arts

MDPI

Article

Looking at the Evidence of Local Jewelry Production in Scythia

Oksana Lifantii

Department of Scientific-Research, Exposition Work and International Cooperation, Treasury of the National Museum of the History of Ukraine, 01015 Kyiv, Ukraine; oksanalifantiy@gmail.com

Abstract: This article considers finds from the Scythian monuments of the North Black Sea area that can be connected to local jewelry production from the 7th century to the end of the 4th century BCE. I wish to draw attention to the problem of prolonged bias in this area of study. The prominence of the famous masterpieces by West Asian artisans (Lyta Mohyla and Kelermes Kurgans) and of the Greco-Scythian goldwork from the North Pontic kurgans (Chortomlyk, Solokha, Tovsta Mohyla, etc.) invited the view that the vast majority of the gold objects that the Scythians used during their lifetime and later took into their graves were imported rather than locally produced. Instead of trying to consider all artifacts that could potentially be Scythian-made, my goal in this article is to review the direct archaeological evidence of local jewelry production in the form of punches, matrices, and recorded cases of workshops at Scythian settlements. Gathering this evidence, as I will argue, gives us compelling insight into the high level of Scythian goldsmithing from the beginning of Scythian culture in the 7th century BCE and its improvement and adaptation of new techniques in the 5th and 4th centuries BCE, probably in the context of intensified cultural exchanges between Scythians and Greeks.

Keywords: North Pontic area; Scythians; jewelry production; goldsmithing; Greco-Scythian art; animal style

check for updates

Citation: Lifantii, Oksana. 2023. Looking at the Evidence of Local Jewelry Production in Scythia. *Arts* 12: 151. https://doi.org/10.3390/arts12040151

Academic Editors: Annetta Alexandridis and Caspar Meyer

Received: 29 April 2023
Revised: 7 June 2023
Accepted: 4 July 2023
Published: 11 July 2023

Copyright: © 2023 by the author. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (https://creativecommons.org/licenses/by/4.0/).

1. Introduction

> *" . . . the Scythians have suffered from a bad press from the time they first appeared in the accounts of Herodotus to the present."*
>
> (Esther Jacobson 1995, p. 18)

In this article, I shall analyze the evidence of jewelry production by local goldsmiths from the Archaic through the Classical period to the beginning of the Hellenistic era—that is, between the 7th century and the end of the 4th century BCE. During that time, settled and nomadic communities known as Scythians in the classical tradition populated the North Pontic area, and Greek-speaking settlers occupied the northern seacoast.[1]

Considering the plentiful literature available about goldsmithing in the ancient world, the question of possible local Scythian jewelry production has been severely understudied. Several factors can explain this dearth of previous literature. Historically, there has been a prejudiced narrative among scholars, especially those who study ancient Greek art and archaeology, according to whom all gold- and silversmithing during classical antiquity was carried out for "barbarian" Scythians by "civilized" Greeks. David Redfern even pointed out that "wherever there is a gold object from Ukraine which has been produced to high technological and artistic standards, it is assumed to be of Greek manufacture, even when nothing of a comparable standard has been found in Greece" (Redfern 2000, p. 112).

While such presumptions were especially widely entertained among Imperial and Soviet Russian specialists (Rostovtzeff 1922, pp. 102–4; Gaydukevich 1949, pp. 118–35; Nikulin 1957; Onayko 1974, 1976), the basic premise was repeated in Western literature, too (Hoffmann and Davidson 1965, p. 14; Williams and Ogden 1994, pp. 126–27). A telling example of how concrete archaeological evidence of local production was made to

fit existing frameworks comes from a short essay by Lev Kharko, in which he compared a punch from Tyritake with gold appliqués from the necropolis of Scythian Neapolis showing impressions of similar but not exactly matching forms. The scholar concluded that the inspected jewelry must have been made in the Bosporan Kingdom or by a Bosporan goldsmith visiting the late Scythian city (Kharko 1961, p. 224). Viktor Gaydukevich even maintained that gold and silver masterpieces found in Scythian kurgans could only have been made by Greek artisans who worked in the Bosporan Kingdom. Otherwise, without seeing actual Scythians, even prominent masters—such as the vase painter Xenophantos from Athens—could not achieve the level of "ethnographic" realism (Gaydukevich 1949, p. 132). Such a notion was quite popular among Soviet specialists on antiquity (Nikulin 1957, pp. 85–86). It was partly an ideological notion: that there were "foreign Greeks" (i.e., not from USSR territory) and more "domestic" Greeks (who had lived in the North Pontic region).

In the last few decades, specialists, based solely on style or on the combination of style and some technical details, even distinguished Bosporan workshops in which specific objects from Scythian kurgans were made by masters who came from different regions of mainland Greece. For example, Dyfri Williams singled out the so-called Lion Master and Great Bliznitza Master (Williams 1998, p. 101); later, Mikhail Treister pointed to at least seven workshops, among them "the workshop of the Solokha scabbard" and "the Gorytos and scabbard workshop." He added that several artisans were active in each workshop and that some of these workshops existed over several generations (Treister 2005, p. 63).

The other quite popular idea was that local Scythian masters could make gold jewelry, but their work was always only a rough imitation of Greek art. Thus, while describing the Hellenistic period jewelry of Scythian Neapolis, Pavel Shults pointed out that most of the pieces were imported from the Bosporan Kingdom, while the local Scythian decoration only imitated them (Shults 1953, p. 47). Therefore, the scholar believed that based solely on "special expression" and "local stylistic originality," he could distinguish Scythian work from Greek products. Evgeniya Prushevskaya proposed the idea that in the Bosporan Kingdom, Scythian masters could work alongside Greek artisans "hand in hand" (Prushevskaya 1955, p. 339); yet, "Greek artisans had the leading role in this craft". Nadyezhda Onayko did not entirely rule out the possibility of a Barbarian apprentice presence at Bosporan workshops. She connected them with damage to matrices and punches, which led to the poor quality of mass-produced jewelry (Onayko 1974, p. 86).

Due to modern goldsmithing technology studies, it has become more apparent that "the conventional belief that the 'Barbarians' were technologically inferior to the Classical Greeks is a fallacy" (Redfern 2012, p. 95). Scholars have started to reject bias and try to look at broader arguments on possible Scythian goldsmith traditions in the North Pontic area (e.g., Jacobson 1995, pp. 7–8).

While beliefs in jewelry production in the North Pontic area became increasingly prevalent, there was a lack of archaeological evidence in Scythian-period settlements for such activity. Currently, the situation has changed; thus, it makes more sense to revise the available data.

