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Special Issue Reprint

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# Situating Eurasia in Antiquity

Nomadic Material Culture in the First Millennium BCE

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Edited by  
Caspar Meyer

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# **Situating Eurasia in Antiquity: Nomadic Material Culture in the First Millennium BCE**

Editor

**Caspar Meyer**



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# About the Editor

## Caspar Meyer

Caspar Meyer is Professor of Classical Archaeology and Material Culture at the Bard Graduate Center in New York. His research focuses on the cultural dynamics of craft production in the Greek city-states of the Aegean and among the mobile pastoralists of Eurasia. Another area of his interest is the history of the instruments and media that archaeologists have developed to aid the transformation of artifacts into written explanations. He previously taught at Birkbeck College, University of London, and has held research fellowships at the Getty Research Institute in Los Angeles and the Centre Louis Gernet in Paris. He is the editor of *West 86th: A Journal of Decorative Arts, Design History, and Material Culture*.





# Nomadic Material Culture: Eurasian Archeology beyond Textual Traditions

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## 1. Introduction

The term nomadic material culture refers to the tools, equipment, and other tangible items associated with communities that are characterized by a high degree of residential mobility. In ancient Eurasia, this mobility often revolved around pastoralism wherein livestock management on horseback played a central role in the economy and way of life by involving a large proportion of the population in seasonal migrations between pastures, water sources, and camp sites (Khazanov 1994, p. 17). This propensity for mobility has traditionally been of secondary importance in the archeological study of Eurasian Iron Age societies. Although researchers have long highlighted the spread of objects relating to horse-borne mobility and armament—notably missile weapons, short-bladed swords, and bridle components—they have tended to be interested less in what these finds reveal about people’s ability to move than in how recurring assemblages can be identified with the population groups mentioned in historical sources, such as the Cimmerians, Scythians, and Sarmatians (e.g., Rolle 1989; Cunliffe 2019). The articles brought together in this Special Issue of *Arts* seek to redress this bias by reframing the archeological heritage of the Eurasian steppe around questions of mobility, innovation, diversity, and mutual transformation.

## 2. Nomadic Material Culture as an Investigative Framework

The emphasis on material as opposed to archeological culture is intended to challenge customary modes of classification and interpretation in the discipline. Admittedly, the choice is not without its problems. In recent decades, anthropologists have grown increasingly wary of the homogenizing and essentializing impetus of the culture concept (Hicks 2010, pp. 26–27). Following James Clifford’s well-known critique (Clifford 1988), they stress that the modern idea of culture is a legacy of colonial ethnography that sought to contain and control otherness through classification. They argue instead for an understanding of culture as dynamic, contested, and contingent on processes of interaction, exchange, and negotiation. More recent theorists have come to question whether it is at all possible to conceive of culture as a separate domain of mental representations or significations that are ontologically prior to their material constitution (Olsen 2003; Ingold 2007). Last but not least, advocates of posthuman or flat ontologies question the culture concept on account of the priority it gives to humans as agents and the hierarchies this imposes between material and mental or natural and cultural entities. Such hierarchies build on binary divisions that are, for better or worse, distinctive of Western modernity (Latour 1993).

Irrespective of these criticisms, the concept of material culture can provide a welcome invitation to meditate more broadly on the relationships between people and things across space and time, regardless of particular historical events, processes, or names (Anon 1996, p. 5). This reflection is indeed why the category first came into being, as Dan Hicks has illustrated (Hicks 2010, pp. 30–38). In the English-speaking world, the expression material culture appears to have been coined in museum anthropology of the inter-war period in the twentieth century. It was conceived partly in reaction to the focus on the socio-technical evolution of “primitive” societies best known from the linear-progressive scheme devised by Augustus Pitt-Rivers (1875). To contemporary museum scholars, it offered a way to

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distinguish their endeavor from earlier antiquarian collecting and to bring their work under the emergent sociological paradigm inspired by Émile Durkheim, with its growing emphasis on systematic fieldwork and empirical observation. In view of the category's genesis, it is no accident that its extension to nomadic heritage finds to date little explicit consideration outside museum publications, such as Ken Teague's book on the Horniman collection in London (Teague 2000).

What matters in the context of this Special Issue is that the term's currency also challenges the notion of homogenous ethnic groups that are central to culture-historical approaches in archaeology (Hicks 2010, p. 34). Culture history is an explanatory framework that focuses on the chronological and geographical sequence of cultural developments, often using artifacts to define cultural phases and reconstruct historical narratives (Trigger 2006, pp. 211–313). Culture-historical interpretation aims to identify cultural or ethnic groups and trace their technological changes and geographical spread over time, usually through typological classification, stratigraphy, and distribution maps. Among the paradigm's most influential proponents were Gustaf Kossinna and Vere Gordon Childe (Lucy 2005, pp. 86–109). While the former's studies often tried to connect archeological cultures directly to specific historical people, the latter was interested in the spread of technological innovations—for instance, in metallurgy or farming—and their ostensibly determining impact on culture and society. In Russian and Soviet archaeology, the basic premises of the culture-historical method were widely adopted through the influence of such leading figures as Boris Grakov, Vladimir Gorodtsov, and Mikhail Artamonov, either directly through Kossinna's work or by way of his predecessor, Oscar Montelius (Trigger 2006, pp. 326–28; Klejn 2012, p. 165; Porucznik 2021, pp. 3–15).

Culture history continues to play a pivotal role in the archaeology of Eurasia. A key factor in the rise and persistence of culture-historical interpretation is the rich legacy of the Greco-Roman sources dealing with the geography and inhabitants of the northern Black Sea area, often from a quasi-ethnographic point of view (Rostovtzeff 1931, pp. 1–139; Skinner 2012; Meyer 2020; Porucznik 2021, pp. 132–82). Of foremost importance is the description written in the fifth century BCE by the Greek historian Herodotus (Corcella 2007, pp. 454–721). Drawing on previous sources and contemporary informants, Herodotus (4.5–82) composed a detailed excursus on Scythia and its diverse customs and populations as a preamble to his recounting of the region's invasion by the Persian king Darius. However, using Herodotus as a source in archeological interpretation entails at least two methodological obstacles.

Firstly, in referring to the people he describes, Herodotus switches back and forth between employing names as broad cultural designations or as ethnonyms in the strict sense, referring to a group with shared cultural traits that claimed co-sanguinity. The key instance is Herodotus' ethnic interpretation of the name Scythian (deriving from Skoloti) in his account of the nomads' mythical ancestry (4.5–7), which contrasts with his references elsewhere (4.17–23) to other people who espoused Scythian customs and to sedentary groups that claimed Scythian ancestry but engaged in agriculture or mixed economies (Meyer 2021). Although similar uncertainties apply to the names of other steppe populations mentioned by ancient authors, the lack of fit between textual and archeological categories has rarely invited systematic scrutiny (Ivanchik 2001; Meyer 2013, pp. 98–107; Meyer forthcoming; Mordvintseva 2017). As Oksana Lifantii points out, the ambiguous meaning of the name Scythian in the ancient sources invited conflicting usages in modern literature, with some authors reserving the term in its ethnic meaning for the mobile pastoralists and farmers between the Danube and Don rivers and others employing it as a broad designation for early Iron Age equestrian nomads across the Eurasian steppe, regardless of whether they considered themselves Scythians or not (Lifantii 2024). Either way, even this cursory glance at nomenclature shows that Scythian, as much as any other ethnic name appearing in the classical tradition, cannot constitute an archeological culture in the sense Kossinna and his successors had envisaged.

Secondly, the overarching narrative aims of Herodotus' history required him to switch back and forth between treating the Scythians as ethnographic subjects of his survey of the northern Black Sea region or as historical actors partaking in his account of failed Persian imperial expansionism. Although the ethnographic passages prompted some acknowledgement of the Scythians' diverse subsistence and residential patterns, the event-based sections dealing with Darius' invasion impelled the author to depict the Scythians as the antithesis of Mediterranean urban cultures (Hartog 1988). Thanks to Herodotus and other "ethnographic" authors, the Scythians became nomads par excellence, defined in terms of the achievements of sedentism that they lacked—specifically, as illiterate wagon dwellers who lived on meat and milk instead of grain and wine, fought as equestrian archers rather than mass-ranked hoplites, and adhered to their ancestral customs with violent suspicion of outsiders (Shaw 1982–1983). If we are to accept wholesale this classical tradition of nomadic otherness, the people of the Eurasian steppe compensated for their lack of civilization with depraved hostility, decapitating or blinding their captive enemies or engaging in cannibalism.

The stereotyped description of Scythian nomadism has had far-reaching implications for modern perceptions of Eurasian antiquity both in and beyond academia. The depiction of the steppe as the dominion of warlike herders on horseback has blinded researchers to evidence for segmentary economic specialization within and across local communities and mixed subsistence systems involving agriculture alongside pastoral activities. This evidence can no longer be ignored in light of the recent insights into dietary practices in the northern Black Sea region that show that mobility patterns were selective and restricted to individuals and groups embedded in otherwise sedentary landscapes (Ventresca Miller et al. 2019; Ventresca Miller et al. 2021). The remarkable advances in isotope analysis and archaeobotany in Central Asia have revolutionary implications for Eurasian archaeology in other regions of the steppe belt by accentuating the local variabilities in subsistence strategies and supplanting established narratives of nomadic homogeneity with a rich tapestry of interconnected economic practices and social formations (Spengler et al. 2021).

It could be argued that the focus on nomadic material culture in this volume reinforces this age-old bias by suggesting an intrinsic connection with pastoralism. Against this objection, we make the case for a broad definition of nomadism in line with the current literature on mobility in anthropology, archaeology, and geography (Barnard and Wendrich 2008; Beaudry and Parno 2013; Leary 2014; Hamilakis 2018; Gibson et al. 2021). Although the term derives from the Greek word *nomos* for pasture (or *nomas* for people who "roam around for pasture") (Meyer 2021), its meaning currently hinges on the aspect of residential mobility (Wendrich and Barnard 2008, p. 5). Willeke Wendrich and Hans Barnard define this mobility as "the capacity and need for movement from place to place," an explanation that foregrounds the movement of people and individuals across landscapes, but "leaves their organization and motivations to be determined" (p. 5). They distinguish four basic types of mobility that can acquire nomadic characteristics:

- The entire group travels from resource to resource;
- Segments of different groups travel to and from specific resource areas;
- Segments of the group gather resources for a base camp;
- The entire group travels, following a distinct and fixed pattern (p. 5).

In a similar vein, Roger Cribb cautions against typologies that categorize groups as being either sedentary, nomadic, or transhumant. Rather, sedentary and nomadic strategies should be viewed along a dynamic continuum of overlapping and interlocking practices. The chief criteria of nomadism are, in his view, the human rather than animal involvement in the movements and the potential for shifting migratory patterns wholesale into neighboring environments (Cribb 1991, pp. 18–19).

### 3. Summary of the Special Issue

Although mobility in the Eurasian steppe was often linked to pastoralism, the occurrence at archeological sites of what we seek to explore as nomadic material culture is

not a sufficient condition for identifying the presence of pastoral nomads. The examples of nomadic heritage explored in this Special Issue should instead be taken to express a potential for mobility with a wide range of conceivable motivations, be they economic, military, or political. The multiplicity of motivations can be gleaned through the three topics emphasized in the summary below.

### 3.1. *Technological Innovation and Modification*

One prevalent way in which previous scholarship has characterized nomadic material culture is through contrasts with the range of finds expected at archeological sites of sedentary populations (Cribb 1991, pp. 68–69). Distinctive traits that are commonly highlighted include the portability of possessions and the corresponding absence of permanent architectural structures. A simplistic juxtaposition between sedentary and nomadic sites is, however, increasingly untenable in view of the structures brought to light through systematic surface surveys and excavation in Kazakhstan, Tuva, and Mongolia (Honeychurch and Makarewicz 2016, pp. 349–50; Chang 2018, pp. 39–76; Spengler et al. 2021; Zhogova et al. 2023). Even at such exemplary nomad sites as the Pazyryk mounds, the log cabins built inside the largest mounds point to migration patterns tied to permanent winter installations, as Karen Rubinson and Kathryn Linduff indicate (Rubinson and Linduff 2024). More generally, nomadic groups have been recognized for the technological innovations that supported their lifestyles, including advancements in metallurgy and the design of weaponry and horse gear, which were crucial for subsistence activities and warfare.

In our Special Issue, several contributions detail interesting ways in which preexisting artifacts were modified to suit the needs of mobility. For instance, Sergei Polin and Marina Daragan explore the unique construction and functional adaptations of Greek bronze greaves discovered in Scythian burial mounds (Polin and Daragan 2023). Distinctive adjustments include the large openings cut into the inner sides of the greaves from Barrow 6 near Vodoslavka in Southern Ukraine. Located where the calf muscles protruded, these openings were covered with sewn-on pads of thick leather, a modification likely made to improve comfort and functionality for riders. Similar alterations are observed on greaves from classical-era Scythian sites across the Pontic steppe and forest-steppe and thus suggest a widespread practice and advanced metalworking skills among Scythian artisans. In a similar vein, Oksana Lifantii’s reconsideration of a type of personal adornment worn by the Scythian elite in the northern Black Sea region shows how highly skilled Scythian craftspeople modified preexisting—and, in some cases, imported—elements and combined them with purposely designed ones to create complex meshes that were sewn onto garments (Lifantii 2024). Consisting of gold and gilded silver tubes, beads and pendants of sheet metal, the resulting jewelry forms were devised to meet their wearers’ cultural predilections for visually striking markers of identity that doubled as portable wealth.

Several contributions reconsider evidence for goldsmithing technology in potentially mobile contexts. Barbara Armbruster and Caspar Meyer present the results of an interdisciplinary study of the Early Scythian princely tomb of Arzhan 2 in Tuva (South Siberia) by focusing on tool marks and surface morphologies in order to analyze the variety of techniques—including, for instance, lost-wax casting, chasing, pressing, engraving, filigree, and granulation—that were employed to craft elaborate jewelry, decorated weapons, and other personal ornaments (Armbruster and Meyer 2024). Despite the impressive range of products in evidence, none of the techniques would have required permanent, large-scale facilities. The tools and methods used were versatile and adaptable, allowing the artisans to produce both lightweight gold decorations and solid, functional objects facilitating equestrian mobility, such as open-work fasteners, sliders, strap ends, and handles. Lifantii reviews direct archeological evidence for local jewelry production at Scythian sites in the northern Black Sea region by focusing on punches, matrices, and workshop remains recorded in excavations (Lifantii 2023). The presence of such tools indicates a high level of goldsmithing skill and challenges the longstanding bias in scholarship that views most gold objects from Scythian contexts as imported rather than locally produced. Finally, Leonid

Babenko's wide-ranging discussion of recent research on the gold pectoral from Tovsta Mohyla brings out the sophisticated adaptation of metalworking techniques to the needs of mobile ways of life (Babenko 2023). The use of hollow pseudo-torques (ornamental twisted rods) that mimic the appearance of heavier, solid gold jewelry demonstrates a sophisticated approach to balancing the demands of esthetics and practicality. The open-work decorative motifs and figure scenes evoking pastoral life also resonate with mobile contexts by conveying cultural stories and values that can be displayed in different settings, whether social gatherings, rituals, or during travels.

