

Lost Wax and Lost Textile: An Unusual Ancient Technique for Casting Gold Belt Plaques

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Many spectacular gold ornaments looted from unidentified burial mounds in southern Siberia were presented to Catherine, wife of Peter I of Russia, to honor the birth of their son in 1715 (Bunker et al. 1970, pp. 109–110). These ornaments, now housed in the Hermitage Museum in Leningrad, are not all of the same provenance. One distinctive group of openwork plaques among these treasures depicts scenes of animals and humans from the oral mythic and epic traditions of the ancient horse riding tribes who inhabited the grasslands beyond the Great Wall (Rudenko 1962, pls. I, 4, 5, II, 5, IV, 2, 3, 5, V, 1–3, VI, 3, 4, VII, 1, 7, VIII, 1–3, IX, 1, 2, 6–8, XII, 4, 5, XXIII, 28, 29). So far, all attempts to place these plaques successfully in time, space, and history have failed, although a good deal of romantic speculative prose, including my own, has been expended (Salmony 1947, 1948, 1949, 1952; Haskins 1959, 1961, 1962; Bunker 1978). Now, new observations concerning their art historical relationships and the manner in which they were manufactured suggest a Far Eastern origin for these plaques rather than the Central Asian provenance currently promoted by Russian scholars (Sarianidi 1985, p. 54).

The distinguishing feature of this group of belt plaques is that the reverse of each has the appearance of a coarse, loosely woven fabric that is usually erroneously described as an imprint "of the coarse cloth with which the mold was covered during casting" (British Museum 1976, p. 17). Actually, on close examination, the back of each plaque displays a positive textile relief that duplicates in casting the original textile that must have reinforced the model (figure 20.1). A gold hook buckle with the textile appearance on the reverse in the Metropolitan Museum of Art in New York reveals undercutting in the decoration that could only have been accomplished with the use of a model made of wax (figure 20.2). Therefore the casting technique employed can be referred to as "lost wax and lost textile" (Bunker and Tembach 1970; Hunt 1980, p. 73). In other words, the wax and the textile were both replaced by the metal induced into the mold during the casting process. A brief study of more belt plaques with textile relief backs in European and American collections allows for a better understanding of this technique.

Primarily, the lost-wax and lost-textile casting method was employed for producing plaques of gold and silver (Hearn 1987, fig. 78). Only a few bronze plaques, most of which were mercury gilded, have the textile relief on the reverse (Karlbek 1966, pl. 32, 1, 2; Bunker et al. 1970, fig. 119). The fabric reinforcement allowed for a thinner model that would reduce the amount of metal expended and diminish the weight in the finished product (figure 20.3). Bronze plaques that were not cast from a fabric-reinforced model but are decorated with designs that derive from those found on lost-wax



Figure 20.1 Reverse of gold hook buckle, third to second century a.c., 7.8 cm in diameter.

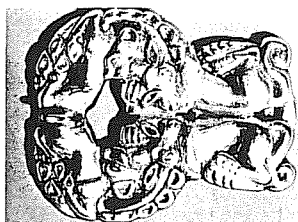


Figure 20.2 Gold hook buckle, third to second century a.c., 7.8 cm in length.

and lost-textile examples are much thicker and heavier by comparison with their earlier prototypes (figure 20.4).

What inspired the unprecedented addition of a piece of textile into the lost-wax casting process? During the late Warring States and early Han periods, one of the methods for producing the wide assortment of lacquer objects was one in which the "pieces were lacquered over a simple wooden core, or reinforced with lacquer-impregnated fabric applied to the core" (Kuwayama 1982, introduction). Judging from X-rays of a few Han examples in the Asian Art Museum of San Francisco, this fabric appears to be a loosely woven coarse hemp or similar cloth (Richard Barden, Asian Art Museum of San Francisco, Conservation Department, personal communication). It is tempting to see a connection between this lacquer technique and the lost-wax and lost-textile method of casting that was utilized from the third to first century a.c. to produce belt ornaments for the Yuezhi and Xiongnu tribes on China's northern borders.