When describing the possibility of local production, one should consider several factors. The most widely discussed remains the actual gold, electrum, and silver artifacts originating from the Scythian kurgans. However, there are other essential arguments in favor of local production: testimonies of written sources, instrument finds, and production residues (ideally traces of workshops). Identification of the sources of metals can also be helpful. Thus, I shall revise these themes below.

2. Evidence of Local Production in Written Sources

The written sources could be more generous in their descriptions of goldsmithing technology, even concerning the Greeks themselves. It is probably fair to say that artisans prefer to keep most of their techniques and methods hidden to protect their business from

competitors. It is thus unsurprising that very few Greek goldsmith names are known (Williams and Ogden 1994, pp. 30–31).

When talking about Scythians, ancient authors rarely mention local craft production, at least not directly. However, in describing the neighbors of the Scythians—the Massagetae tribe—Herodotus states that they decorated their clothes and horse bridles with gold (Herod. I, 215). The same tradition can be inferred from the finds from Scythian burials. Furthermore, Herodotus recounted the Scythian genealogical myth, where four sacred gold objects (gifts from the gods) are described: a plough, a yoke, a sword, and a cup (Herod. IV, 5). The last two are known in archaeological terms as gold-covered scabbards and sword hilts and gold or silver gilt bowls and cups.

As for the gold sources, Herodotus recorded a tale of its origin in the faraway North, where it was guarded by griffins with whom the mythical one-eyed people—the Arimaspi—were constantly fighting (Herod. IV, 13).

Moreover, Strabo referred to gold-bearing rivers in the Caucasus Mountains, where locals recover this precious metal with sheep fleece (Strab. XI, 2.19). This may be one of the possible sources of the gold used in Scythia.

3. Evidence of Local Jewelry Production in Archaeological Sources[2]

There are many studies on jewelry production in the Classical and Hellenistic periods (Higgins 1961; Hoffmann and Davidson 1965; Williams and Ogden 1994; Treister 2001), or antiquity more generally, with a focus on metalworking (Minzhulin 1998; Minasyan 2014). As a result, it is easier to trace possible local goldwork. For instance, it is known that jewelry at that time was seldom cast (Higgins 1961, pp. 16–17; Ogden 1990; for a contrary opinion, see Minasyan 2014, pp. 101–7). In most cases, granulation and filigree were used alongside hammering and chasing sheet gold, as well as the drawing and weaving of wire into chains. Clear evidence for competency in filigree and granulation techniques is still hard to come by at Scythian sites. Oleksandr Minzhulin believed that Scythian goldsmiths only used embossing and imitated the effects of granulation through hammering techniques (Minzhulin 1998, p. 155). However, local artisans probably mastered other goldsmithing techniques.

Borys Shramko made the first effort to study the evidence of local goldsmithing in Scythia. He found traces of goldsmithing at the Bilsk hillfort: gold and tin ingots, parts of molds, crucibles, casting ladles, and, of course, punches or dies (Shramko [1970] 2016). Similar instruments for melting gold are known in Panticapaeum (Gaydukevich 1949, p. 118).

It has also been suggested that the Scythian kings maintained workshops of dependent craftspeople in their entourage. The stylistic affinities of metalwork from elite tombs of the Archaic period excavated in the northern Caucasus indicate that such workshops most likely comprised goldsmiths from Urartu, Assyria, Ionian Greece, and Scythia (Illinska and Terenozhkin 1983, pp. 62, 67). In the Classical period, these workshops probably existed in the North Pontic area; maybe one such was at the Kamianske hillfort on the lower Dnieper (Illinska and Terenozhkin 1983, pp. 161, 188–89).

Relatively recently, practical experiments were conducted to analyze some appliqués from the Kul-Oba barrow near Kerch, which led to the conclusion that, based on the traces on the plaque's surface analyzed under a microscope, one can identify the exact hammering technique (Zhuravlev et al. 2014, p. 190). This research highlights the potential opportunities of re-studying well-known artifacts to identify traces of their facture.

In the same publication, Marina Shemakhanskaia hypothesized the involvement of traveling jewelers based on platinum inclusions in the gold overlays of the touchstones from Kul-Oba and the probable reuse of similar overlays found in Philippovka in the Southern Urals (Zhuravlev et al. 2014, pp. 175–76). However, I do not see why the reuse of materials or components in other regions necessarily presupposes itinerant craftspeople traveling with their tools and materials. There are many more reasons for objects to travel; itinerant makers are just one of them.

Shemakhanskaia also supported an earlier hypothesis according to which itinerant groups of goldsmiths relocated to produce jewelry for the funerals of native communities (Gulyaev and Savchenko 1999, pp. 154, 156; Zhuravlev et al. 2014, pp. 176–77). However, since this idea remains unsupported by clear archaeological evidence, one of the authors who originally proposed this idea subsequently argued that local artisans could also produce poor-quality sheet gold decorations on prompt orders from the family of a deceased person (Gulyaev 2018, p. 274).

While analyzing gold artifacts from Scythian burials, some specialists allow for the possibility of local production for some of them, but only as an exception. Thus, Caspar Meyer characterises them as follows: "the dryer style, the preference for schematization and frontal figures, and the restricted palette of subsidiary ornament and techniques (hammering and engraving only), are often thought to indicate local imitation" (Meyer 2013, p. 124). I partly agree that Scythian-made jewelry, or at least the material currently available, could be characterized as technologically less accomplished. However, the relevant corpus of finds is voluminous enough to argue that local production was the norm rather than the exception and that local jewelry traditions existed among Scythian as well as Greek communities in the Northern Black Sea area.

Thus, scholars are increasingly willing to attribute objects made of precious metals to local Scythian workshops. These include personal ornaments, clothing decorations, vessels, weapons, and horse trappings. Esther Jacobson believed that the Archaic Kelermes panther, Lyta Mohyla eagle, and Kostromskaya stag were Scythian goldwork. She also proposed that the band diadem from Kelermes 1 with granulation and the Shumeiko gold scabbard overlay were Scythian works (Jacobson 1995, pp. 71–72). Jacobson also attributed the Classical sphinx-shaped earrings from Chortomlyk to the output of local artisans (Jacobson 1995, p. 97). Leonid Babenko allowed for the possibility of local manufacture for the curved headdress appliqué from Pisochin kurgan No. 8 (Babenko 2005, p. 127). Caspar Meyer includes the diadem from Sakhnivka, the rhyton and garment appliqués from Merdzhany, the cup from Kurdzhips, the appliqués from Oksiutyntsi, the plaque from Heremesiv kurgan, the openwork plaque from Hiunivka, and the Karagodeuashkh headdress decoration (Meyer 2013, pp. 124–25).