### 3.2. Cultural Identity and Interaction

Material culture offers many potential avenues to explore how mobile groups maintained their identity, status, and connectivity. Two articles in our volume illuminate in surprising ways how specific object types can bring out the changing facets of Scythian social organization and regional connections. First, Denis Topal provides an in-depth examination of the ceremonial forms of swords and daggers decorated with precious metals, which occupy a special place in the culture of the Iron Age nomads (Topal 2024). Based on the chronological distribution of the 76 examples he studied, Topal documents a strong interest in such status items in the third quarter of the fourth century BCE—a phase of growing competition and instability among the Scythian elites of the northern Black Sea region. The material also reveals regional differences. In the northern Black Sea area, most ceremonial swords were covered with gold overlays with relief decoration, whereas further east, the metalworking techniques were more varied, including gilding, wire decoration, gold inlay, and figural applications. The persistent preference for comparably short blades more suited for thrusting than cutting underscores the ceremonial characteristic of the weapons and the Scythians' reliance in combat on mounted archery rather than swords. Second, Marina Daragan and Sergei Polin explore the multifaceted role of axes in Scythian burial practices by shedding light on the objects' practical utility and symbolic significance (Daragan and Polin 2023). Their research reassesses several unusual burial contexts in the northern Black Sea region with axe depositions showing that the objects were employed in rituals before the excavation of the graves, during their backfilling and in the final sealing of the constructions. Ethnographic parallels from other Eurasian cultures reveal that axes often symbolized a connection between the physical and supernatural worlds and were thought to protect the living from the spirits of the dead and to facilitate the deceased's journey to the afterlife. This differential usage underscores the axes' importance beyond that of functional tools or weapons and reflects the cultural connections, belief systems, and hierarchical structure of Scythian society.

Interactions between mobile and sedentary communities are often examined through material exchanges, such as imported goods found at archeological sites or objects that indicate contact and influence. For instance, Iryna Shramko's contribution concentrates on the funeral costume of elite women in the northern Pontic forest-steppe (Shramko 2024). Based on recent discoveries in the Skorobir necropolis at the Bilsk fortified settlement in Ukraine, Shramko offers a new reconstruction of a costume previously identified in finds from Syniavka and Bobrytsa. Consisting of a gold-decorated headdress, necklaces of semi-precious stones, and other accessories, the repertoire hints at a stable tradition of women's dress persisting for much of the sixth century BCE and evolving at the fulcrum of long-distance interactions with West Asian and Pontic Greek centers as well as the Hallstatt polities of central Europe. The western connections of mobile steppe elites take center stage in Louis Nebelsick's re-examination of the celebrated Witaszkowo/Vettersfelde hoard from Poland through the lens of the dramatic shifts in population density and habitation patterns in eastern central Europe that have become ever more pronounced in archeological contexts of the second half of the sixth century BCE (Nebelsick 2024). Following the re-excavation of the hoard's original archeological site in the early 2000s, Nebelsick interprets the assemblage as a votive deposited according to local ritual traditions. At the same time, the "bilingual" nature of the artifacts fuses nomadic weapons and jewelry types with West

Asian figural conventions in ways that suggest prolonged cultural interchange between Scythian patrons and Ionian craftspeople. Drawing on a wide range of contextual evidence, Nebelsick posits that the hoard reached its destination as a diplomatic gift to a local leader who acted as a mediator in Scythian slaving operations beyond the fringes of the western Eurasian steppe. His analysis highlights the complexity of nomadic interactions and the far-reaching consequences of their westward incursions.

Finally, two articles illuminate the interactions between mobile and settled societies from the perspective of the cities of the Bosporan Kingdom on the shores of the Kerch Straits. Michał Halamus first explores the use of tamga signs in Bosporan inscriptions of the second and third centuries CE (Halamus 2024). Introduced to the northern Pontic steppe by Sarmatian nomads of the second or first century BCE, tamgas were originally adopted into the Greek epigraphic culture of the Bosporan cities to mark ownership or presence. Halamus details the evolution of these signs from their use as secondary markings on jewelry and weapons to their appearance on coins and stone stelae, often as significant elements of civic self-representation and royal propaganda to convey messages of power, identity, and cultural participation in the Bosporan Kingdom. Second, Joanna Porucznik and Evgenia Velychko reassess an elite child burial discovered in 1953 in the necropolis of Panticapaeum at modern-day Kerch (Porucznik and Velychko 2024). They examine its contents in relation to the social dynamics and shifting interplay of Greek and non-Greek influences between the fourth century BCE and the second century CE. The presence of adult-size items—such as a gold torque with a carnelian intaglio, a bracelet typical of late Scythian sites, and an inscribed finger ring—points to the ascribed elite status of the deceased child and to a level of visibility and social standing of sub-adults previously uncharacteristic of Bosporan society. Integrating this material with debates in childhood studies, the authors identify the mortuary commemoration of children as a newly evolved medium for articulating ideas of loss, family continuity, and identity that was relied upon by Greek as well as non-Greek elite families.

### 3.3. *Environmental Adaptation*

Another area that attracts special attention in the study of nomadic mobility is the ways in which material culture enables and reflects environmental adaptation, such as the selection and processing of natural resources, the modes of constructing tools and dwellings, and the maintenance of seasonal installations along migration routes dictated by ecological conditions and grazing needs. Karen Rubinson and Katheryn Linduff examine the unique socio-political and economic structures of the Pazyryk culture of the fifth to third centuries BCE as an adaptive strategy to the challenging landscape and climate of the Altai-Sayan mountain system in South Siberia (Rubinson and Linduff 2024). They argue that the hierarchical organization usually foregrounded in the literature on the basis of the stratified wealth in tombs offers an incomplete picture of the social organizations that underpinned these herding communities. The variety of occupational tasks in Pazyrykian daily life—including herding, craftwork, trading, hunting, felting, food preparation, childcare, and warfare—required a multiplicity of skills and knowledge that called for ad hoc leadership arranged along heterarchical as opposed to hierarchical principles. The ability to shift between organizational modes allowed local communities to thrive in this harsh and confined environment and hints at the immense range of mobile ways of life that existed in the broader ecoregion. James Johnson's contribution also deals with the multivalence of nomad burial mounds (Johnson 2024). Although these mounds are usually seen as symbols of a rigid, patriarchal society, Johnson argues that such views of Scythian kurgans are overly simplistic and influenced by Greek and Persian preconceptions of the northern nomads as barbarians. Combining Geographic Information Systems with an original theoretical framework inspired by Mikhail Bakhtin's *Dialogic Imagination* (Bakhtin 1981), the author shows how viewshed analyses of kurgan landscapes can reveal the multiple ways of experiencing the monuments, depending on the age, gender, and cultural background of the mobile viewer. By examining burial mounds through this expanded methodology, Johnson



provides a deeper understanding of Scythian mortuary landscapes and their implications for current approaches to ancient societies within and beyond the Eurasian steppe.

As the articles in this collection demonstrate, material culture holds many potential insights into the everyday lives, social structures, and values of nomadic peoples. By studying material culture, we can shed light not only on the practical aspects of life, such as the need for adaptable tools and possessions, but also on the symbolic role that material engagement plays in rituals and social ceremonies. Paying greater attention to objects and monuments helps us appreciate the complexity and richness of mobile communities and challenges the age-old view of such groups as merely transient or peripheral. In recognizing the limiting constraints of textual sources, we come to acknowledge how mobility fostered innovation, cultural exchange, and identity formation and to gain a deeper and more nuanced understanding of human history.

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## Article

# A Distinct Form of Socio-Political and Economic Organization in the Pazyryk Culture

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**Abstract:** The Pazyryk Culture, situated in the Altai Mountains of Russia, Kazakhstan, Mongolia, and China, flourished for a relatively short period: 5th–3rd centuries BCE. A series of burial grounds from the later phase, 4th–mid-3rd centuries BCE, to be studied here reveal the remains of three groups of individuals of high, mid, and lower status. Within the limiting topographical and environmental confines of the local region, in contrast to the vast grasslands of the steppe and the deserts and oases of Central Asia, it is possible via the analysis of material culture and with reference to ethnographic studies to see nuances of interaction among these three groups and the regions immediately adjacent during this short period. Aided by modern scientific techniques, including DNA and isotopic analysis, together with analysis of excavated and often frozen remains, it is also possible to map out a heterarchical set of relationships within the hierarchical framework. The model developed in this unique landscape might be tested elsewhere in Eurasia as it extends the application of the notion of nonuniform socio-political organization among pastoralists noted for Bronze Age societies in the Eurasian steppe to the late Iron Age.

**Keywords:** Pazyryk Culture; heterarchy; horse herding; landscape adaptation; Altai; climate; trade; societal complexity

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## 1. Introduction: What Constitutes Pazyryk Culture?

As proposed by Ochir-Goryaeva (2020),<sup>1</sup> the remains from tombs discovered in the mountainous region of central Siberia in the Altai Mountains of Russia, Kazakhstan, and later dated ones in western Mongolia and northwestern China, exhibit consistent burial patterns and/or deposits distinctive for the region. She argued that mobile pastoralists who occupied the open steppe landscape practiced differing burial practices due to their more regular interaction with groups beyond their territory and suggested that because the Pazyryk peoples had limited access to groups outside of their confined mountainous area, their burials and their contents remained consistent throughout their occupation of the Chuya Valley region. We extend this argument to suggest that although their burials share features of a broader steppe culture, including mound building and “animal-style” artifacts, the Pazyryk Culture represents a self-contained regional community that lasted only from the 5th to the 3rd centuries BCE due to environmental and historical circumstances. The materials left in these burials will be read here as evidence of a society organized primarily and uniquely for the region around the rearing and trading of horses that depended on both a hierarchical and heterarchical system of leadership that allowed for the sharing of duties and goods as needed.

For example, the objects, imagery, and treatment of the body in burial point to an attempt to capture, display, and maintain that which was most important for the livelihood of the community—family and group relationships, respect for the wild animal kingdom, their domesticated herds (especially horses), the protection and bodily health of the deceased, and the status of the individual and the local group.<sup>2</sup> Importantly, the cultural

value placed on those notions must have guided the selection of images in order to maintain, validate, and project their common bond. Preparation of the necessary accouterments for funerary and burial rituals to meet the ritual schedule, in addition to everyday activities, required many at several levels of responsibility and authority to work together in order to maintain an ordered society.

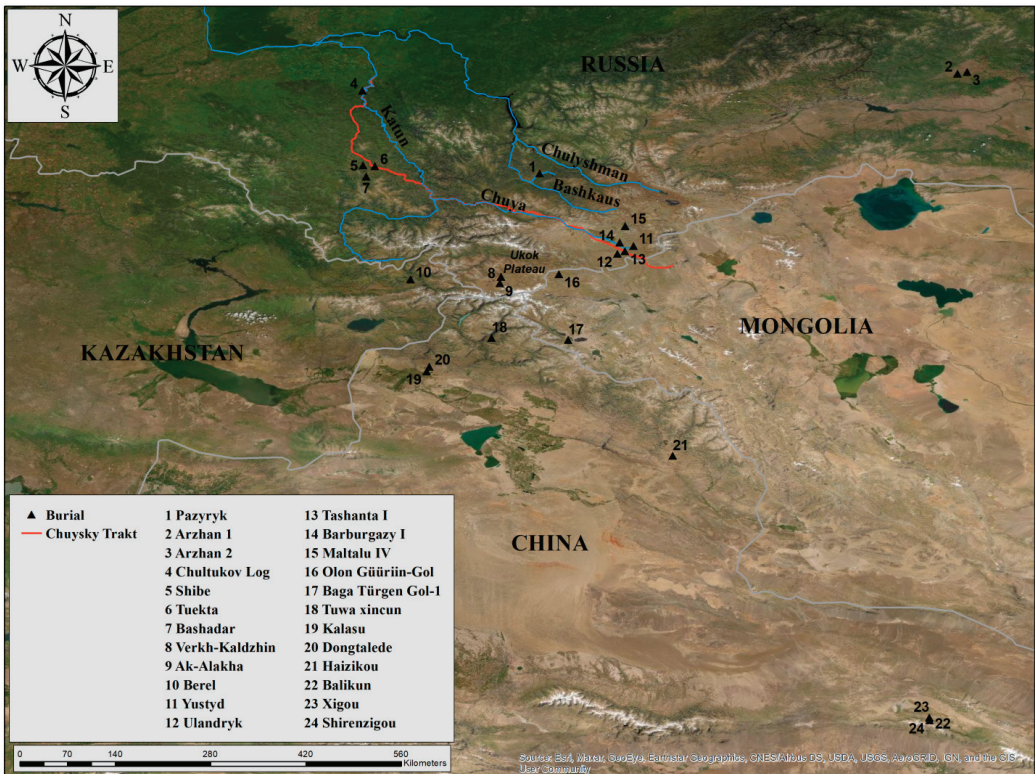
Although access to some exotic and precious goods was restricted for the elites, the preparation of ritual materials for burial, as well as the use of certain motifs and burial patterns, were shared by persons of all social groups. Such common rituals and displays would also have confirmed the bond among them but also laid out and reminded the community of the social role and position of each observer to the group as a whole. Such shared values displayed in these burials and above-ground monuments provide evidence that ritual organized the groups around common principles that could overcome local, individual ambitions as was argued by Barfield for living mobile pastoral groups (Barfield 1993, p. 86), or as Wright suggested for Mongolian nomadic pastoralists where such displays, he suggested, were leveling mechanisms that yielded evidence of community solidarity, not necessarily social hierarchies as had been argued in the past (Wright 2015).

This study of the Pazyrykian society will offer an alternative model to those recently reviewed by Spengler et al. (2021, p. 251) and Hermes et al. (2019) for mobile pastoral groups and will instead look at social order within the Pazyryk Culture and attribute that to its self-contained topographic configuration, environmental and climatic conditions in addition to historical contingencies. What we have found is that the Pazyryk Culture was a regional horse herding economy seemingly organized as a local, regional network of interdependent communities that gave rise to a largely self-sufficient society supported by unequal relationships and interregional interaction as described for some other mobile pastoral groups (Frachetti 2012; Simpson and Pankova 2017, p. 162), but not yet understood for the Pazyryk region. Stability in such groupings demanded a complex network of partners that created an overlapping exchange system based on trade and exclusive gifting of very special exotic goods. That system survived only 50 years in and around the site of Pazyryk itself, although the beginnings of that pattern apparently developed and operated in the immediate region at least 150 years earlier. Individuals and groups at a variety of social levels and at multiple scales participated and probably shifted from task to task and responsibility to responsibility. For instance, the vertical relations in the Pazyryk communities allowed for local management of herds and, in the case of horses, the specialists who handled and trained them, whereas horizontal, unequal, or differentiated relations may have existed with neighboring or even local groups such as between horse traders and, probably, fabricators of metal weapons or fur trappers.

Moreover, within the dispersed complex of Pazyrykian communities, some individuals must have carried out several tasks that presumed situational leadership in order for the Culture to function as a whole. This case study of the horse-based economy established by the mid-4th century BCE at Pazyryk proposes a model of organization that considers the location of the culture and the consequent specialized adaptation developed to manage it. Such sensitivity to setting and the unique adjustment to it does also refute a uniform definition of “nomadic” lifeways<sup>3</sup> and underscore the emergence of diverse yet “strategically independent” small-scale socio-political societies as suggested for the Eastern Eurasian Steppe in the Bronze Age by Frachetti (2008, 2012, p. 2).

