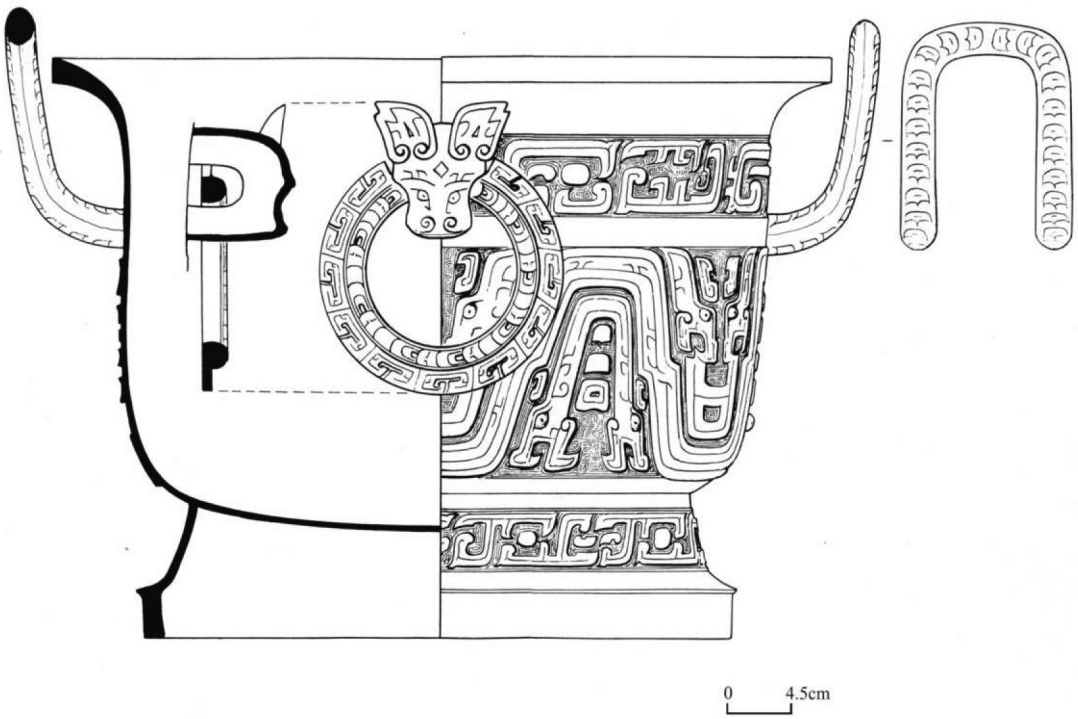

Fig. 13: Bronze *yu* from Fufeng Qijiacun (1958).

兩周時期青銅器作坊與新風格的創造的過程設計與紋飾

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周代的青銅器製作作坊、設計者和藝術創作是本文要解決的問題。文章首先介紹了青銅器鑄造碎片和作坊的分佈地點。青銅器作坊的增長規模是與「市場」的早期發展相關的。而從這些遺跡來看，戰國時作器者的影響力已遠遜於前代。當時的青銅器作坊多集聚在宮廷附近，主要為諸侯或王室服務。從斷代的角度來看，周代禮器在藝術上的變化十分緩慢。本文將首先檢視青銅禮器在藝術上並沒有頻繁發生顯著變化的原因。在發展過程中，青銅禮器更多是主人身份地位的象徵，例如鼎和簋，它們很少會偏離傳統的形制。但這兩種禮器上的銘文是最為豐富的。與此相反，從晚商開始，像觥和盉那樣的盛水器在鑄造藝術上就是最多新變的。青銅器存在等級之分。等級的高低可從數量上體現（例如一套銅器的數量），或者是否有銘文或紋飾的分別，有最普通的也有最新穎的（並非風格怪異），例如盉。但是前者往往體現地位等級，後者似乎更多與持有者的個人好尚有關，作為他財富的象徵。本文明確指出，一些青銅器類型較諸其他更適於嘗試藝術創新。文章的最後一部分將討論到一個極有特色的青銅器作坊，其特殊圖案和圖案的裝飾技術顯示出銅器設計者個人或者整個青銅器作坊的獨特風格。

關鍵詞： 周代　青銅器　鑄造工藝