I could identify other artifacts made by local goldsmiths in addition to those mentioned above. However, it is impossible to describe them all in a single article, let alone present arguments for each one. Instead, I prefer to draw attention to evidence of local imitation of jewelry probably imported in the Archaic period. One particularly interesting find consists of a series of garment appliqués from the Perepiatykha tumulus excavated in 1845 by Mykola Ivanyshev (Skoryi 1990). One silver gilt (Figure 1, 1) and twenty-three gold griffin-shaped plaques were found there (Figure 1, 2)[3]. Due to its material and technological characteristics, and the early iconography of the griffin, the silver plaque is probably identifiable as Ionian Greek or the work of a Western Asian goldsmith. The gold items, on the other hand, were probably modelled after the silver plaque, showing the different masters' hands. Thus, this case can be used as evidence of local Scythian goldsmithing (see more arguments in favor here: Skoryi 1990, pp. 40–41).

A similar situation can be seen with the replacement of a—probably lost—eagle-shaped appliqué with one slightly rougher one (Figure 1, 4). This one differs from the series of sixteen other appliqués (Figure 1, 3) made with one die or matrix or several such tools of similar shape and size. The appliqués were found in Lyta Mohyla kurgan (also known as Melgunov kurgan) in the modern Kirovohrad Oblast of Ukraine (Lifantii 2014, p. 40, Figure 3, 1). Needless to say, the other sixteen plaques can also be attributed to Scythian goldsmithing.

In some finds from the North Pontic area, bronze products were covered with gold foil. Examples include the cross-shaped gorytoi decorations from Husarka and Opishlianka (Polidovych 2000, Figure 1:7–8) from the second half of the 6th century BCE and a bull figurine from Zolotonosha (Hrybkova and Polidovych 2013, Figure 1) from the 5th century BCE. Thanks to the bronze casting techniques and animal style, they can be attributed to

Scythian artisans. In such cases, it is hard to determine whether the bronze base can be counted as the matrix or the former used to shape the gold foil. Normally matrices consist of wooden bases, as can be seen, for example, in the burials of the people who lived far away east in the 4th century BCE, namely in Pazyryk in the Altay Mountains (Minasyan 2014, p. 227, Figure 86, 1).

Figure 1. Garment appliqués: (1–2)—found in Perepiatykha kurgan (photo by the Treasury of the National Museum of History of Ukraine); (3–4)—found in Lyta Mohyla kurgan (after Pridik 1911, Table II).

Many garments, bridles, and wooden vessel decorations of the 5th–4th centuries BCE from Scythian barrows could have been manufactured by local artisans. However, in most cases, this conclusion is based on the style of depiction and the relatively simple techniques. I can add more examples of local goldsmith production to those already proposed by other scholars. They are the fragments from the headdress openwork appliqué from Bratoliubivka kurgan (Figure 2, 1), appliqués from Berdianskyi kurgan with fighting and drinking scenes (Figure 2, 2–3), and openwork appliqués from Kamianka barrow No. 21 (Figure 2, 4). This list could become very long. More to the point, Esther Jacobson highlighted that it is inaccurate from an artistic and a historical point of view to determine Scythian goldsmithing only on the basis of rough technique (Jacobson 1995, p. 71).

Figure 2. Garment appliqués: (1)—found in Bratoliubivka kurgan (photo by Oksana Lifantii); (2)—appliqués from Berdianskyi kurgan; (3)—openwork appliqués from Kamianka kurgan No.21 sewn on hat reconstruction (photos by the Treasury of the National Museum of History of Ukraine).

3.1. Tools Found in Scythia

Among the abovementioned tools found at Scythian sites, punches, dies, and matrices are most definitely connected to goldwork. Of course, a few discoveries of gold waste can be included in this group. The other instruments can be employed in a wide range of artisanal tasks in addition to bronze casting (crucibles, casting ladles, tongs, molds, chisels, anvils, mallets, hammers, shears, tweezers, chasing punches, etc.).

Several researchers have pointed out that jewelers' implements made of perishable materials rarely survive over time, and many simple tools may become unrecognizable and be reburied in dumps (e.g., Hoffmann and Davidson 1965, p. 25). Thus, distinguishing them from other types of tools found in Scythia can be very difficult.

3.1.1. Punches

In a previous publication, I researched the possible local production of garment appliqués made of precious metals. In the Black and Mediterranean Sea areas, we can identify 56 bronze punches for embossing jewelry or garment (?) decorations dating from the Archaic to the beginning of the Hellenistic periods (Boltryk and Lifantii 2016, p. 220, tab. 2). Thus, many punches were found in Scythian-occupied areas (Table 1). Moreover, the four punches from two Scythian hillforts (Figure 3) provide strong evidence for local production, especially if we consider that only four punches of Hellenistic date are known from the excavations at Panticapaeum, the capital of the Bosporan Kingdom.

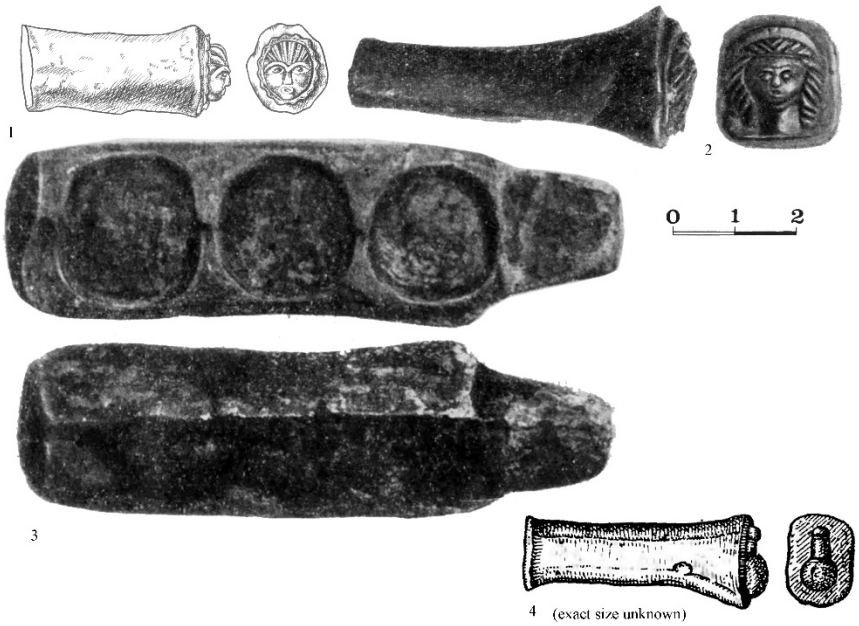

Figure 3. Bronze punches from Scythian monuments: (1)—found at Kamianka hillfort (after Boltryk and Lifantii 2016, Figures 2–3); (2)—found at the Kamianka hillfort; (3)—found at the Bilsk hillfort (after Shramko [1970] 2016, 57, Figure 1); (4)—found at the Kamianka hillfort (after Grakov 1954, 134, Figure 13, 5).