## 2. Background

Sites now known collectively as constituting the Pazyryk Culture have been located and excavated in and near the Altai Mountains of Russia, Kazakhstan, Mongolia, and China (Figure 1). Taken together, they can be dated from a relatively short period, from the 5th–3rd centuries BCE. Widely known in the early 20th century after the excavation of the burial site preserved in permafrost at Pazyryk, the region was often included in discussions about Eurasian trade and exchange networks of goods and ideas originating in the sedentary states of China, Persia, or Greece.



**Figure 1.** Map of Pazyryk Culture sites. Map by Evan Matthew Mann. (Many other sites are collected in Mongolia and plotted by Jacobson 2009).

The Pazyryk Culture designation includes a subset of sites often subsumed under the all-encompassing label “Scythian”. From the exacting work of González-Ruiz et al. (2012) and others (Voevoda et al. 2000; Molodin 2000), we know that the underlying population across the Steppe was genetically connected, but the dynamics that may have driven a cultural diffusion are still poorly understood. The populations of the Pazyryk region, for instance, were a mix of several regional eastern and northern Eurasian gene pools, suggesting the movement of peoples in and out of that small region for many centuries before and during the first millennium BCE (González-Ruiz et al. 2012, pp. 9–10), but the specifics of those movements still await investigation. How the Pazyrykian peoples might have been connected to the larger world called by some of the Scythian culture, which they surely did not know first-hand, is still an open question. They developed a delimited culture that was internally coherent and short-lived and that allows for a focused discussion of the group locally as well as regionally constituted and maintained.

The Pazyryk Culture derives from the name of the find spot of the best-known group of mounded kurgans located in the valley of the Ulagan River, where Russian archaeologists M. P. Griaznov (in 1929) and S. I. Rudenko (in 1947–1949) explored barrows preserved in permafrost, the five largest of which are thought to be the burials of the upper elite leadership of the region at that time (Figure 2). More recently, mounded tombs nearby on the Ukok Plateau in the eastern Altai at Ak-Alakha (Polosmak and Molodin 2000; Polosmak 2001) and in northern Kazakhstan at Berel yielded other richly outfitted Pazyryk Culture funerary remains dating from the same period (Francfort et al. 2006; Samashev 2006, 2011, 2012). Unlike the large barrows at Pazyryk, these are mostly tombs of lower-level elites, although Berel 1, excavated in the 19th century, appears to be more similar to the Pazyryk



examples (Zakharov 1925, 1928). The lower slopes rising from the Chuya Valley are also marked by the burial complexes to the west of Pazyryk at Bashadar, Tuekta (Rudenko 1960), and Katanda (Zakharov 1925). In addition, small burials of non-elites were excavated in the 1980s at sites such as Yustyd, Ulandryk, and the Sailugem valley (Kubarev 1987, 1991, 1992).<sup>4</sup>



**Figure 2.** View of Pazyryk kurgans. Константин, Ганжа. “Pazyryk Kurgans”. *World History Encyclopedia*. Last modified 18 June 2021. <https://www.worldhistory.org/image/14265/pazyryk-kurgans/>. Use under creative commons license, accessed on 4 July 2023.

Since then, Pazyryk-style cemeteries in western Mongolia, such as at Olon-Kürin-Gol excavated in 1993 by a Russian-German-Mongolian team (Molodin et al. 2012; Törbat and Tseveendorj 2016) have been reported. Other sites in the same region, the Baian-Ölgii aimag, were explored by V. I. Molodin, H. Parzinger, and Tseveendorj (Molodin 2008; Molodin et al. 2007, 2016) as well as by a Mongolian-French team (Törbat et al. 2009). These sites yielded burial patterns and materials comparable to those known at Pazyryk itself and on the Ukok Plateau (Polosmak and Molodin 2000; Polosmak 2001). Others were reported in northwestern Mongolia from a slightly later period (MASKD II 2020). Additional related sites that include Pazyryk features, although less directly modeled on Pazyrykian tomb types than those at Olon-Kürin-Gol, for example, were located and excavated in Dzungaria between the Altai and the Tianshan Mountains in Xinjiang Province in western China (Yu and Hu 2015; Ma 2014; Shul’ga and Shul’ga 2017). These findings show that knowledge of the Pazyryk culture extended far beyond eastern Kazakhstan and the Siberian Altai to its east and southeast.<sup>5</sup>

Interestingly, both the Mongolian sites and those in northern Xinjiang are accessible today from the north via a passageway where a highway and gas pipeline are being developed in order to provide contact into and out from the Pazyryk valleys as they would have been in the 6th to 3rd c. BCE (Nyíri and Breidenbach 2008). The terrain prohibits other routes and allows natural gas, rare animal pelts, and minerals to flow out from the region.

Likewise, the only route from the west into the Chuya River Valley and the Pazyryk culture sites runs through Berel in northeastern Kazakhstan. Routes along the Ob River from north to south must have provided for contact, as did tributaries of the Yenisei River that led to the forested area of Tuva and their mineral and fur resources. Via these passageways, the Pazyryk peoples were linked along routes that we shall see provided an economic lifeline based on trade and exchange, and along these routes were found peoples who shared some related traits with the Pazyryk Culture, such as a group known as the Chandman-Sagil or Sagly-Bazhy Culture (Novgorodova et al. 1982; Jeong et al. 2020, pp. e10–e11).<sup>6</sup>

The Altaian community was not the first horse-riding, pastoralist group in the broader region of Siberia. It was preceded by other groups who buried their elites under mounds together with horses and many riches. The important site Arzhan has yielded the earliest of these and is located in the Sayan Mountains in Tuva to the north and east of Pazyryk. A series of burials, of which two have been excavated, belong to two different phases.<sup>7</sup> The earliest burial known so far was excavated by Mikhail Griaznov and M. Kh. Mannat-ool in the 1970s (Grjaznov 1984; Griaznov 1980). Termed Arzhan I, it dates to the end of the ninth/beginning of the eighth century BCE (Zaitseva et al. 2005, pp. 66–68; 2007), and although it had been looted in the past, what remained, Hanks argues, gives a window onto the rise of a mounted military and apparently a regional confederacy (Hanks 2012). The contents of their burials, including materials from outside the region, were expressions of their economy, elite status, and role in the local society. Arzhan 1 has a distinctive plan under a platform that was about 120 m in diameter and 4 meters high that concealed several burials. At the center was the burial of a male and a female, surrounded by eight additional burials (males mostly over age 40, although one was 18–20 years old) and six horse burials. Radiating out from the center were a series of wooden chambers constructed of larch logs, some of which contained horse burials alone and two of which contained both horses and human beings; chamber 13 contained bones of a male older than 60, and chamber 31 contained two elderly males. Chamber 9 contained a young child with no accompanying horse. Altogether, there were 160 horses buried within the central mound and about 300 additional horses around it. The gold found within the mound was fragmentary and was associated both with the central burial and the male in burial 13, as well as with horses in burials 13 and 31, in the form of foil strips decorating the horses' tails (Grjaznov 1984, p. 32). The burials contained weapons and horse equipment, a few with animal imagery, including a bronze horse phalera in the shape of a curled feline, an image which continues to be associated with many later horse-riding mobile military groups across the steppe and associated with the broader Scythian culture (Cunliffe 2019). The variety of bit types, together with variations in weaponry, as laid out in the burial, indicate connections with eastern Kazakhstan, the Altai and the Minusinsk basin in the northern sector, and from the materials in the south, contacts with Tuva and Mongolia (Bokovenko and Samashev 2012, p. 25). Mobility was clearly a way of life that included trade and exchange at this early date.

A second burial in Tuva, Arzhan 2, excavated by a Russian-German team between 2000 and 2004, in contrast to Arzhan 1, was undisturbed. A burial chamber of an elite male and female couple was not centrally located under the mound, but the wealth of their furnishings, including more than 5600 objects of gold, made clear that they were the individuals for whom the large mound was constructed and some of the additional deceased had served. The mound is much smaller than Arzhan 1, 80 m in diameter and 2 m high, and dates to the middle to the end of the 7th century BCE (Zaitseva et al. 2005, pp. 84–88; Zaitseva et al. 2007). Horses accompanied the burials, although in this case, they were buried outside the space defined by the burial mound itself. The remarkable gold work, which has been studied extensively, is now on display in the Hermitage Museum in St. Petersburg (Menghin et al. 2007, pp. 60–99; Čugunov et al. 2010; Čugunov et al. 2017).

As in the case of Arzhan I, there is evidence of a broad reach outside of the region, reflecting the spheres of interaction and control. Genetic analysis of the horses from Arzhan 2 demonstrates that they originated in perhaps ten different herds, and one of the horses

hailed from the Altai region, according to isotopic study of horse bone (Ellanskaya 2013, p. 34). Also, based on the isotopic study, but of human bone, the female in the main burial is also from outside, having a north Altaic origin (Ellanskaya 2013, p. 36).

Although there is passing reference in the literature to regional surveys locating what might be remains of habitation sites of this group (Plets et al. 2012, pp. 891–92; Ochir-Goryaeva 2017, p. 335; Gheyle 2009; Kiryushin et al. 2003, pp. 15–26; Glebova and Sergeev 2018, p. 185), and the strongest evidence for wintering in place comes both from log cabin structures found in the largest burials (Figure 3) and modern ethnographic parallels (Polosmak 2001, p. 20), the funerary remains are our main source of information. Evidence found in burials from the later phase of the Pazyryk Culture, 4th–mid-3rd centuries BCE, of particular interest here, importantly include graves of social and political elite, and others located in the adjacent vales and slopes of the Chuya Valley and Ukok Plateau of the Altai Mountains who come from lower and mid-level status communities, respectively (Linduff and Rubinson 2022, pp. 82–86). Considering the broad range of locally procured and manufactured material remains brought forth from these cemeteries across the region, interaction among these three local groups and the regions immediately adjacent can be discerned. When reviewed within the limiting and unique topographical and environmental confines of this local region, a new understanding of the functioning of their subsistence strategies, sociopolitical and economic organization, and ritual practices across the Pazyryk Culture can be realized. This distinct local trajectory followed regional networks of interaction known as early as the fourth and third millennia BCE (Frachetti 2012).



**Figure 3.** Burial chamber, Pazyryk kurgan 5. State Hermitage Museum 1689/283. Modified by authors from Simpson and Pankova (2017, p. 263, fig. 150).

### 3. Climate and Topography

Glebova and Sergeev proposed that the physical environment of the Altai Republic, overall, an area much larger than that occupied by the Pazyryk Culture, fundamentally determined settlement and habitation patterns and the chronology of their use. This region of Siberia includes steppe and forest-steppe lands, high river terraces, flood plain meadows, and intermountain depressions suitable for habitation at various altitudes. These areas provided both pastures for animals and small-scale cropping (Glebova and Sergeev 2018; Tishkin and Dashkovskii 2003, p. 144; Hiebert 1992). Rivers and their tributaries flow to and through the region; mountain lakes contain enormous freshwater reserves. In a natural setting that was so varied and unyielding in terms of climate, topography, and habitat, the environment was fundamental to determining a lifestyle and economy that depended on the interaction among local groups, as no single sub-area was entirely self-sufficient. The major ecosystems in the region—alpine, taiga, mountain-forest, forest-steppe, steppe, and freshwater/wetlands—played a significant part in the regional economy. The unique diversity of animals and plants made the area desirable for many distinctive practices, and

yet all movement was constricted by the mountainous terrain and varied ecologies. The Pazyryk Culture likely provided and received goods for and from neighboring people inside and outside of this confined area, as well as supported shared regional seasonal ceremonies and burial rituals.

This sort of interchange both at as well as beyond Pazyryk increased over the period under study (late 4th to 3rd c. BCE). Dalia Pokutta and her team, for instance, reported on sites dating from the 5th c. BCE in the Manzherok territory in the Russian Altai in the Katun Valley north and west of Pazyryk where the Manzherok settlement with the adjacent Chultukov Log 1 cemetery was found. Evidence there shows signs of agriculture and mobility of members of the community between there and the Pazyryk region somewhat earlier than the elite Pazyryk burials themselves, including the interment of women with the distinctive burial treatment of shaved heads and charcoal-blackened wigs, known in all tiers of the Pazyryk Culture. A similar phenomenon can be seen in the Barangol cemeteries, where in Barangol-2, at least one woman buried with wig and ball-topped hairpins was found. Combined dating evidence and strontium isotopic values from Chultukov Log 1 indicate that after the 5th century BCE, residential mobility among Altaic peoples was rising, especially long-distance female movement, even leading to the acquisition of new contacts with adjacent territories of Central Asia (Pokutta et al. 2019; Oleszczak et al. 2018; Borodovsky and Tur 2015).

Confirmation of cultivation in this northern Katun valley follows the findings of recent paleoethnobotanical studies in Central Asia that show crop diffusion and spread. Although still fragmentary since the archaeobotanical finds are piecemeal and often fortuitous (from burials, for instance), the picture of the economic landscape of the Altai is complex, diverse (Spengler et al. 2016, p. 2), and interactive. In Siberia, Spengler posted evidence of wheat, barley, and broomcorn millet from as early as the early first millennium BCE at sites at Milovanovo-3 (on the Ob River where millet and wheat impressions were found on ceramics) and Serebryakovskiy (on the Yenisei where barley and millet seeds were found) (Spengler et al. 2016, pp. 1531–32, Table I; Vainshtein 1980, p. 51). Such evidence offers a preliminary explanation for Pokutta's claim that there had been a movement of food products such as grains from sites in the northern Chuya Valley south to Pazyryk over a period of the second half of the first millennium BCE (Pokutta et al. 2019).

In addition, the Altai was and is a region of vastly divergent temperatures and terrains that supported local networks of largely self-sufficient food-producing units that provided goods for local consumption and probably for exchange. For example, chamois, squirrel, ermine, and sable were used to make special caftans found in the elite grave Kurgan 2 at Pazyryk (Rudenko 1970, p. 85). These non-local materials from wild animals were supplemented by artisan-fashioned local felt (sheep fleece), leather (horse hide), horn (from yak and argali), and gold and other materials that expanded and embellished the wardrobe of elites and their horses (Rudenko 1970, p. 86; Borodovskii 2000).

The effect of climate on the Altai populations, using information from dendrochronology to provide control within decades of the changing climate (Panyushkina 2012; Panyushkina et al. 2007), suggests that climate change may have affected the occupation locales and distribution of the burial sites of the Pazyryk culture (Rubinson and Linduff 2021). As Jiri Chlachula says, “[r]ich seasonal (late spring–early summer) grasslands are presumed to have been the primary impetus for this occupation of rather remote and difficult-to-access places, such as Plateau Ukok” (Chlachula 2018, p. 17) where tombs of mid-level elites have been found. Those locales had become excellent pasturelands that regenerated quickly due to the changing climate and where winter snow was thinner than at lower levels (Chlachula 2018, pp. 14–15). However, between 370 BCE and 250 BCE, there was “a turbulent cold climate with amplified decadal variability”, creating unpredictability and instability (Panyushkina 2012, p. 149). The latter date is the time when Pazyryk's occupation appears to end.

Because of the local, rugged topography, routes of exchange across the region were possible only along east/west river valleys (Plets et al. 2011; Nyíri and Breidenbach 2008)



that must have accommodated local exchange of goods, but also the introduction of foreign goods. In addition, the recently proposed earlier route to the north may have supplied other products, such as furs or metal ores (Pokutta et al. 2019). In addition, besides the movements of goods and people, these could also be conduits for ideas and cultural practices, as they had been in the Bronze Age (Frachetti 2012, p. 17).