The plaques with the fabric appearance on the backs

were probably made in the following manner (Richard Kimball, master goldsmith and jewelry scholar, personal communication). A model for each plaque was made out of fabric-reinforced wax. The fabric on the edges of the model and any openwork edges were trimmed with a knife, evidenced by the slightly ragged appearance of the edges seen on the backs of the plaques. The resulting thin fabric-reinforced wax model was invested in a clay mold. Thus, when the wax and textile were burned out and replaced by molten metal, the resulting plaque carried a reproduction of the model's reinforcing fabric on its reverse. The attachment loops on the reverse of each plaque were then cast onto the finished plaque.

Many plaques, which have the textile appearance on the back or are stylistically related to plaques that do, have been found in northern China and beyond the Great Wall in Inner Mongolia and Ningxia in recent decades with material that can be dated to between the third and first centuries a.c. A bronze plaque without the fabric appearance that is of the same type of hook buckle as the Metropolitan Museum example already discussed was recently excavated from a cemetery belonging to either the Yuezhi or the Xiongnu at Xigou, Zhungeer Banner, western Inner Mongolia near the Great Wall, along with two gold plaques that are inscribed with third century a.c. Chinese characters (Yih Ju Meng Relics Work Station, 1980, p. 8; Li 1985, pp. 333–334). Two gilt bronze plaques of recumbent yaks with the textile appearance (Stockholm Museum) belong to the material found at Shouxi in the Huai valley (Karlbek 1966, pl. 31.1, 2). One Shouxi plaque is the same as a plaque belonging to the Shaanxi Provincial Museum in Xi'an.

The plaques with the textile relief on the back exhibit a full range of styles and subject matter designed to fulfill the mythic and totemic requirements of the various tribes that were ultimately united into a vast steppe empire by the Xiongnu early in the Western Han Period. China had supplied the pastoral herdsman to the north with luxuries for centuries in trade for horses, furs, jade, carpets, and rugs. Lacquer and silk abound in the tombs of Pazyryk in southern Siberia, along with a fragment of a late Warring States mirror (Rudenko 1970, p. 115). In many instances these plaques exhibit telltale characteristics of style or motif, which suggests a close awareness of things Chinese. The sword worn by the rider on the famous Hunting Plaque in Leningrad is a Chinese weapon with a third century a.c. trapezoidal shape suspended by a typical Chinese scabbard slide (figure 20.5). The flipped up hind hooves represent an independently invented Chinese version of the "flying gallop," also seen on a painted Changsha lacquered box (Jaffe 1983; Sullivan 1962, pl. 60), which does not derive from Central Asia or further west. Even the tree forms are Chinese and belong to the same species as those on a lien from

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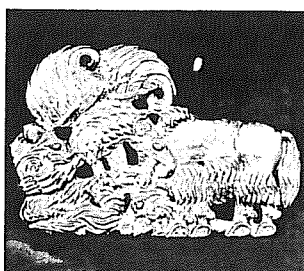


Figure 20.3 Belt plaque, third to second century a.c. Gold with turquoise inlay. Hermitage, Leningrad.



Figure 20.4 Bronze belt plaque, second to first century a.c. 10.5 cm in length. Los Angeles County Museum of Art, Los Angeles.

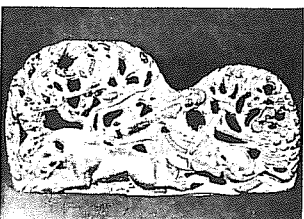


Figure 20.5 Hook buckle, third to second century a.c. Gold with turquoise inlay, 19 cm in length. Hermitage, Leningrad.

Changsha (Sullivan 1962, pl. 7). The use of rich inlay and small pictorial scenes in relief abound on the *hoshanlu* of the Han Period. Further art historical comments could be considered but are beyond the scope of a metallurgy conference.