Moreover, the same two hillforts (Kamianka and Bilsk) where the bronze punches were found also yielded gold garment appliqués (Havryliuk 2013, Figure 2.34: 3; Shramko [1999] 2016, p. 527, Figure 6.27), although their designs do not match. Given that precious metal finds rarely come to light in Scythian settlements, the appearance of gold appliqués in the occupation layers of the same hillforts as the punches were found can be seen as corroborating evidence of local production.

Table 1. Goldsmithing instruments found in Scythia.

Instrument Type	Description	Place of Find	Date	Date of Find	Collection	Figure No.
Bronze punch for beads	unknown	near Staiki (Kyiv Oblast, Ukraine)	unknown	before 1900	It was in the Varvara and Bohdan Khanenko collection. Now lost (?)	-
Wooden matrix fragments	fish	Solokha kurgan (near Velyka Znamianka village, Zaporizhzhia Oblast, Ukraine)	late 5th/early 4th c. BCE	1912	Hermitage	4,4
Wooden matrix fragments	fish	Solokha kurgan (near Velyka Znamianka village, Zaporizhzhia Oblast, Ukraine)	late 5th/early 4th c. BCE	1912	Hermitage	4,4
Four (?) wooden matrices in fragments	wing or ear	Solokha kurgan (near Velyka Znamianka village, Zaporizhzhia Oblast, Ukraine)	late 5th/early 4th c. BCE	1912	Hermitage	-
Wooden matrix	eagle	Solokha kurgan (near Velyka Znamianka village, Zaporizhzhia Oblast, Ukraine)	late 5th/early 4th c. BCE	1912	Hermitage	4,3
Wooden matrix fragments	complex animalistic composition	Solokha kurgan (near Velyka Znamianka village, Zaporizhzhia Oblast, Ukraine)	late 5th/early 4th c. BCE	1913	Hermitage	-
Wooden matrix fragments	fish	unidentified kurgan, probably lower Dnieper area	4th c. BCE	before 1913	Hermitage	4,2
Two wooden matrices in fragments	wing ore ear	unidentified kurgan, probably lower Dnieper area	4th c. BCE	before 1913	Hermitage	4,2
Bronze punch	unknown	settlement near Velyka Danylivka (Kharkiv Oblast, Ukraine)	unknown	-	Lost (?)	-

Table 1. *Cont.*

Instrument Type	Description	Place of Find	Date	Date of Find	Collection	Figure No.
Bronze punch	shellfish or lion's paw	Kamianske hillfort (Zaporizhzhia Oblast, Ukraine)	4th c. BCE	1952	Museum of Archeology of V. N. Karazin Kharkiv National University	3,4
Horn matrix (?)	panther	Khotiv hillfort (Kyiv Oblast, Ukraine)	7th–6th c. BCE	1965	Institute of Archaeology of NAS of Ukraine	4,1
Bronze "pillow" (die) for hammering appliqués	three recesses	Bilsk hillfort, Eastern fortification (Poltava Oblast, Ukraine)	4th c. BCE	1968	Museum of Archeology of V. N. Karazin Kharkiv National University	3,3
Bronze punch	human head with long hair	Kamianske hillfort (Zaporizhzhia Oblast, Ukraine)	4th c. BCE	1969	Museum of Archeology of V. N. Karazin Kharkiv National University	3,2
Bronze punch	human face/mask	Kamianske hillfort (Zaporizhzhia Oblast, Ukraine)	4th c. BCE	1984	Kamianka-Dniprovska Historical and Archaeological Museum	3,1

Some of the punches and molds made in the Scythian animal style discovered to the west of the North Pontic region (i.e., in Thracian territory) have also been considered a marker of the influence or presence of Scythian artisans (e.g., Culică 1967, p. 684, Figure 3, 4; Bonev et al. 2013, p. 335, Figure 2:13).

It is quite intriguing in this regard that Panticapaeum has not produced any punches of the Classical period. Some scholars have assumed that Bosporan goldsmiths may have intentionally destroyed such punches, as they did with coin stamps, to hold the monopoly on production (Blavatskiy 1959, p. 52; Onayko 1974, p. 85). However, this seems difficult to believe in light of the considerable number of instruments found at other Greek city states and Scythian or Maeotian settlements. For instance, according to Viktor Gaydukevich, a punch from Tyritake proved that "even in small cities of the Kingdom of Bosporus, goldsmith workshops existed" (Gaydukevich 1949, p. 119).

Two 6th-century BCE punches from Borysthenes (Berezan island) are also relevant to our discussion (Treister 2008, 2.1.2; Boltryk and Lifantii 2016, Table 2). Treister believes that the "punches show that the traditions of jewelry production in Lydia and northern Ionia had been developed further in North Pontic (Berezan) and Thracian toreutics". Another interesting find was the discovery at Yahorlyk of a fragment of a stone "pillow" (or die) for hammering appliqués in the 6th century BCE (Ostroverkhov 1981, Figure 5: 20, 37), which resembles an example from the Bilsk hillfort (Figure 3, 3). Yahorlyk is normally considered a temporary workplace of Greek artisans situated on the opposite side of the Dnieper–Bug estuary from Olbia.

Thus, we have evidence for the production of embossed jewelry at Pontic Olbia and the nearby Yahorlyk settlement as early as the Archaic period. For the Classical period, excavations at the sites of the Greek city states in the area generally did not produce any punches, while in local settlements—despite the limited level of research—a series of finds attest to continued production. On the other hand, the Hellenistic strata of several Greek

cities in the region yielded punches, among them Panticapaeum, Tyritake, and Chersonesus (Boltryk and Lifantii 2016, Table 2).

3.1.2. Matrices

Regarding matrices made of unperishable materials, they have mostly been found in the North Pontic area in Greek city states. For example, one damaged stone matrix found in Pontic Olbia was probably used for embossing gold appliqués for Scythian wooden vessels (Prushevskaya 1955, Figure 8). However, in several cases, finds from Scythian sites can be identified as matrices for making gold plaques.