Known key routes across the valleys presumably provided the paths over which various kinds of affiliations, including kinship, cultural, and ritual, occurred, but they also formed tracks for economic supply chains. What precisely the role of horses was in the economic relationship cannot be completely known at present, but horse herding was certainly the primary occupation in the Chuya Valley, and horse sacrifice played a central role in ritual. Horses were also a commodity that demonstrably drove movement east to Mongolia and trade connections to the south to China (Linduff and Rubinson 2022, pp. 102–27). A cooperative population with a variety of essential skills and the ability to multi-task must have been requirements for society to endure but would have been threatened if any part of the system, such as climate, broke down.

#### 4. A Multi-Tiered Socio-Political Organization

Taken together, the three classes of late Pazyryk Culture burials can be documented to reveal a *hierarchical* social order, while at the same time, a *heterarchical* order appears to have maintained other parts of the pastoral lifestyle (Crumley 1995; Linduff and Rubinson 2022, pp. 82–86).<sup>8</sup> The hierarchical organization has been delineated via the study of the quantity and quality of grave goods and the size and location of burial structures.<sup>9</sup> Personal merit and position were displayed at all levels of society via the embellishment of adult fashion with leather applique enhanced with gold or other metal foil, fur elements, gold appliqué, and very occasionally beading. When found on children’s clothing, it must have reinforced/confirmed the standing of a particular lineage. Even though men wore caftans and pants and women wore skirts, pointing out gender distinctions, access to fancy attire for the elite appears to be gender-blind, although accorded only to certain families who would have been advantaged by its exotic and lavish properties.

The five largest tombs of the high elite at the site of Pazyryk were constructed over about 50 years, based on dendrochronological dating. Three of the burials were each of a man and a woman, and two were of single males.<sup>10</sup> A smaller burial at the end of the sequence contained a woman and child. From 7 to 14 horses were sacrificed at the time of large burials. Both the humans and the horses were elaborately decked out, and the grave goods demonstrated both visual reflections of more westerly areas and materials imported from many directions, including furs from the north, textiles originally from the Achaemenid world, and textiles and lacquer from China. These goods constitute further evidence of the socio-political elite since they were found almost exclusively in these tombs.

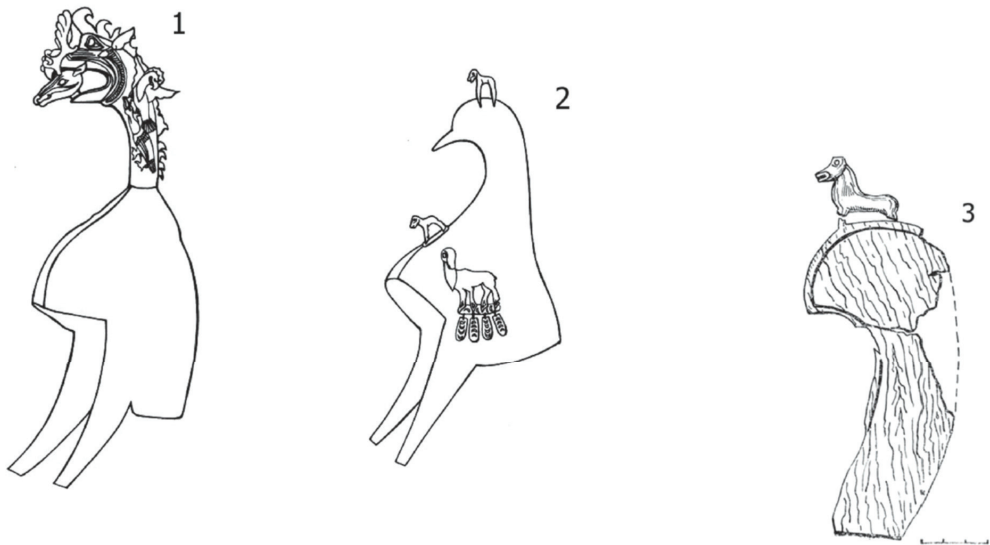
The Ukok plateau, to the south of the region, hosted slightly smaller mounded graves that were burials of individuals who are considered to be socio-economically mid-level members of society. Their tombs generally contained fewer horses, from 4 to 10, and little in the way of imported materials. With two exceptions, they were individual males. One exception was a female popularly known as the Ice Princess, the other a double burial of two individuals, one male and the other with disputed gender (Linduff and Rubinson 2022, pp. 86–88).

A unique feature of the data set for the Pazyryk Culture overall is the unusually large number of burials of common folks interred and now excavated in the cemeteries of the Chuya Valley. These cemeteries included burials of men, women, and children, often interred together in diverse combinations. In most of the cemeteries, between one-third and one-half of the graves contained horses, but in small numbers, generally corresponding to the number of buried individuals. These much smaller graves also contained timber structures, but they were constructed as simple boxes and not the elaborate cabins at Pazyryk.



There is evidence of a shared lifestyle among all groups. In addition, there are shared symbols of personal identity, perhaps indicating family or clan affiliation, which were documented at Pazyryk (high elite), Berel, and Ak-Alakha (regional mid-level elite). The burials of common folk show, moreover, that they were among themselves internally hierarchically ordered as evidenced by the amount of gold and decoration on garments or other trappings such as bags, for instance, at Ulandryk (Kubarev 1992, Fig. 30, p. 85; Fig. 32, p. 89) or gold earrings at Yustyd XII, Kurgan 4 (Kubarev 1991, Fig. 34, p. 131).

Despite differing scales, the burials under mounds, sacrificed horses, wooden burial structures, shared items such as wooden trays with legs, single ceramic jars, and carved wooden components of horse tack featuring shared animal imagery demonstrate that they were members of a multi-tiered, conjoined society. Additional features, such as identical tattoos found on a male and a female on the Ukok Plateau and the male leader from Pazyryk Kurgan 5 (Polosmak 2000), show direct connections between individuals. The headgear on males found on the Ukok Plateau and among the commoner burials, for instance, features small images of animals, including horses, and demonstrates strong cultural ties among the groups (Figure 4), as do hairpins topped with deer, found among women in all three groups (Rubinson and Linduff 2023). The commoner groups likely were herders and when needed, were fighters, as well as provisioners of at least some of the craft products. Among the mid-elite group, the Ice Princess is understood to be a ritual leader, a role that was likely shared among members of the most elite group. Thus, the society was multi-tiered with shared cultural features and economic interests.



**Figure 4.** Reconstructed felt hats with wooden attachments: (1) Pazyryk kurgan 2 (elite); (2) Verkh Kaldzhin-2, kurgan 3 (mid-level); (3) Wooden hat frame with attached animal: Ulandryk II, kurgan 8 (commoner). Adapted from Ochir-Goryaeva (2017, Figure 6).

### 5. A Multi-Occupational Society with Seasonal Leadership Demands

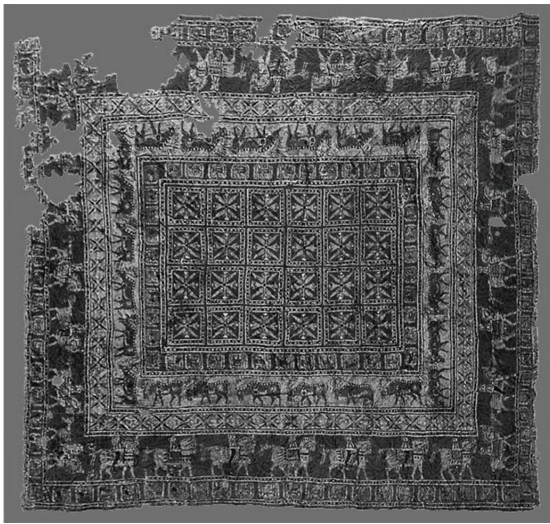
Certain tasks required and allowed individuals to rise to leadership positions when the occasion arose. The most conspicuous would be the military, but those who led the herding activities at distinct times of the year would form another group requiring coordination and leadership: shearing, refining the fleece, felting including dyeing, and construction of clothing, for instance. The production of products used corporately by the community, such as ritual items or leather-trimmed horse gear might require the coordi-

nation of efforts of experts with various skills, as would trading in order to connect this isolated and somewhat fragile area with the world outside of its topographic confines.

Our reconstruction of the yearly round of activities in this southern Altai region incorporates robust livestock-related tasks, including the management, milking, trading, and ritualization of horses and a parallel sheep herding tradition used for food and preparation of felted clothing and animal and household equipment; subsistence hunting and fishing; and a sophisticated craftworking tradition in wood, bone, horn, and leather (Figure 5). Such pursuits were essential to the economy and took place at different times of the year and occupied some, but not all, of the collective community all the time. Additionally, these endeavors were accompanied by the importation and use of metal items for horse harnessing and weapons; of fur for clothing and of lacquer ornaments for decoration of horse tack; of cotton and silk fabrics for clothing, horse gear, and containers, as well as finished woolen carpets and hangings (Figure 6), and seeds such as coriander and the hallucinogen hemp for ritual use (Linduff and Rubinson 2022). Although there may have been some cultivation or gathering of winter fodder for the sheep (Hermes et al. 2019), domesticated grain crops were not preserved in the burials and appear to have been a limited element, if at all, of the daily human diet, similar to historically recorded mobile pastoralists (Rudenko 1970, pp. 60–61; Borodovsky and Tur 2015, p. 139; Hermes et al. 2019).



**Figure 5.** Saddle cover. Felt, leather, hair. Pazyryk Kurgan 1. Adapted from Rudenko (1953, Pl. 77).



(a)



(b)

**Figure 6.** (a) Pile carpet from Pazyryk Kurgan 5. [https://en.wikipedia.org/wiki/Pazyryk\\_culture#/media/File:Pazyryk\\_carpet.jpg](https://en.wikipedia.org/wiki/Pazyryk_culture#/media/File:Pazyryk_carpet.jpg) (public domain), accessed on 4 July 2023. (b) Color detail of pile carpet from Pazyryk Kurgan 5. <https://commons.wikimedia.org/wiki/File:Scythiancarpet.jpg> (public domain), accessed on 4 July 2023.

Occupational diversity (differentiated by gender and age) and the yearly calendar required on-demand, specialized skills and varied manners of organization.<sup>11</sup> Those would include the following:

1. Herding (seasonal: round up and winter foddering necessary);
2. Craftworking (winter, seasonal);
3. Trading (probably year-round);
4. Hunting (year-round);
5. Felting (spring);
6. Food prep (daily year-round; summer—limited cultivation, including gathering);
7. Food storage (summer—drying, smoking);
8. Child care (year-round; daily varied according to availability of parents, older adults, or older children);
9. Military (as needed).

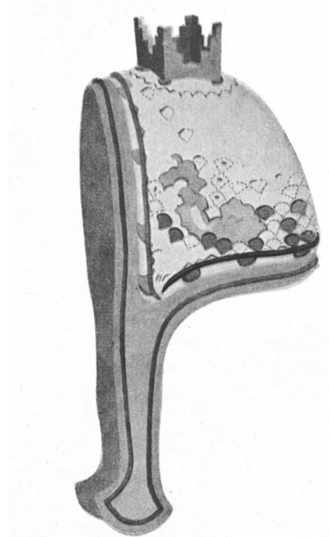
Overall, everyday life, including ritual, experienced in these communities took considerable amounts of effort from all members, including children who undertook concentrated, often seasonal work during the yearly round to prepare and support the well-being of the society. The results of that work can be recognized in the items preserved in the tombs, but it is not the work itself that is highlighted in the choice of grave goods. Rather, it is the goal of those finished goods, including tomb size and shape, to embellish the social position of the deceased. They display status, group, and perhaps family affiliation, not especially the individual or the skills of the tomb occupants except in limited cases, such as some ritual tasks.

The preparation of the grand tombs at Pazyryk, for instance, could only be carried out at certain times of the year when the ground could be dug. Needless to say, advance prepa-

ration and construction of such spaces was an enormously time-consuming task. Each cavity was to be filled with a prefabricated log chamber in which the deceased and most of the grave goods, save the horses and their gear, were to be placed. Given the harsh winter climate, the work was seasonal, so most of the preparation of funerary goods must have taken place during winter months.

Many artisanal skills were available as is confirmed in the bulk of goods preserved in these tombs that were locally procured, although some materials such as lacquer or gold may have been brought in to embellish certain objects. Skilled workers were dependent on the seasons and climate to prepare and repair all sorts of items, including garments for humans and gear for horses, wall and bed coverings as well as preserved foods for winter months. Woodworking occupied many artisans, and skill levels among woodworkers and other artisans varied, suggesting multiple workshops, perhaps even household workspaces, but with the highest skill levels evident in the most lavishly outfitted tombs.

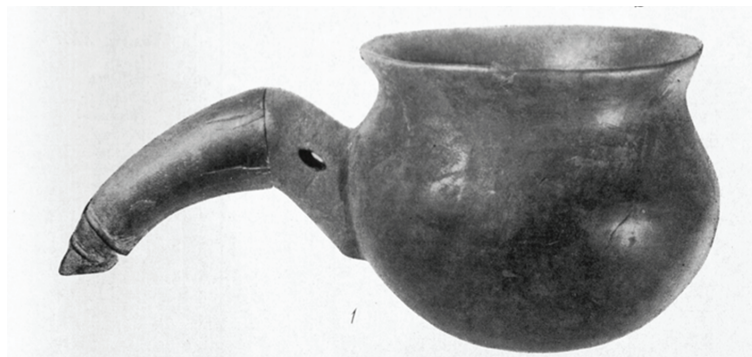
Construction and decoration of artifacts made of materials such as leather, bone, or horn required special skills in executing shared designs as well as abilities in handling malleable metals, including gold, silver, and tin. Other talents were required to prepare and apply furs, including squirrel, sable, and horsehair, to clothing, containers such as mirrors, and horse gear. Fibers taken from sheep, for instance, were spun or pounded into felt locally after they were dyed with natural mineral colors such as cinnabar known from nearby outcrops 30–40 km south of Pazyryk (Rudenko 1970, p. 206). Other textiles locally made were dyed with possibly imported vegetal dyes (Polosmak et al. 2006). Cochineal insects have also been identified as a dye source for woolen goods (Polosmak et al. 2006; Simpson and Pankova 2017, p. 173). Clothing was made from a variety of textiles, some of which were imported from Central Asia or further west (Polosmak et al. 2006, p. 199). Other fabrics were made locally from sheep's wool (Kubarev 1992, pp. 108–9; Simpson and Pankova 2017, p. 119; Rudenko 1970, pp. 202–3; Polosmak and Barkova 2005, pp. 32–41). Lacquered leather ornaments attached to horse gear, including bridles, saddles, and headgear, have been shown to have been imported from China (Stepanova 2014, 2016) (Figure 7). The nature of these elaborated items required specialized skills from workers who understood the harnessing as well and were dedicated to their production but likely as part-time pursuits.



**Figure 7.** Felt hood with crenelated crown, lacquered attachments. Pazyryk Kurgan 3. Adapted from Rudenko (1953, Pl. 96).