The discovery of a gold plaque from Verkhne-Udinsk near Lake Baikal (Bunker et al. 1970, fig. 18) and a pair among the finds at Tillyatepe in Afghanistan that have the fabric appearance have prompted the Russians to claim a Central Asian source for these Peter the Great gold plaques, a claim that cannot be substantiated (Sarianidi 1985, pp. 42, 246). The gold plaque from Lake Baikal (figure 20.6), known to be a Xiongnu summer campground, is an earlier version of a bronze plaque found at Xichagou in Liaoning (Sun Shoudao 1960, p. 33); it was associated with *wushu* coins not minted before 118 a.c. (figure 20.7) in an area that the Xiongnu had conquered. Each Tillyatepe buckle depicts a figure with Chinese features driving a chariot drawn by winged felines that are similar to Han Period engravings found at Yinan in Shandong province (Yinan 1956, pp. 97–98). One openwork gold plaque with a textile appearance on the back (figure 20.8) in the Peter I treasure is decorated with creatures that are related to Chinese dragons found on numerous Warring States and Han jades (Lawton 1982, p. 144). This plaque is also inlaid with glass paste, which, according to Li (1985, p. 341), often replaced jade for inlay during the late Warring States and Han periods. An almost identical version of this plaque in bronze without the textile relief on the back was recently excavated by Wu En with recognizable Xiongnu ceramics and *wushu* coins not minted before 118 a.c. in Ningxia, another area into which the Xiongnu had expanded (Wu, personal communication; Museum of Ningxia Hui, 1987). This plaque and other pictorial plaques were found near the waists of the dead, both male and female (figure 20.9).

The evidence for the manufacture of the plaques cast with lost wax and lost textile points to a Far Eastern source for the technique. Whether they were cast in one workshop or several, or even by itinerant Chinese artisans, is as yet unclear, but it is clear from the variety of thread thicknesses seen on the backs that the technique was not standardized. A jade plaque that copies a Xiongnu plaque excavated in Ivogla (Walt 1980, fig. 6; Davidova 1971) was certainly Chinese made, as the Xiongnu did not know how to carve jade (figure 20.10). Cruder bronze versions or stylistically related examples of the gold and silver plaques with the textile relief on the backs occur in burials all over the eastern Eurasian steppe lands from Liaoning to southern Siberia during the heyday of Xiongnu power. Consequently a Siberian provenance is perfectly acceptable for ornaments made for the Xiongnu elite. Further research on existing plaques and future

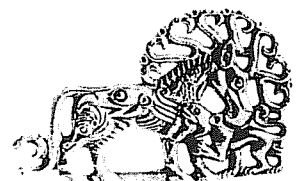


Figure 20.6 Gold belt plaque found at Verkhne-Udinsk, third to second century a.c. Hermitage, Leningrad.



Figure 20.7 Bronze belt plaques excavated at Xichagou in Liaoning Province, second to first century a.c. Liaoning Provincial Museum. [After Sun Shoudao (1960, p. 33)].

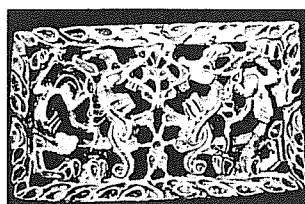


Figure 20.8 Belt plaque, second century a.c. Gold with glass paste inlays. Hermitage, Leningrad.



Figure 20.9 Bronze belt plaque, second to first century a.c. [after Museum of Ningxia Hui (1987, no. 1)].

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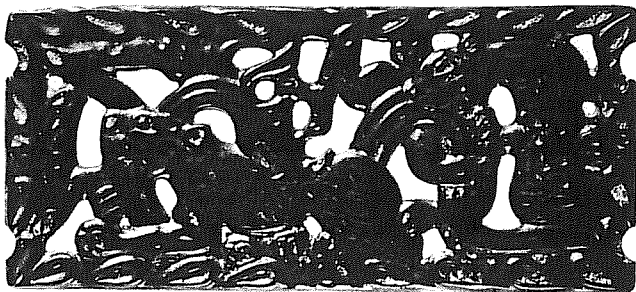


Figure 20.10 Jade belt plaque, third to second century B.C., 16.4 cm in length. Private Collection, Hong Kong.

archaeological discoveries should provide more evidence for the circumstances surrounding their manufacture in the years to come.

Acknowledgments

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