Among them is a recently reinterpreted item from the Khotiv hillfort (Polidovych 2017, Figure 92). Despite the wide range of possible interpretations considered by Yurii Polidovych, he and I are both inclined to agree with the idea that it could be a matrix for gold appliqué production (Figure 4, 1). This horn item was damaged in Scythian times and found in the layers of a possible Archaic period workshop. Given its archaeological context, this matrix was definitely the product of a Scythian artisan.

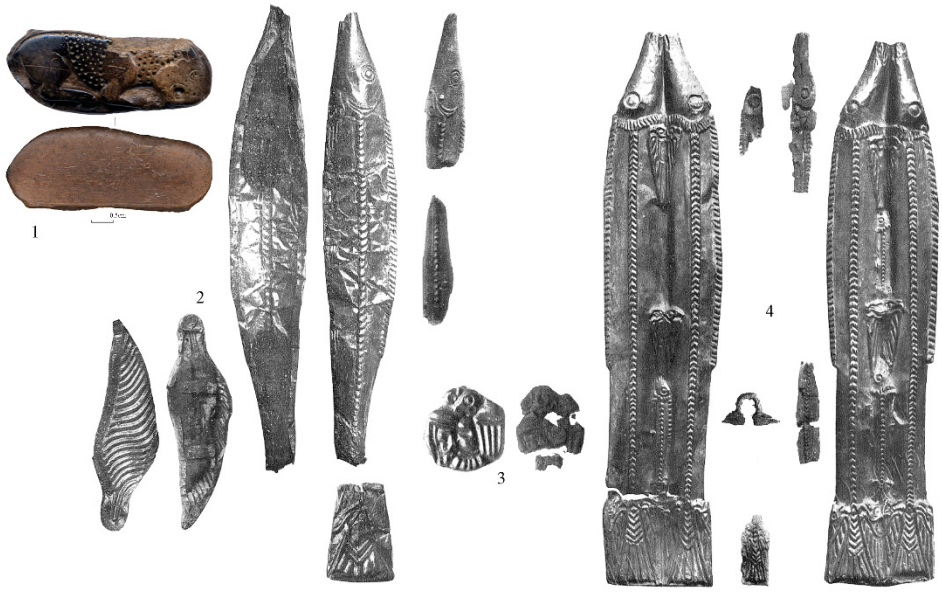

Figure 4. Matrices from Scythian monuments: (1)—horn matrix found at the Hotiv hillfort (after Polidovych 2017, Figure 92); (2–4)—wooden matrices with gold appliqués from Solokha and one unknown kurgan in the lower Dnieper (or North Pontic) area (after Veselovskyi 1913, Table II–III).

Remains of several carved wooden matrices (Figure 4, 3–4, Table 1) were discovered during the Solokha kurgan excavations in 1912. They were the base for two gold frontlets (nosebands) and cheek-piece bridle decorations for two horses buried there. Also, one eagle-shaped clothing appliqué with a wooden matrix inside was found in a human tomb of the same barrow. According to analyses conducted at the time, the wood was determined to be from a pear tree. The later publication of the Solokha finds also describes the remains of a wooden matrix from the kurgan's side tomb; unfortunately, it is preserved only in many little pieces of yew planks (Mantsevich 1987, pp. 70–71, cat. 49). Despite their fragmentary nature, the quality of the wooden carving attested in these finds is impressive, and their style fits quite well into the Scythian canon. Scythians were probably good at carving wood; at least, this can be assumed from their skills in carving bone and horn and is further corroborated by the numerous finds of wooden vessels—though without ornamental carving—in their tombs. Due to the often-haphazard conservation methods of Imperial and Soviet times, wooden bases and matrices were often lost.

Based on these finds from Solokha kurgan, Nikolay Veselovskyi concluded that all gold decorations with large surfaces were carried out on matrices that can only be used once and

remain part of the decoration, usually as a backing (Veselovskyi 1913, p. 98). Meanwhile, Nadyezhda Onayko established how slight variations in figural and ornamental rendering appeared in the gold gorytoi covers made from the same metal matrix. By demonstrating the use of metal matrices, the author completely refuted the idea that each cover was made from separate wooden matrices (Onayko 1974).

Serhii Polin believes that many sheet gold bridle decorations were made on wooden matrices, even in cases when the wood was not recorded during the excavation (Bidzilia and Polin 2012, p. 456). Polin also proposed that the same technology, which he acknowledges as Scythian but limited in time to the end of the 5th century BCE and the first half of the 4th century BCE, was used for the manufacturing of some examples of gold sword scabbard plaques and the gold handles of some wooden bowls (Bidzilia and Polin 2012, p. 461).

Thus, at least for now, I suspect that Scythian rather than Hellenic artisans tended to use wooden matrices. For example, all known gorytoi covers preserve remains of wooden bases that show no ornamental carving. In several cases, the wooden base was covered with malleable materials that served as a "protective pillow", supporting the relief of the gold embossed cover. Such "mastic" was noticed and traced, for instance, during the excavation of the Chortomlyk gorytos cover (Veselovskyi 1913, p. 98). In the case of the gorytoi from Solokha (Mantsevich 1987, p. 74) and Melitopol (Terenozhkin and Mozolevskyi 1988, pp. 121–22), the excavators noticed alabaster layers. The probable process of manufacture of the Chortomlyk and Karagodeuashkh gorytoi series was analyzed by several scholars and summarized by Treister with the conclusion that the gorytoi were made with combinations of several bronze matrices rather than a single matrix (Treister 2001, pp. 137–40). The scholar agrees that the layer of plaster was left in place to preserve the thin reliefs from deformation (Treister 2001, p. 136, footnote 85). There are known cases of using different materials—including bitumen and minerals—as the base or "filling pillow" for gold decorations. For example, some Mycenaean beads had an emery core (Konstantinidi-Syvridi et al. 2014, pp. 345–46).

In other regions of the ancient world, documented matrices were mostly made of metals. For example, two bronze formers (in the literature, they are often called punches) of the 4th–3rd centuries BCE were found at the settlement near Dragoevo village in Bulgaria (Bonev et al. 2013, Figure 2:9). I agree with the proposition that such instruments were in most but not all cases used as matrices rather than punches (Minasyan 2014, p. 356). The famous Lydian treasure comprised a series of such formers (Özgen et al. 1996, 61, nos. 214–218).