Earthenware vessels, wooden vessels and cups (Figure 8), little low wooden tables, stools, and pillows stuffed with deer hair found at Pazyryk tell of home life and food preparation, including milking of animals for preparations such as cheese, as well as the milking of horses, for making koumiss for ritual use. These items may have been used for daily occasions but also for special functions during rituals and are consistent in form, size, and decoration, suggesting that these were shapes and uses maintained and agreed upon by the group. In the absence of habitation debris, we can only assume that activities were undertaken on demand. The coordination of those activities, especially the sharing of essential tasks and wares among non-adjacent sites, probably required local leadership that only arose when needed for the movement of goods, humans, and animals. Without evidence of specialized production sites, we cannot be certain if particular goods were made in specific locales, but the daily processes of movement of materials, including animals, likely took place via heterarchical arrangements (Crumley 1995). For instance, as Wright reported, “Overall, the household is both a collection of regularly arranged activities and objects and a center point for a large array of movements divided and structured by age, gender, and species.” Such flexible organization for daily tasks described by Wright in living pastoral communities in Mongolia (2012) and for the sharing of responsibilities in a mixed, largely homogeneous yet status-ordered, society is documented in archaeological Baga Gazaryn Chuluu in Mongolia in above-ground monuments, including mounded tombs and satellite burials as well as campsites in the Middle Gobi and Khangai regions of Mongolia (2015). At the very local, household level, multi-tasking and shared responsibility within the group as a whole leads to shared leadership, as evidenced in these central Mongolian communities. Ethnohistorical heterarchical ordering of larger clusters of communities has been studied by Kradin (2011) where he found and reconstructed from written Chinese sources that among the Wuhuan (五环 2nd–1st c. BCE) groupings of communities were independent but joined into confederations. The Wuhuan *dazhen* (大镇 leaders) were heterarchical chieftains as their statuses were not passed, and they had no dependent groups... “From the chieftain down, each man had his own flocks and herds and managed his own property: no man served another” (HHS 90.1b) but depended on the cooperation and management (leadership) of each to cooperate and coordinate with the whole.



**Figure 8.** Wooden cup with horn handle. Pazyryk Kurgan 2 (Adapted from Rudenko 1953, Pl. 21).

At the community level, clearly, those buried in the elite and mid-elite tombs at Pazyryk, Berel, and Ak-Alakha were not herding horses, carving wooden ornaments, or milking and butchering the animals. Whether they were among those who had the required skills to transport and exchange goods necessary to maintain the elite, but also knew the languages needed for barter cannot be determined, although their burials were placed on important access routes. We have no concrete idea what language the Pazyrykians spoke, but as with pastoral communities today, the separation of groups by long distances, difficult terrain, and long periods of time allowed for the maintenance of local dialects and,

in some extreme cases, probably entire languages (Rudenko 1970, p. 226). Nevertheless, imports of extra-local goods and artifacts can be found throughout the Pazyryk Culture burials, speaking to their ability to operate in a complex exchange network.<sup>12</sup>

That network not only provided avenues for the trade of goods or animals but also of prestige materials that marked and were consumed by the Pazyryk Culture's upper elite, as evidenced quite clearly when gifts and goods such as silk fabrics and lacquered products were given and traded for horses with the Chinese, for instance (Linduff and Rubinson 2022, pp. 113–26; Linduff et al., forthcoming). Certainly, the quality and diversity of foreign goods in the last of the large Pazyryk kurgans, Kurgan 5, were exceptional in the remains of the Pazyryk Culture, including goods from West and Central Asia as well as China, and suggest increasing contact with and interest in the world outside of the Chuya Valley. The site of Pazyryk itself is the most eastern of the elite burials of the Pazyryk Culture, and it is on the Ukok plateau accessible to the Kanas Pass between the Altai and China, where there is a group of Pazyryk Culture mid-elites. This suggests that the new markets and opportunities provided by the growing use of cavalry by the states on the northern borders of Warring States China (481–221 BCE) motivated the move of the elites to control the newly rich pastures where the common groups had previously begun to herd the horses and bury themselves Pazyryk style (Linduff and Rubinson 2022, pp. 59–62).

The Pazyryk culture is a society based primarily on horse pastoralism, together with sheep, which depended on the trade of horses as the source of some of the prestige goods that helped support the internal socio-political order. Other goods and necessities came from the trade and exchange with regions to their north and northeast. This network of contacts and connections sustained via family and community relationships as part of a niche pastoral economy and socio-political organization that is distinctive to Pazyryk as far as we know but may be typical of other pastoral societies if such evidence were sought.

Social systems such as kinship, group identity, social ordering, job diversity, differentiated status, as well as knowledge of the outside world, a common lifestyle and treatment of gender and age, an awareness of group historical cohesion, and perhaps other features were on display in tombs and clearly guided the selection of items to inter with the deceased and how to set them out in the graves. The other force, that of rituals, marked the existence of a common spirit world and provided an overarching bond for what was a complex socio-economic operation.

## 6. Discussion and Conclusions

The archaeological remains of the Pazyryk Culture provide unique data for understanding the economic aspects and social organization of the society. Not only have burials been excavated that determine three distinctive social groups but also the frozen nature of many of them has preserved organic materials, including mummified bodies, which are not often available for analysis. The interconnectedness of the three levels of the Pazyryk culture social hierarchy demonstrates that the network supported the brief florescence of the group while the inner order and workings of the local communities provided occasional guidance and leadership, which appeared seasonally and/or only when needed. What sustained this distinctive form of socio-political organization, one which called upon cross-cultural interaction and allowed for the generation of objects and maintenance of non-human animals in daily and long-term relations across the seasons, lasted a short time. Maintained in the particular climatic and ecological zone, the south-eastern Altai, the short-lived Pazyryk Culture was not workable once climatic change and historical circumstances threatened their economic stability. By the mid-3rd century BCE, their occupation of this region disappeared as the climate changed and aggressive groups encroached on their territory.

The archaeological evidence collected has shown that local communities, authorities, and probably individuals created networks with other communities, which have now been excavated to form a local and regional interactive sphere. Their movement through the immediate river valleys and uplands of the southern Altai was apparently regulated by the

production and movement of products produced within the region and barter or exchange of them nearby and at the edges of their sphere of influence. Pazyrykian society was not a monolithic, nomadic group ever in motion and ever marauding as had been consistently argued in ancient as well as secondary texts (for instance, see Herodotus 1987, A, bk. iv, 73–75). Rather, the Pazyryk Culture can be characterized by burial patterns and exchange of goods as a complex of pastoral communities where high elite leadership existed within an overarching, status-ordered hierarchical system, but where there is also evidence of ritual guidance among the mid-elites and roles also among status-ordered commoners who possessed skills that allowed for craft production and language skills necessary for trade and to maintain the seasonal needs of the subsistence system to arise according to a task that allowed for a heterarchical leadership structure to emerge when needed within the hierarchical system.

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## Notes

- 1 We acknowledge the helpful comments made by three anonymous reviewers who asked provocative questions that aided us in the revision of our essay. One of them shared this reference.
- 2 Both Esther Jacobson (1993) and Petya Andreeva (2021) have addressed the ritualistic aspects of imagery.
- 3 See Frachetti (forthcoming) for an expansive look at this issue. Variation in mobile pastoral lifeways and their dependence on climate, ecology, and historical circumstances has been documented previously among living groups (Barfield 1993).
- 4 As of 2010, twelve large Pazyryk burials had been excavated, as well as what has been reported to be 800 medium to small burials in more than 100 cemeteries (Argent 2011, p. 39).
- 5 Tishkin and Dashkovskiy discuss the process of and argue for state formation among the “Pazyryks” of Gorny Altai as one of the early forms of that political entity among pastoral peoples (Tishkin and Dashkovskiy 2019). Particularly valuable is their listing of publications on this material published in journals not always available outside of Russia. The excavations in western, northwestern Mongolia and northwestern China are interesting and important to a discussion of the “afterlife” of the Pazyryk Culture but are not essential to the discussion of the Culture’s social order in the Chuya Valley.
- 6 The pattern of interconnections is not new in this period. It reflects portions of the Inner Asian Mountain Corridor (IAMC) as described by Michael Frachetti for the Bronze Age (2012).
- 7 Currently, Arzhan 0 (Tunnug 1) is being excavated by Gino Caspari et al. (2018) and Sadykov et al. (2020).
- 8 As a system of organization, participants are unranked, possess the potential to be ranked, and have the power of decision-making following the needs of the system. As opposed to the assignment of more power and privilege to members of society “high” in the hierarchy (Crumley 1995). The two structures are not mutually exclusive.
- 9 Rudenko (1970, pp. 211–27) argues that the social structure of the inhabitants of the high Altai consisted of a hierarchical, patriarchal order with hereditary passage of leadership—but says that there is no direct evidence of this at Pazyryk. However, he cites ancient Chinese and Greek authors and many ethnographic parallels, such as in Kazakh and Kirgiz, which suggest that the same was true at Pazyryk (Rudenko 1970, p. 217).
- 10 There were no human bones found in tomb 1, so it cannot be proven on the archaeological evidence that the deceased was male (Rudenko 1970, pp. 311–14).
- 11 Among the groups studied by Barfield (1993), he found that the tasks were divided between males herding and females carrying out most other tasks. Wright (Wright 2012) states that all tasks are networked within the campsites and are flexible, divided between males and females, with males herding and females carrying out most other tasks.
- 12 In an impressive and massive essay, Ursula Brosseder studied and analyzed trade all across Eurasia, especially in the periods following those of interest here, and documented multiple active networks of exchange (Brosseder 2015).

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## Article

# Gold Artifacts from the Early Scythian Princely Tomb Arzhan 2, Tuva—Aesthetics, Function, and Technology

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**Abstract:** This article explores the extraordinarily rich gold finds from the Early Scythian princely tomb Arzhan 2 in the Republic of Tuva, southern Siberia (late 7th to early 6th centuries BCE), through the methodological framework of the *chaîne opératoire* (operational sequence), in order to reconstruct the objects' processes of manufacture. Through an interdisciplinary study of the finds at the State Hermitage in Saint Petersburg, the principal author analyzed tool marks and surface morphologies, which allow for the comprehensive identification and documentation of the numerous techniques employed in the creation of the often very elaborate jewelry, decorated weapons, and other personal ornaments. The production of both individual pieces and extensive series of thousands of identical trimmings attests to the existence of complex craft processes and workshop organizations. The technological aspects of the gold finds impress through their diversity and outstanding quality, both artistically and in terms of their craftsmanship. As this article will demonstrate, the objects present the earliest evidence for a highly specialized goldsmith artform in southern Siberia.

**Keywords:** early Scythian goldwork; gold technology; Siberia

## 1. Introduction

From 2000–2004, the kurgan Arzhan 2 in the Republic of Tuva, southern Siberia (Figure 1), was excavated by a German–Russian team under the joint auspices of the German Archaeological Institute in Berlin and the State Hermitage in Saint Petersburg (Čugunov et al. 2010; Parzinger 2011). Measuring 75 m in diameter and 2 m in height, and surrounded by stelae, deer stones, and stone circles, the mighty funerary monument is one of the most important tombs in the kurgan chain of the Arzhan Valley, surpassed only by the Great Kurgan of Arzhan 1 (Griaznov 1984). The construction of the kurgan dates to the late 7th century BCE and has been assigned to the Aldy Bel' stage in the archaeological chronology of Tuva (Čugunov et al. 2010; Zaitseva et al. 2004). The burial site was apparently also a ritual place and remained structurally intact in later periods, as the site continued to be visited by equestrian nomads for an extended period. Due to the kurgan's geographical location in the eastern steppe belt of southern Siberia, none of the cultural influences sometimes detected in the nomadic metalwork of western Eurasia are present here. In 2006, a selection of outstanding objects from Arzhan 2 was published in a catalog conceived for a general readership (Čugunov et al. 2006). The structure of the complex, containing a main tomb and several secondary burials, as well as the scientific research on the exceptionally rich finds, were comprehensively published (Čugunov et al. 2010)<sup>1</sup>. In addition, the excavations and objects were discussed in a series of articles and exhibition catalogs (Alexeyev 2012; Simpson and Pankova 2017a; Čugunov et al. 2003; Parzinger 2009, 2011, 2017; Piotrovskij and Parzinger 2004).

In 2001, these excavations revealed an intact princely tomb (Tomb 5), which contained—in addition to the spectacular textiles and objects in iron, bronze, and wood—the most significant collection of goldwork of the Early Scythian period in Siberia to date (Figure 2). In

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total, the princely tomb contained around 9300 artifacts. The untouched wooden burial chamber contained the remains of a man and a woman of the same rank, equipped with around 5600 gold objects, in addition to several hundred thousand miniature gold beads. This diverse multitude of artisanal creations offers unprecedented insight into not only the design, processing, and use of extraordinary precious metal finds, but also into their symbolic power and sociocultural background.



Figure 1. Map of the Eurasian Steppe, with the location of Arzhan 2. Cartography by Gabriel Moss.



Figure 2. Arzhan 2, Tomb 5. View from the south-east showing the layout of the two bodies and the rich grave offerings (after Čugunov et al. 2010, fig. 36). Reproduced with permission from Parzinger 2017.

The Early Iron Age gold objects from Arzhan 2 (Tomb 5) include jewelry, costume components, ornamental fittings, and a miniature vessel, as well as ostentatious weapons with accoutrements dating from between the late 7th and early 6th centuries BCE. To their ancient wearers and users, they no doubt represented potent signs of prestige, power, and status. Of particular interest is the remarkably wide spectrum of stylistic variations, symbolic content, functional groups, and technological processes displayed by this unrivaled assemblage of early equestrian nomadic material culture. Mostly designed in the Early Scytho-Siberian animal style, the objects also testify to an appreciation of fauna, with astonishing attention paid to the details of anatomical renderings.

Even before this discovery, the Scythians were famed for their work with precious metals. The gold of the equestrian nomads has become known worldwide through many international exhibitions, focusing, for instance, on the important Siberian Collection of the State Hermitage in Saint Petersburg (Rudenko 1962; Korolkova 2017) and on the finds from the North Pontic region, held in museums in Ukraine and elsewhere (among many others, see Alexeyev 2012; Antonini 1998; Aruz et al. 2000; Meyer 2013; Schiltz 1994; Simpson and Pankova 2017b). While the animal style is a defining feature of Scythian goldsmithing in general, its morphological and iconographical characteristics underwent regionally specific changes over time, as did the preference for specific media and the technological processes applied in the production of objects (Aruz et al. 2000; Jettmar 1979; Kossack 1980; Schiltz 1994, pp. 3–81). Unfortunately, most Scythian gold objects from Siberia came to light under unknown circumstances. The resulting lack of contextual information impedes their reliable classification and interpretation. Furthermore, the extensive literature on Scythian gold focuses mainly on spectacular objects and their stylistic qualities. Craftsmanship and technical details have rarely received consideration, and the tools and techniques used in their production have often been presented from the perspective of modern craft practices (Franchi and Bonora 2005; Minasjan 1998, 2004, 2014).

Employing modern field methods, the excavations at Arzhan 2 produced detailed documentation that opened up previously unimaginable possibilities for interdisciplinary research (Čugunov et al. 2010). Meanwhile, the site's exceptional finds and state of preservation played an equally significant role in the subsequent direction of research. Most previous excavations of Scythian elite tombs revealed that the sites had been either partly or completely looted by grave robbers.

This article addresses key aspects of the manufacturing processes that are identifiable in the collection of precious metalwork from the Early Scythian princely tomb of Arzhan 2. The investigation harnesses an interdisciplinary approach that combines archaeological, stylistic, and technical observations with experience from experimental archaeology, ethnoarchaeology, and metallurgy, as well as information from ancient textual and pictorial sources (Armbruster 2014; Armbruster and Guerra 2003). The methodological lens draws on the socio-anthropological concept of the *chaîne opératoire* (operational sequence) in order to explore the technological processes through which raw materials (in our case, most likely native gold from the Altai) were converted into cultural products. This framework considers technological analysis as an objective in its own right, separate from stylistic and cultural interpretation (Leroi-Gourhan 1993; Lemonnier 1992). Accordingly, our investigation principally focused on toolmark analysis and the visual examination of objects' original surface topography through macro- and microscopy. While such toolmarks cannot reveal complete operational sequences from creation to deposition, they provide empirical evidence of specific technological choices involved in the production process (Sillar and Tite 2000). The aim of this article is to identify technological choices that offer insights into manufacturing techniques, and the tools and materials on which they drew.

From an artistic and artisanal perspective, the goldwork from Arzhan 2 is unusually versatile, allowing for the identification of several distinct find groups based on purely technical grounds (Armbruster 2007, 2009, 2010). The stylistic, morphological, functional, and technological features of the Scythian goldwork from Arzhan 2 exhibit local traits, as we will see. Only a few comparable pieces are known to date, among them, single

pieces from Kazakhstan or Pakistan (Popescu et al. 1998; Rahman 1990). The Siberian Gold collection mentioned above (Rudenko 1962; Korolkova 2017) includes some broadly comparable pieces, but sadly lacks sufficient archaeological documentation to serve as a point of reference for the development of stylistic classifications and chronologies. Apart from a few barely decorated items, objects worked in a local variation of the animal style are predominant in the assemblage from Arzhan. Beyond the general parallels in the rendering of certain animals that define the Iron Age art of the Eurasian Steppe as a “Scytho-Siberian” stylistic koine (notably, the perched rams, “tiptoeing” stags, and curled felines), this idiom has, to date, no close parallels among similarly early material, and clearly goes back to the local Bronze Age traditions of the Altai-Sayan region, familiar from bronze knives and daggers, rock carvings, and tattoos (Cunliffe 2019, pp. 85–103). Spiral ornamentation with spiral hooks, stylized flame or wing representations, fish bladders, and floral motifs are less frequently shown. Most likely, the zoomorphic and highly stylized or abstract motifs convey symbolic meaning through a set of codes no longer accessible to us. Anthropomorphic representation does not occur in this Early Scythian goldsmith art. In later works from the 5th century BCE onward, figural depictions of communal life reflect the social world of the Scythians (Alexeyev 2012; Meyer 2013; Schiltz 1994; Simpson and Pankova 2017b). This later tradition of Scythian metalwork from the North Pontic region, famous from spectacular toreutic masterpieces (Mantsevich 1987; Rolle 1998; Bidzilya and Polin 2012; Babenko 2023), speaks to a distinct context of cultural interaction with Greek settlers on the Black Sea shore. Greek and, indeed, West Asian influences are unknown in the eastern Eurasian Steppe, and even at its western end, appear only in the 5th century BCE. Furthermore, goldwork from this early period is generally rare in the northern Pontic region. All in all, the combination of different object types, stylistic interpretations, and technical preferences found in Tomb 5 of Arzhan 2 is unique and exceptionally appealing.

Due to the abundance of finds, the following discussion can concentrate only on a representative selection of case studies. In order to gain a better understanding of the overall range of finds from the site, this article should ideally be read alongside the volume mentioned above (Čugunov et al. 2010). The present discussion will focus first on the diversity of the technical solutions the Scythian goldsmiths employed to produce animal-style goldwork, highlighting the dexterity and ingenuity of the makers. Subsequently, the individual techniques are explained and illustrated, with reference to further examples.

### *1.1. The Animal Style and Its Technical Implementation at Arzhan*

Most of the gold finds from Arzhan 2 are designed and decorated in the Early Scythian animal style. The selection of animal species depicted on the objects—including felines (panthers and tigers), deer, boars, horses, goats, sheep, rams, camels, and birds of prey—is significant in its own right, as it reflects aspects of the region’s animal world and its veneration by the horse-borne nomads. Moreover, it is remarkable to see the artisanal repertoire that was employed to render the various animals in gold and the range of processes that was brought to bear selectively in accordance with the form, function, and aesthetics of a given piece of jewelry. These considerations come to the fore in the two-dimensional representations, whose shapes are determined by the silhouette specific to each type of animal and even more clearly in the animal forms rendered in bas-relief, half-relief, and three-dimensional figurines. Polychrome effects were achieved either through color accents, such as enamel overlays, or through sketch-like drawings finished with metal inlays. Other items show a two-tone effect accomplished with the help of openwork or appliqués in reflective metals that create a contrast with the material of the background, such as leather, fabric, or the like.

Animals depicted in two dimensions are exemplified by the thin decorative plaques in the forms of crouching horses that were attached to the headdresses of the two deceased with the help of eyelets attached to the back. The items from the costumes of the man and woman were executed in a slightly different manner (Figures 3(1,2) and 4(1,2)). The plaques’ outlines were shaped to resemble those of a horse’s body, with the eyes, mouths, nostrils,



and ears of the examples in the male burial rendered with filigree wires and filled with enamel, and the mane highlighted with chiseled lines. The decoration is less elaborate on the plaques from the female burial, with anatomical details indicated solely with chiseled and engraved lines, and the mane indicated with openwork cutouts. On the top of his headdress, the male also wears a stag figure made of flat metal sheets that were assembled to highlight the figure's outline in a manner comparable to that of the horse plaques (Figure 5(1–6)). An interesting detail in this single, upright animal figure is the filigree and enamel work applied to both sides of the head, as well as the antlers made of sheet metal, attached with the help of an additional rivet pin (Figure 5(3,4)). Initially conceived as two-dimensional, the rutting stag nevertheless makes a three-dimensional impression due to its upright and freestanding posture, which allows the applied ornamentation to be visible on both sides, as well as the double antlers of sheet metal. The stag's particular posture, on the tips of its hooves, is also striking—a posture characteristic of the Early Scythian animal style. The stag is physically attached to a cloud-shaped gold sheet plate using flanging, with extensions of the gold-sheet hooves passing through slots in the base plate before being fixed in place on the underside through bending. The plate with the vertically standing stag figure was attached to the top of the headgear with the help of small eyelets (Figure 5(5,6)).



(1) (2)

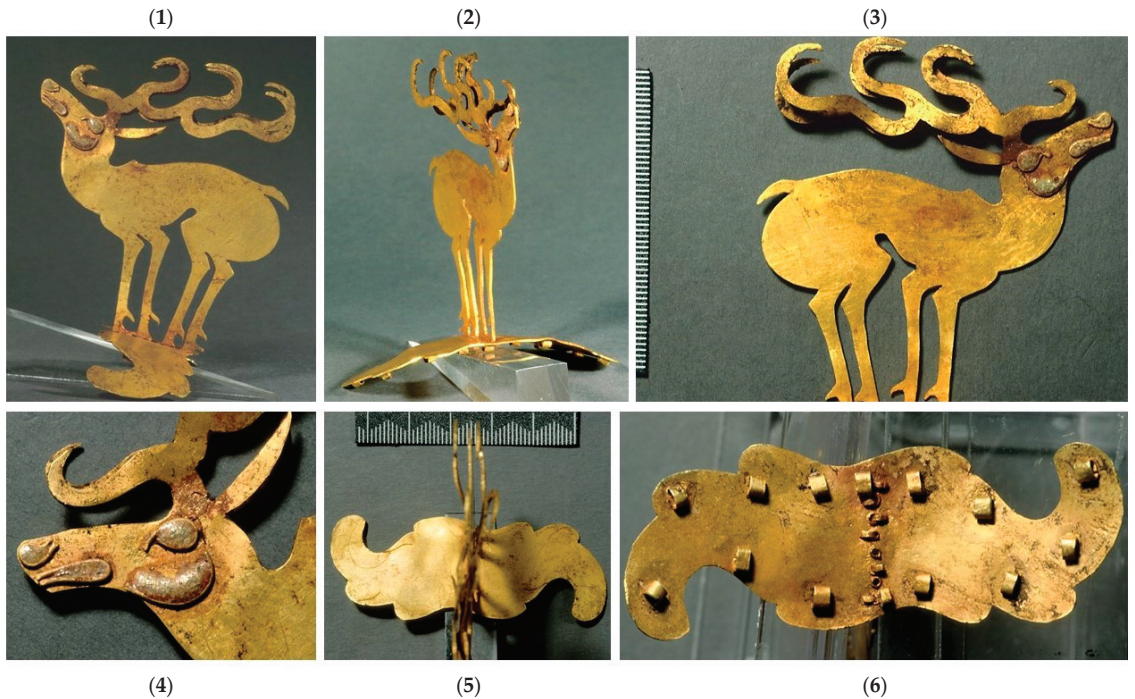
**Figure 3.** (1,2) Horse-shaped plates from the female headdress, made of hammered sheet metal with engraved and openwork decoration, and six small sheet-metal ribbon eyelets on the back. Photos by B. Armbruster.



(1) (2)

**Figure 4.** (1) Solder residue on the back of the gold-sheet horse from the man's deposition; (2) front and back of the sheet-metal horses. Photos by B. Armbruster.





**Figure 5.** (1–6) Gold-sheet deer figurine; (1,2) upright gold-sheet animal figurine with two deer antlers; (3,4) cellular enamel in filigree and fastening rivet for a second gold-sheet antler bar; (5,6) base of the gold-sheet deer figurine with 14 sheet-metal eyelets on the underside for attachment to the man’s headdress and physical connection along the centerline. Photos by B. Armbruster.

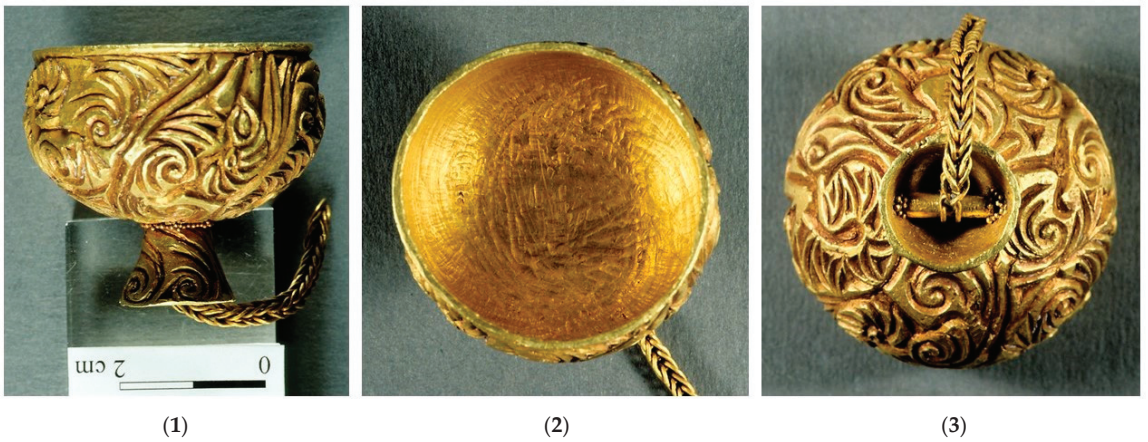
Most of the goldwork items from Arzhan show reliefs depicting animals of various dimensions and designs. These were initially worked in chip carving and then cast in gold through the lost-wax process. According to their context of use, such notched reliefs were conceived to accentuate fully three-dimensional or more planar visual effects, and elsewhere were combined with openwork. The technique affords dynamic effects of light and shadow that animate the animals and their figural details in attractive and lively ways.

A case in point is the necklace worn by the woman. It consists of a flat cast gold plate in the shape of a crescent moon with a flat notched relief on its surface and a loop-in-loop chain attached to each end (Figure 6(1–6)). In this case, the elongated animal bodies of panthers, boars, and deer were nested between spiral patterns (Čugunov et al. 2010, pl. 79. 2). The hollow-cast miniature cauldron and the shafts of long needles are further examples of bas-reliefs that were initially shaped through chip carving (Figures 7(1–3) and 8(2)). The decorated surfaces of these works are completely covered with relief decoration, i.e., in *horror vacui*.

The complex animal frieze on the man’s massive neck ring is composed of numerous animal bodies (Figure 9(1–6)). It consists of four continuous animal frieze bands that spiral in alternating directions around the round-barred, ring-shaped part. While the neck ring itself is three-dimensional in design, the animals are worked in half-relief (Figure 9(2)). The animal representations include predatory felines, horses, goats, sheep, two-humped camels, wild boars, and a deer (Čugunov et al. 2010, pls. 4 and 35–36).



**Figure 6.** (1–6) Woman's necklace, notch-cut in bas-relief, perforated ends, loop-in-loop chains. Photos by B. Armbruster.

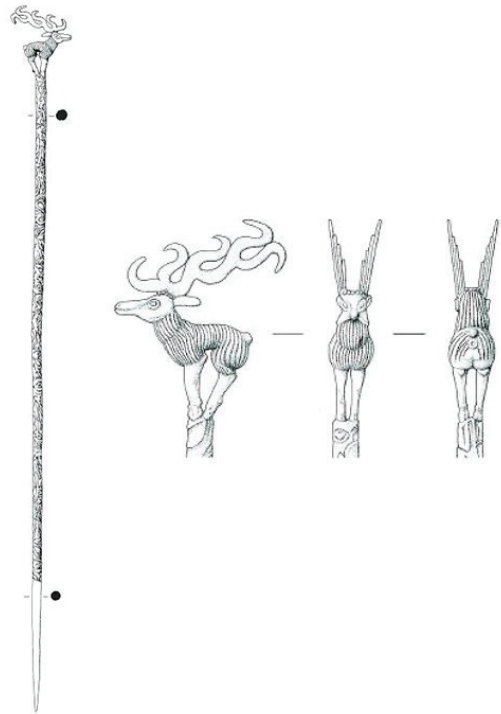


**Figure 7.** Pendant in the form of a miniature cauldron, hollow cast in the lost-wax process over a core. (1) Notch-cut relief on the outside and granulation line at the transition between the body and the stand; (2) traces of scraping on the inside; (3) suspension inside the cauldron stand consisting of a cross pin and loop-in-loop chain, with granulation decoration. Photos by B. Armbruster.





(1)



(2)

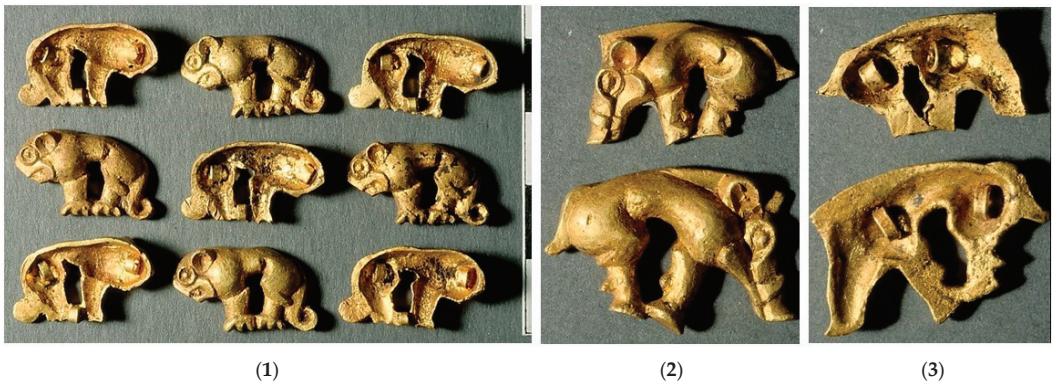
**Figure 8.** (1) Pinhead with fully sculpted stag. Photo by B. Armbruster; (2) drawing of pin and pinhead (after Čugunov et al. 2010, pl. 56).