3.2. Sources of Gold and Silver in Scythia

That there was gold mining in the Greek *oikumene* is well known. However, most gold originating from Greece was recovered from riverbeds (Williams and Ogden 1994, p. 14). The process of recovering river gold was relatively easy and—in contrast to mining—did not require hard labor (Hoffmann and Davidson 1965, pp. 20–21). The Thracian state was known for its rich gold mines (Higgins 1961, p. 5). Some gold ores were discovered in Macedonia in the Classical period but were quickly exhausted (Hoffmann and Davidson 1965, p. 1).

On the basis of archaeological finds of metal objects and the previously mentioned story in Herodotus about gold sources, scholars suppose that gold could have been transported to the North Black Sea region from ores in the Ural, North Caucasus, and Altay Mountains (Gaydukevich 1949, p. 118; Higgins 1961, p. 5; Williams and Ogden 1994, p. 13; Jacobson 1995, p. 13), perhaps even from Tien Shan (Jacobson 1995, p. 13). Some scholars propose that the local mines of Donbas in east Ukraine and alluvial sources in the Dnieper-Buh estuary in south Ukraine were exploited alongside the foreign sources (see overview in Mozolevskyi and Polin 2005, pp. 424–27).[4]

The Scythians' other gold sources could have been southern Thrace and Colchis (Gaydukevich 1949, p. 118). In this case, intriguing observations can be made on the presence of a Thracian population at Pontic Olbia in the 7th–6th centuries BCE whose members could

have traded Carpathian–Danubian metals with Olbian artisans (Ostroverkhov 1981, p. 33). These merchants might have traded in Thracian gold as well.

Another possible source of precious metals for nomad warlords could have been booty (Illinska and Terenozhkin 1983, p. 160; Gulyaev 2018, pp. 410, 464). Scythians are known for their wars in Western Asia in the 7th century BCE and, subsequently, in Europe: namely, with Persia in the late 6th century, Thrace in the 5th century BCE, and Macedonia and the Bosporan Kingdom in the 4th century BCE. However, some researchers refuse to accept such an idea. In fact, Esther Jacobson argues that there is no written evidence of Scythians plundering Greek-speaking cities in the northern Black Sea region (Jacobson 1995, pp. 13–14). Indeed, according to Strabo, it was the Greeks who poisoned the Scythians—whom he describes as "the most straightforward of men and the least prone to mischief"—with greed, the practice of piracy, and the habit of slaying strangers (Strab. VII, 3.7). In spite of these arguments, it is difficult to believe that the Scythians did not engage in looting before their acquaintance with the Greeks, for instance, during their West Asian campaigns, their raids of western Europe, and in the local wars in the northern Black Sea region.

4. Conclusions

In trying to explain how Greek-made gold objects came to be included in Scythian grave assemblages, I agree with Jacobson's conclusion that, most likely, they arrived at their destination as a result of direct patronage and peaceful exchange (Jacobson 1995, pp. 10–12). Diplomatic gifts to the Scythian nobility could have been one of the main mechanisms through which gold objects traveled, especially in the 4th century BCE.[5] But war booty cannot be excluded, as I have argued above.

As for the objects whose production is not clearly of Greek origin, one should not exclude the possibility of local production by Scythian artisans, even if the techniques used may seem too sophisticated at first glance. Considering the high level of Scythian technical dexterity in carving horn, bone, and wood and in casting bronze and forging iron, it is highly likely that their skills in gold- and silversmithing were equally well developed.

Funding: This research received no external funding.

Data Availability Statement: Not applicable.

Conflicts of Interest: The author declares no conflict of interest.

Notes

1 I must clarify here that the early nomads of Central Asia and the Sayan-Altay Mountains can not be described as Scythian (Yablonsky 2000; Shelekhan and Lifantii 2022, pp. 39–40, footnote 1). I agree with the position that the broad usage of the name "Scythians" for many different peoples of the Eurasian Steppe is incorrect and often leads to misinterpretations of many aspects of the material culture and political history of these early nomadic communities. As Leonid Yablonsky accurately pointed out, "The misuse of this ethnonym [Scythian–OL] in archaeology . . . has created, moreover, a psychological basis for the theory that there was the existence of "unity" within the early nomadic cultures who inhabited the steppelands from the Danube to Mongolia . . . From using etymologically inaccurate terms such as "Historical Unity of the Scythian-Siberian World" and "Scythian-Siberian Cultural-Historical Unity" the innovators, who were experts in the field of eastern steppe archaeology, began to use even more capricious word-combinations such as "Civilization of the Early Eurasian Nomads." (Yablonsky 2000, p. 4). Thus, in the article, the Central Asian and Sayano-Altay jewelry materials can be used only as an addition and example of the goldsmithing of a maybe distantly related but definitely non-Scythian tradition. Since the early Scythian time, the jewelry craft of Scythians, Saka, and the peoples of Aldy Bel and Pazyryk cultures demonstrate different technological and aesthetic traditions and the influence of entirely different settled civilizations.

2 In recent decades, some new bronze matrices and punches from now-private collections have been published. However, due to a lack of confidence in their authenticity, even in several given to the museums as a gift from a collector, I will not mention them here. Some cases of forgery of Scythian (most famously the "tiara of Saitaferne"), Thracian (Kuleff et al. 2009), and other (Muscarella 1977) antiquities were carefully investigated. It is quite evident that the purported bronze "scabbard applique" from a private collection could be a galvanic copy of the artifact from Kul-Oba discovered in the 19th century (see discussion here: Treister 2017, p. 205). Thus, in the absence of a confirmed and reliable provenance for alleged archaeological artifacts, I do not see a positive outcome in considering such items. For instance, Serhii Polin changed his view on the manufacturing process of

Greco-Scythian gold scabbard covers because of the mistaken assumption that this "matrix" was found in a Roman settlement in Germany and was "a fantastic find that shows the highest value of such a matrix, preserved and passed down from generation to generation for several centuries" (Bidzilia and Polin 2012, p. 460).

[3] Nine fully preserved and more than seven in fragments survived to modern times and belong to the Treasury of NMHU collection—Serhii Skoryi made a mistake in his monograph, saying there were only nine of them in the museum collection. The location of others is unknown (Skoryi 1990, p. 38). Thanks go to my colleague Yevheniia Velychko from the Treasury for the information about fragmented appliqués.

[4] Even apologists of the term "Scythian-Siberian cultures" admit that the gold items from Pazyryk have an entirely different metal composition: it has not been remelted, and no alloys have been added to it, unlike the gold of the jewelry from the North Black Sea region (Mozolevskyi and Polin 2005, p. 425).

[5] For more arguments on diplomatic gifts, see (Meyer 2013, p. 127; Porucznik 2021, pp. 95–97).