**Figure 9.** (1) Cast, closed, and solid neck ring from the man; (2) front piece with small, soldered panthers (one piece missing); (3–6) the circumferential animal frieze in notch-cut. Photos by B. Armbruster.

The animal frieze was cast together with the front piece using the lost-wax process, wherein the relief was carved into the wax model using the chip technique and then transferred into metal using a mold. After the casting procedure was completed, the surface was finished with punches, chisels, and scrapers. As a comparison piece to this animal frieze, we can point to the fragments of a massive neck ring with a rectangular cross-section, also bearing notch-cut decoration from Pattan, Kohistan in Pakistan (Rahman 1990; Čugunov et al. 2010, p. 312, Figs. 284, 3–7). The front piece of the example from Arzhan has a rectangular cross-section, and was initially left smooth and undecorated during casting. Subsequently, the numerous small panther figurines—unlike the animals on the neck ring, all oriented in the same direction—were cast in a series of individual half-reliefs. Each panther was then soldered separately to the two smooth sides visible from the front to form parallel rows (Figure 9(1)) (Čugunov et al. 2010, pl. 35).

Thousands of appliqués in the forms of small predatory felines, and hundreds in the forms of wild boars, were prepared as semi-reliefs in wax and cast in large series (Figure 10(1–3); see below). The animals are shown in the characteristic “tiptoe” posture mentioned above and in a side view that accentuates the recognizable silhouette of the two animal species (Čugunov et al. 2010, pls. 37, 38, 44). It is worth noting that, despite their small dimensions, the appliqués are provided with anatomical details, such as eyes, mouths, ears, tails, and paws or hooves. The backs are slightly concave, most likely to reduce the weight of the individual pieces, which would have been a necessary measure considering that the sheer weight of over 2500 cast animal figures sewn to the male outfit would have added up to a substantial quantity of gold.



**Figure 10.** Series-cast animal figurines, the fronts in semi-sculptural relief, the backs hollow and with soldered eyelets bent from sheet-metal strips; (1) panther; (2,3) boar. Photos by B. Armbruster.

An example of a three-dimensional conception of the animal style is the long pin found with the female body, which was decorated with a freestanding deer figure tiptoeing on its hooves (Figure 8(1)) (Čugunov et al. 2010, pls. 74. 2a–e and 52. 1). As with the previous examples we looked at, this figurine was carved in a wax model and then cast in the lost-wax process. Only the double-sheet gold antlers were made separately and attached by soldering. The small, crouching ram figures, on the other hand, were cast in a mixed method, combining half-relief at the body and full-relief at the neck and head (Figure 11(1,2)) (Čugunov et al. 2010, pls. 62. 3–7 and 78. 4–5). The figures were provided with a semicircular bent sheet at the base and served as sliders on the woman’s dagger belt.

In addition to these items, numerous strap elements and belt accessories cast in gold are decorated with animal forms in notched relief. Among them are stylized variants, such as an impressive omega-shaped clasp with two heads of birds of prey—probably eagles—facing away from each other (Figure 12(1–5)). Although a solid cast object, it is provided with openings. The front was heavily reworked, as is evident from the tool marks



left by a scraper in and around the large loop and on the notch relief of the bird heads. The surfaces on the reverse and on the relief of the fasteners, by contrast, still show the raw finish of the casting skin, which was, in this instance, very rough.



**Figure 11.** (1,2) Small sliders with hybrid (half-relief and in the round) ram figures and sheet metal. Photos by B. Armbruster.



**Figure 12.** Omega-shaped fastener with two birds of prey heads. (1,4) Front side with distinct traces of having been worked over with a scraper and grinder; (2,3,5) back side with cast skin clearly visible. Photos by B. Armbruster.

The decoration on the pommel and guard of the man's dagger consists of four curled tigers (or other predatory felines) arranged in opposing pairs. The animals are clearly recognizable thanks to the visual effect of the inlaid gold wires (Figure 13(1–4)). Numerous highly stylized, smaller animal bodies adorn other areas of the handle as well as the



central ridge of the blade. Additional gold inlays were added to the lateral parts of the dagger handle's circumference. From a technical standpoint, this inlay work is particularly noteworthy, as it extends over the rounded surfaces of the relief as well as the flat areas of the blade. On other objects, such as iron arrowheads, the application of gold inlay is also impressive, with its finely executed figural designs (Čugunov et al. 2010, p. 47, pl. 46. 1). One large triangular arrowhead, for example, shows figure work—a goat's head and a bird of prey with its head and claws turned back—in black reserve, while large areas in the background are evenly covered in gold (Figure 14(1,2)).



**Figure 13.** (1) Iron weapons with inlay decoration, the men's dagger and two ring handled knives; (2–4) details of the dagger with linear (tiger) and flat (blade) inlays; (5) small gold pieces from inlays. Photos by B. Armbruster.



**Figure 14.** (1,2) Iron arrowhead with gold inlay; detail of the arrowhead. Photos by B. Armbruster.

The outlines of the animal bodies derive their special charm from the contrast between the light background and the dark figures, with their interior details demarcated with gold lines. The scene represents the predator tearing its prey into pieces. While decorated

arrowheads are known from other sites in the Scythian world, it is extremely rare that they are decorated with extended figural groups conceived in a coherent artistic idiom (Alexeyev 2012, pp. 60–61).

### 1.2. Functional Groups

From a functional point of view, the personal adornments and costume components associated with the female and male buried in Arzhan 2 (Tomb 5) should be distinguished from the ornamental elements made for the weaponry and wooden vessel. Modern reconstruction drawings and exhibition mannequins wearing replicas of the clothing, footwear, headgear, jewelry, and weapons offer an impression of the splendor that the personal equipment of the couple from Arzhan once afforded (see Čugunov et al. 2006; Čugunov et al. 2010, plates 1–81; Stepanova and Pankova 2017, p. 93, Fig. 75).

The personal adornments include pieces that were worn directly on the body, such as necklaces and earrings (Figure 15(1–7)). The finds consist mostly of unique items; only one jewelry set was made to be worn as a matching pair. The costume components comprise some custom-made items that were worn as unique pieces—among them, pins, a pendant in the form of a miniature cauldron with a loop-in-loop necklace (Figure 7(1,3)), and the singular elements of the headgear, such as the man’s stag figure mentioned above (Figure 5) and the woman’s chiseled panther appliqué (Figure 16(1,2)). Other items were made as pairs. These consisted mostly of earrings, band-shaped trimmings employed as boot ornaments, and horse-shaped decorative plates attached to the headgear. Small appliqués in the form of feline predators—probably panthers—were produced in large quantities and sewn to the cloaks or mantles of the two buried individuals. Among these appliqués, we can distinguish two series that were stylistically related but manufactured in different ways.



**Figure 15.** Pair of female earrings; (1) tunnel earplugs with granulation, filigree, and enamel; and suspended filigree-decorated rings and link chain; (2) filigree ring with conical extension; (3) enamel cells with granulation; (4) triangular granulation and enamel surrounded by twisted wire; (5) perforations at the base of the conical extension for attaching pendant strands of beads; (6,7) filigree work of the complex rings. Photos by B. Armbruster.





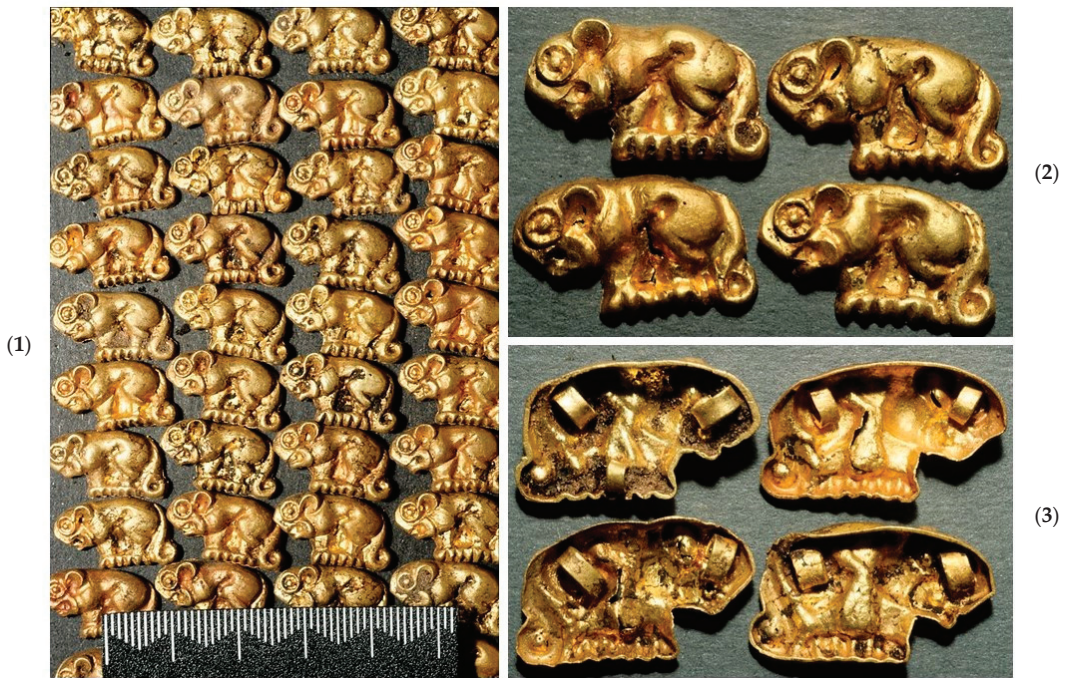
**Figure 16.** Panther emblem chased from thin sheet metal. (1) Front side with clear chasing traces of the punch and two perforations on the claws; (2) hollow back side with three soldered sheet-metal eyelets for mounting. Photos by B. Armbruster.

The man's 2632 small animal appliques were made from the same casting mold, while the woman's 2297 identically shaped panther figurines were struck from thin gold sheet using a die or punch (Figures 17 and 18(1–3)). As a result, these strikingly similar variants of appliques differed significantly in weight. Both variants were provided with small sheet-metal eyelets that were soldered to the back and sewn to the fabric or leather of the cloak in curvilinear patterns (Čugunov et al. 2010, p. 29, Fig. 37, pp. 34–35, Figs. 44–45). A less plentiful but significant series of 312 boar appliques was cast in two different sizes and served to decorate the wooden lining of the quiver (Figure 10(2,3)).



**Figure 17.** Cast appliques in the shapes of predatory felines from the male in the burial. Photo by B. Armbruster.





**Figure 18.** (1) Small figurines of a predatory felines from the woman, made of thin sheet metal through pressing into a die; (2) front sides; (3) back sides with eyelets. Photos by B. Armbruster.

Other clothing and shoe trimmings consisted of countless sewn-on miniature beads, which are estimated to number around 25,000 pieces for the man’s garment alone. Measuring only about one millimeter in size, the beads covered the man’s trousers, the hem of the woman’s skirt, and parts of her shoes (Čugunov et al. 2010, pl. 34. 2–7). The miniature beads attest to a range of production techniques, having been cast or formed as open or closed shapes in sheet metal (Figure 19(1,2)).

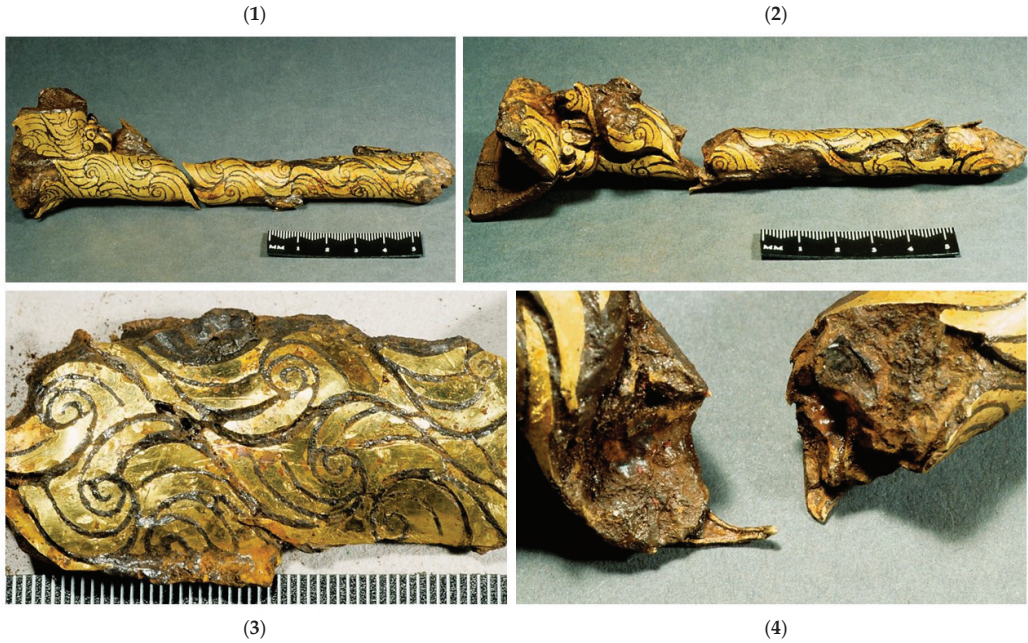


**Figure 19.** Miniature beads, (1) cast and (2) sheet metal. Photos by B. Armbruster.

Among the weapons decorated with gold are a battle axe (Figure 20(1–4)), two daggers (Figures 13(1–4) and 21(1–5)), two ring knives (Figure 13(1)), and several iron arrowheads



with gold and silver inlays (Figure 14(1,2)). The woman's iron dagger consists of a blade with gold inlays and an openwork cast gold handle attached by a rivet. The inlaid patterns of the iron weapons are formed in combinations of abstract spiral or flame motifs, as well as zoomorphic images.



**Figure 20.** (1,2) Two views of the fragmentary battle axe; (3) details of the inlay decoration and (4) a view of the back of an inlay element. Photos by B. Armbruster.



**Figure 21.** (1) Iron dagger blade found with the deceased woman; (2,3) details of the gold surface inlay; (4,5) two views of the rivet pin and remnants of the blade attached to the gold dagger handle with it. Photos by B. Armbruster.



The gold elements from the weapons include the items that adorned the quiver's carrying strap, among them, numerous hollow-cast sliders, strap tongues, and end elements, as well as locking pieces (Figure 22(1,2)). Other items consist of thin-walled cylindrical sleeves and gold-sheet fittings for a bow and a whip handle made of organic materials that have disintegrated (Figure 23) (Čugunov et al. 2010, pls. 45 and 50).



Figure 22. (1,2) Cast belt trim, sliders, and finials. Photos by B. Armbruster.



Figure 23. Elements of a whip, hollow-cast end pieces, and open cylindrical sheet-metal sleeves. Photo by B. Armbruster.