References

Babenko, Leonid. 2005. Песочинский Курганный Могильник Скифского Времени. Kharkiv: Raider.

Bidzilia, Vasyl, and Serhii Polin. 2012. Скифский Царский Курган Гайманова Могила. Kyiv: Instytut arkheolohii NAN Ukrainy, "Skif".

Blavatskiy, Vladimir. 1959. О Боспорском Ремесле IV–I Вв. До н.э. Советская Археология 29–30: 42–57.

Boltryk, Yurii, and Oksana Lifantii. 2016. Виготовлення золотих аплікацій костюма в Скіфії (пуансон з Кам'янського городища). In Археологія та етнографія півдня Східної Європи. Дніпро: Lira, pp. 217–27.

Bonev, Velislav, Boika Zlateva, Ilian Iliev, and Ivelin Kuleff. 2013. Punches, Moulds and Matrixes from North-Eastern Bulgaria: An Archeometallurgical Study. In Сборник в Памет На Академик Д. П. Димитров. София: Нац. археол. институт с музей, pp. 333–48.

Culică, Vasile. 1967. O Unealtă Scitică de Orfăurărie La Dunărea de Jos. In *Studii Şi Cercetări de Istorie Veche Şi Arheologie (SCIVA)*. nr. în TOM: 4; anul 1967. Subtitlu: SCIVA-Studii şi cercetări de istorie veche (Discuţii şi Note), pp. 677–85. Available online: http://biblioteca-digitala.ro (accessed on 7 June 2023).

Gaydukevich, Viktor. 1949. Боспорское Царство. Москва-Ленинград: Издательство Академии наук СССР.

Grakov, Boris. 1954. Каменское городище на Днепре. Материалы Института археологии АН СССР 36. Moskva: Akademiia Nauk SSSR.

Gulyaev, Valerij, and Evgenij Savchenko. 1999. К Вопросу о Роли Золота в Погребальном Ритуале Скифов. In Евразийские Древности. *100* Лет Б.Н. Гракову: Архивные Материалы, Публикации, Статьи. Москва: ИА РАН, pp. 151–60.

Gulyaev, Valerij. 2018. Скифы северного причерноморья в *7–4* вв. до н. э.: старые проблемы—новые решения. Moskva: IA RAN.

Havryliuk, Nadiia. 2013. Экономика степной Скифии *VI–III* вв. до н. э, 2nd ed. Киев: Видавець Олег філюк.

Higgins, Reynold. 1961. *Greek and Roman Jewellery*. London: Methuen.

Hoffmann, Herbert, and Patricia Davidson. 1965. *Greek Gold: Jewelry from the Age of Alexander*. Edited by Axel von Saldern. Brooklyn: The Brooklyn Museum. Mainz: P. von Zabern.

Hrybkova, Hanna, and Yurii Polidovych. 2013. фигурка быка скифского времени из собрания Б.И. и В.Н. Ханенко'. Археологический альманах 30: 259–77. Available online: http://dspace.nbuv.gov.ua/xmlui/handle/123456789/171399 (accessed on 7 June 2023).

Illinska, Varvara, and Oleksii Terenozhkin. 1983. Скифия *VII–IV* Вв. До н.э. Киев: Наукова Думка.

Jacobson, Esther. 1995. *The Art of the Scythians: The Interpenetration of Cultures at the Edge of the Hellenic World*. Boston: BRILL. Available online: https://brill.com/display/title/2077?rskey=on1wQl&result=1 (accessed on 7 June 2023).

Kharko, Lev. 1961. К Вопросу о Производстве Золотых Бляшек в Черноморье. Материалы и Исследования По Археологии СССР 96: 223–24.

Konstantinidi-Syvridi, Eleni, Nikolas Papadimitriou, Anna Philippa-Touchais, and Akis Goumas. 2014. 'Goldworking Techniques in Mycenaean Greece (17th/16th-12th Century BC): Some New Observations'. In *Metals of Power-Early Gold and Silver*. Edited by Harald Meller, Roberto Risch and Ernst Pernicka. Halle (Saale): Tagungen Des Landesmuseum Für Vorgeschichte Halle (Saale), Band 11/2, pp. 335–48.

Kuleff, Ivelin, Totko Stoyanov, and Milena Tonkova. 2009. Gold Thracian Appliqués: Authentic or Fake? *ArchéoSciences* 33: 365–73. [CrossRef]

Lifantii, Oksana. 2014. Золоті Прикраси Одягу Із Ранніх Скіфських Комплексів. In Боспорские Исследования. Edited by В.Н Зинько. Симферополь-Керч: Крымское отделение Института востоковедения им. А.Е. Крымского НАН Украины, vol. 20, pp. 39–53.

Mantsevich, Anastasiya. 1987. Курган Солоха́ю Пібликация Одной Коллекции. Ленинград: Искусство.

Meyer, Hans-Caspar. 2013. *Greco-Scythian Art and the Birth of Eurasia: From Classical Antiquity to Russian Modernity*, 1st ed. Oxford Studies in Ancient Culture and Representation. Oxford and New York: Oxford University Press.

Minasyan, Rafael. 2014. Металлообработка в древности и Средневековье. Санкт-Петербург: Издательство Государственного Эрмитажа.

Minzhulin, Oleksandr. 1998. Реставрація творів з металу. Київ: Спалах.

Mozolevskyi, Borys, and Serhii Polin. 2005. Курганы Скифского Герроса IV в. До н.э.(Бабина, Водяна и Соболева Могилы). Kyiv: Stilos.

Muscarella, Oscar White. 1977. "Ziwiye" and Ziwiye: The Forgery of a Provenience. *Journal of Field Archaeology* 4: 197–219. [CrossRef]

Nikulin, V. 1957. К вопросу о наличии на Боспоре центра по штамповке изделий из золота и серебра. Материалы по археологии Северного Причерноморья 1: 85–90.

Ogden, Jack M. 1990. Casting Doubt: Economic and Technological Considerations Regarding Metal Casting in the Ancient World. *MRS Proceedings* 185: 713. [CrossRef]

Onayko, Nadyezhda. 1974. Заметки о Технике Боспорской Торевтики. Советская Археология 3: 78–86.

Onayko, Nadyezhda. 1976. О Воздействии Греческого Искусства На Меото-Скифский Звериный Стиль (К Постановке Вопроса). Советская Археология 3: 76–86.

Ostroverkhov, Anatolii. 1981. Обробка Кольорових Металів На Античних Поселеннях. Археологія 36: 26–37.

Özgen, İlknur, Jean Öztürk, and Machteld J. Mellink. 1996. *The Lydian Treasure: Heritage Recovered*. Istanbul: Uğur Okman.

Polidovych, Yurii. 2000. Скіфські Хрестоподібні Бляхи. Археологія 1: 35–48.

Polidovych, Yurii. 2017. Пластина із зображенням хижака у скіфському звіриному стилі. In Хотівське городище (новітні дослідження). Київ: Інститут археології НАН України, pp. 91–95.

Porucznik, Joanna. 2021. *Cultural Identity within the Northern Black Sea Region in Antiquity: (De)Constructing Past Identities*. Colloquia Antiqua 31. Leuven and Bristol: Peeters.

Pridik, Yevgenij. 1911. Мельгуновский Клад 1763 Года. Материалы По Археологии России 31: 1–31.

Prushevskaya, Evgeniya. 1955. Художественная Обработка Металла (Торевтика). In Античные Города Северного Причерноморья. Очерки Истории и Культуры. Edited by В.ф. Гайдукевич and М.И. Максимова. Москва-Ленинград: Издательство АН СССР, vol. 1, pp. 325–55.

Redfern, David Vincent. 2000. Greek Goldsmiths: Master Craftsmen of the Ancient World. Truth or Fallacy. In Таманская Старина. Санкт-Петербург: Издательство Государственного Эрмитажа, vol. 3, pp. 112–14.

Redfern, David Vincent. 2012. *A Study of Scythian Gold Jewellery Manufacturing Technology and Its Comparison to Greek Techniques from the 7th to 5th Centuries BC*. BAR International Series 2424. Oxford: Archaeopress.

Rostovtzeff, Michael. 1922. *Iranians and Greeks in South Russia*. Oxford: Clarendon Press.

Shelekhan, Oleksandr, and Oksana Lifantii. 2022. 'Swords and Swordsmen in Greco-Scythian Art'. *Peuce (Serie Nouă)—Studii Şi Cercetari de Istorie Şi Arheologie* 20: 39–72. Available online: https://www.ceeol.com/search/article-detail?id=1076541 (accessed on 7 June 2023).

Shramko, Borys. 2016. Об Изготовлении Золотых Украшений Ремесленниками Скифии. In Більське Городище в Наукових Працях Б. А. Шрамка: Збірник Наукових Праць, Присвячений-Річчю Від Дня Народження Вченого. Edited by Ігор Корост. Kotelva—Kharkiv: V. N. Karazin Kharkiv National University, HCR «Bilsk», Maydan, pp. 57–59. Available online: https://books.google.ch/books?id=-qNODQAAQBAJ&lpg=PA1&hl=ru&pg=PA1#v=onepage&q&f=false (accessed on 7 June 2023). First published 1970.

Shramko, Borys. 2016. Глиняные Скульптуры Скифии. In Більське Городище в Наукових Працях Б. А. Шрамка: Збірник Наукових Праць, Присвячений 95-Річчю Від Дня Народження Вченого. Edited by Ігор Корост. Kotelva—Kharkiv: V. N. Karazin Kharkiv National University, HCR «Bilsk», Maydan, pp. 520–30. Available online: https://books.google.ch/books?id=-qNODQAAQBAJ&lpg=PA1&hl=ru&pg=PA1#v=onepage&q&f=false (accessed on 7 June 2023). First published 1999.

Shults, Pavel. 1953. Мавзолей Неаполя Скифского. Москва: Искусство.

Skoryi, Serhii. 1990. Курган Переп'ятиха (До Етнокультурної Історії Дніпровського Лісостепового Правобережжя). Київ: Наукова думка.

Terenozhkin, Oleksii, and Borys Mozolevskyi. 1988. Мелитопольский курган. Киев: Наукова думка.

Treister, Michail Yu. 2001. *Hammering Techniques in Greek and Roman Jewellery and Toreutics*. Colloquia Pontica, v. 8. Leiden and Boston: Brill. Available online: https://brill.com/edcollbook/title/7236 (accessed on 7 June 2023).

Treister, Michail Yu. 2005. Masters and Workshops of the Jewellery and Toreutics from Fourth-Century Scythian Burial-Mounds. In *Scythians and Greeks: Cultural Interactions in Scythia, Athens and the Early Roman Empire (Sixth Century BC–First Century AD)*. Edited by David Braund. Exeter: University of Exeter Press, pp. 56–63.

Treister, Michail Yu. 2008. Metallurgy and Metals in the Black Sea Area (Antiquity). Μεγάλη Διαδικτυακή Εγκυκλοπαίδεια Του Εύξεινου Πόντου. Available online: http://blacksea.ehw.gr/forms/fLemma.aspx?lemmaId=10784 (accessed on 7 June 2023).

Treister, Michail Yu. 2017. Бронзовая Матрица, Найденная в Пойме р. Трубеж (Об Использовании Бронзовых Матриц с Рельефными Изображениями в Причерноморье в VI—IV Вв. До н. э.). Археологія і Давня Історія України 2: 200–7. Available online: http://www.irbis-nbuv.gov.ua/cgi-bin/irbis_nbuv/cgiirbis_64.exe?I21DBN=LINK&P21DBN=UJRN&Z21ID=&S21REF=10&S21CNR=20&S21STN=1&S21FMT=ASP_meta&C21COM=S&2_S21P03=FILA=&2_S21STR=arhdiu_2017_2_19 (accessed on 7 June 2023).

Veselovskyi, Nikolay. 1913. К Вопросу о Технике Золотых Рельефных Украшений в Греческом Искусстве. Известия Императорской Археологической Комиссии 47: 96–103.

Williams, Dyfri, and Jack Ogden. 1994. *Greek Gold: Jewellery of the Classical World*. London: British Museum Press.

Williams, Dyfri. 1998. Identifying Greek Jewellers and Goldsmiths. In *The Art of the Greek Goldsmith*. Edited by Dyfri Williams. London: British Museum Press, pp. 99–104.

Yablonsky, Leonid. 2000. 'Scythian Triad' and 'Scythian World'. In *Kurgans, Ritual Sites, and Settlements: Eurasian Bronze and Iron Age*. Edited by Jeannine Davis-Kimball. British Archaeological Reports, International Series 890. Oxford: British Archaeological Reports, pp. 3–8.

Zhuravlev, Denis, Elena Novikova, and Marina Shemakhanskaia. 2014. Ювелирные изделия из кургана Куль-Оба в собрании Исторического музея: историко-технологическое исследование. Trudy Gosudarstvennogo istoricheskogo muzeia 200. Москва: Государственный исторический музей.

Disclaimer/Publisher's Note: The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.