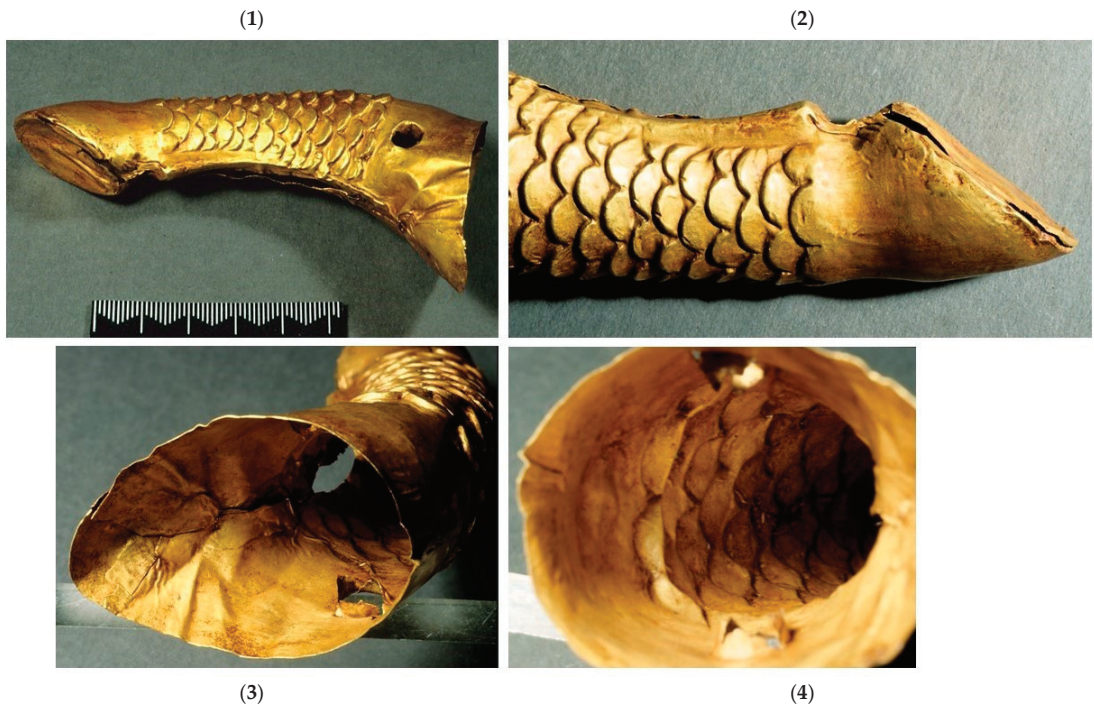
These decorative elements are often designed to create a two-tone effect with the color of the base material, such as leather or wood. Among them are both heavy pieces of strap decoration that were cast with details in openwork and light fittings made of thin sheet metal, including the decorative elements of the bow. The bow was also decorated with gold-wire elements.

As an example of an object made of wood and covered with pressed-relief sheet metal, we can highlight a vessel with a handle covered in a decorative gold sheet in the shape of a hoof (Figure 24(1–4)) (Čugunov et al. 2010, pl. 81. 1). The finds featured a wooden comb with a gold-plate handle and a bronze mirror with gold slides

(Čugunov et al. 2010, pl. 80. 1, 4). The ingenuity and material investment expended in enhancing the numerous objects from the princely tomb with gold—be they made of bronze, iron, or organic materials—demonstrate the exceptionally high esteem in which the buried couple was no doubt held.

The ways in which Early Scythian goldsmiths were able to combine different materials, stylistic expressions, and technical solutions foreground their dexterity as craftspeople, their capacity as designers, and their deep understanding of their materials.

Only a few pieces show clear signs of wear, among them the man’s massive neck ring. The pristine condition of most other items indicates that most of the goldsmiths’ works were never, or only extremely rarely, worn in everyday life. As a result, it seems likely that the goldsmiths made most items shortly before the burial as grave offerings for display in the funerary ritual.



**Figure 24.** Pressed gold-sheet decoration of a wooden bowl handle; the scale-like relief was carved into the wooden handle. (1,2) Exterior of the hoof, relief, and rivet hole; (3,4) view of the interior showing the negative relief. Photos by B. Armbruster.

## 2. The Goldsmiths’ Techniques

Several craft traditions are discernible in the precious metalwork, suggesting either that the collection represents the output of several workshops or that one workshop was able to accommodate this diversity, both technically and stylistically. At least five main areas of artisanal specialization can be identified: cast products with notched or chip-carved decoration; simple sheet-metal products; pressed sheet-metal work; objects with granulation, filigree, or enamel; and precious metal inlays in iron.

Many pieces were made using a combination of several techniques executed in an operational sequence determined by the requirements of each technological action. On complex pieces, the decoration drew on multiple technological principles. The miniature cauldron, for instance, is primarily characterized by its exterior relief that was first carved, and then cast and reworked. Closer inspection, however, also reveals that the object bears



discreet granulated decoration in two areas, as well as wirework in the form of a loop-in-loop chain attached to the vessel's foot (Figure 7(1–3)). Another example is the long decorative pin with a cast ornamental relief around the shaft and a bowl-shaped pinhead at its end (Figure 25(1)). Furthermore, an openwork decorative plate and a row of granulation were soldered to the shaft just below the pinhead.



**Figure 25.** (1) Line granulation at the head of a long needle; (2) scatter granulation at the chain suspension of the miniature vessel. Photos by B. Armbruster.

Of particular interest is the manufacture of substantial quantities of feline figurines of the same type. This mass production of thousands of animal figurines or even miniature beads requires an appropriate workshop organization to economize labor time. Measures to limit the amount of precious material used are evident only in the pressed sheet appliques produced for the woman's garment.

In the following discussion, we investigate the goldsmithing techniques, tools used, and operational sequences of technological actions with reference to the finds from Arzhan 2. Case studies are used to illustrate the salient identifying features of each technique.

To date, no analytical results of alloy compositions represented in the gold from Arzhan have been published. It is presumably native gold with small amounts of silver and even smaller quantities of copper. The goldsmiths were certainly familiar with the principles of intentional alloying, since the solder on several items relied on the admixture of some copper to lower the metal's melting point.

### 2.1. Casting Process

The production sequence of all gold objects is based on an initial cast item. In some instances, this preliminary product already featured the object's shape and relief decoration. Elsewhere, the initial element consisted of an ingot that the goldsmith transformed into wire or sheet metal through hammering.

**Ingot casting:** Ingot casting was used to produce the preliminary elements, which were then formed into plates, sheets, rods, or wires through plastic deformation. Molds made of solid materials, such as clay, stone, or bronze, can be used to make ingots. The simplest option, however, is to pour the molten metal from the crucible into a sand pit in the workshop floor or into a piece of charcoal with an appropriately shaped depression carved into its surface (Armbruster 2001).

**Lost-wax casting:** The vast majority of the gold finds from Arzhan were cast by means of the lost-wax method. The procedure is particularly suitable for casting complex reliefs, as well as hollow or solid three-dimensional forms. The objects decorated with relief were first modeled in wax, and then the decorative details were carved. The small animal figures

with a cavity at the back also belong to this category of cast products (Figures 10(1,2) and 17) (Armbruster 1993; Hunt 1980; Fröhlich 1981). Most of the cast pieces, regardless of whether they bear notched decoration or not, show traces of scraping and cutting resulting from the removal of the rough casting surface on the visible parts of the object, whereas the backs often show clearly identifiable remnants of the rough casting skin (Figure 26(1,2)).

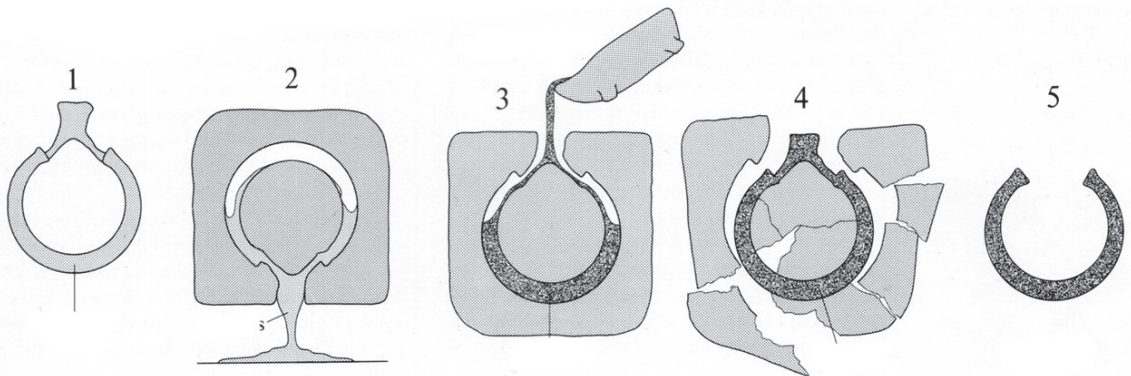


(1)

(2)

**Figure 26.** (1,2) Strap end with notched relief in animal style, distinct rough cast skin on the reverse side. Photos by B. Armbruster.

In the lost-wax casting process (Figure 27), the wax model is shaped precisely in the form of the desired object (Hunt 1980; Sias 2005). This can be done by modeling, removing material through carving (i.e., subtractively), or adding or assembling elements using liquefied wax (i.e., additively). The finished model is then provided with casting channels and a casting funnel made of wax. In a subsequent stage, the complete wax model, except for the end of the casting funnel, is encased in several layers of refractory clay with very few organic inclusions. Enriched with charcoal powder and finely ground clay, the first layer can be applied as a liquid solution resembling a slip in order to reproduce the model's decoration or relief in all its details. Before a new layer of clay is applied, the previous one must be allowed to dry completely.



**Figure 27.** Schematic drawings of the lost-wax casting process. (1) Wax model with casting channels and casting funnel; (2) clay investment (casting mold) and removal of melted wax after drying; (3) filling of the remaining cavity with molten metal; (4) breaking of the clay mold jacket after cooling; (5) raw cast product after the removal of channels and casting funnel (after Wübbenhorst and Engels 1989, p. 14, Fig. 7).



After the mold has dried out completely, it is heated until the melted wax can be poured out. The resulting cavity is then filled with molten metal until the casting funnel overflows. After cooling, the clay mold is destroyed and all clay residue removed; the casting channels are then cut off and the surface of the raw cast is worked over. Since the clay of the casting mold is tempered with organic materials (such as animal dung) to prevent shrinkage cracks, any gases that might form while the molten metal is poured can escape through the cavities left by the organic matter removed through the firing process. The lost-wax casting method transfers all details directly into the metal object. As a rule, however, a rough casting skin forms on the surface of the object, as can be clearly observed on many objects made in Arzhan. Such traces are removed either by abrasion (scraping, grinding, or polishing), densification (chasing), or chiseling. On the casts from Arzhan, however, remnants of the casting skin are not always visible in the notch cuts, which speaks to the extraordinary care expended on the finishing process. Owing to the complex shapes of the finished products, it is nevertheless possible to conclude that these objects were produced through the lost-wax technique.

**Lost-wax process with casting core or openwork:** Hollow objects, such as the miniature cauldron (Figure 7(1–3)), the two end pieces of the whip handle (Figure 23), and numerous elements of the belt decorations (Figures 28(1–4) and 29(1–3)), were cast over a core. The casting core, like the casting mold shell, was probably also made of clay containing little organic matter. To achieve the open cavity, the wax pattern is modeled over the dried clay core and then encased with the clay investment of the mold. Core supports become necessary when the core is completely covered by the wax model. To add such supports, metal pins are inserted through the wax pattern so that the clay core and outer clay investment are connected. They serve to hold the core in place after the wax has been melted out, allowing the molten metal to fill the cavity between the core and the mantle. This hollow casting technique enables not only the production of a great variety of object shapes, but also the efficient use of metal.



Figure 28. (1–4) Hollow-cast sliders with relief outside and casting skin inside. Photos by B. Armbruster.





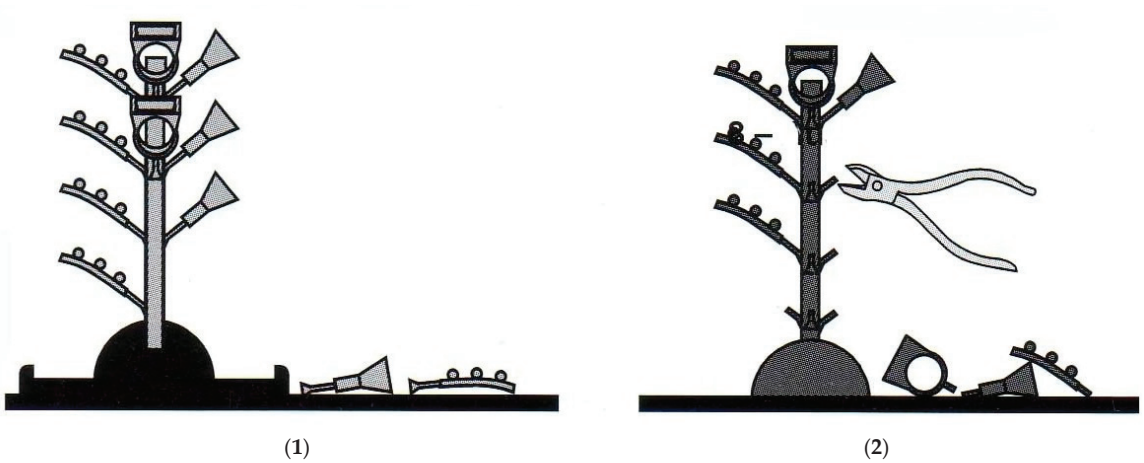
**Figure 29.** (1–3) Hollow-work and openwork cast sliders with notched decoration. Photos by B. Armbruster.

**Serial casting:** For the small animal figures that occur in very large numbers, such as panthers and boars, which were cast with slightly hollowed backs, it is likely that they were not produced individually but rather in multiples in a complex lost-wax casting process. In this process, several individual wax models are attached to a so-called “wax tree” (Autorengruppe TAG 2016; Franchi and Bonora 2005, p. 54; Untracht 1987, p. 543, Figs. 11–83). This construction consists of a central “trunk” and numerous fine “branches” of wax, to the ends of which the small wax figures are attached with liquid wax (Figure 30).

The identical wax models can be produced in series beforehand by impressing a solid model of the respective animal figurine in moist clay. This can be done several times on one slab of clay to facilitate the work. After the open clay mold has dried, the impressions can be filled with wax. Another possible procedure involves stone or wooden molds from which the negative form of the animal figure has been carved out. These open negative molds can also be filled with wax to create wax figurines in large numbers. To create the back cavities, the mold can be inverted before the wax solidifies completely, allowing some wax to drip off (Figure 10(1–3)).

**Finishing the cast objects:** The casts are freed from the casting channels or separated from the casting tree by knocking them off with a chisel and hammer. The cast products usually have a rough surface, the so-called “casting skin.” Therefore, after casting, the cast surface is finished by grinding and polishing with grinding stones and polishing agents, scraping and chasing with the help of punches and chisels.

The omega-shaped fastener from the quiver’s sling with bird-of-prey heads provides an illustrative example of the cast skin, still unmistakably visible on the reverse and even in the notch relief of the decorative heads on the obverse (Figure 12(2,3,5)). The item, however, also quite clearly shows the scraping and grinding marks on the front of the decoration (Figure 12(1,4)).



**Figure 30.** Schematic drawing of a modern casting tree. (1) Wax tree; (2) metal tree after casting process with objects on branches being clipped off (after Autorengruppe TAG 2016).

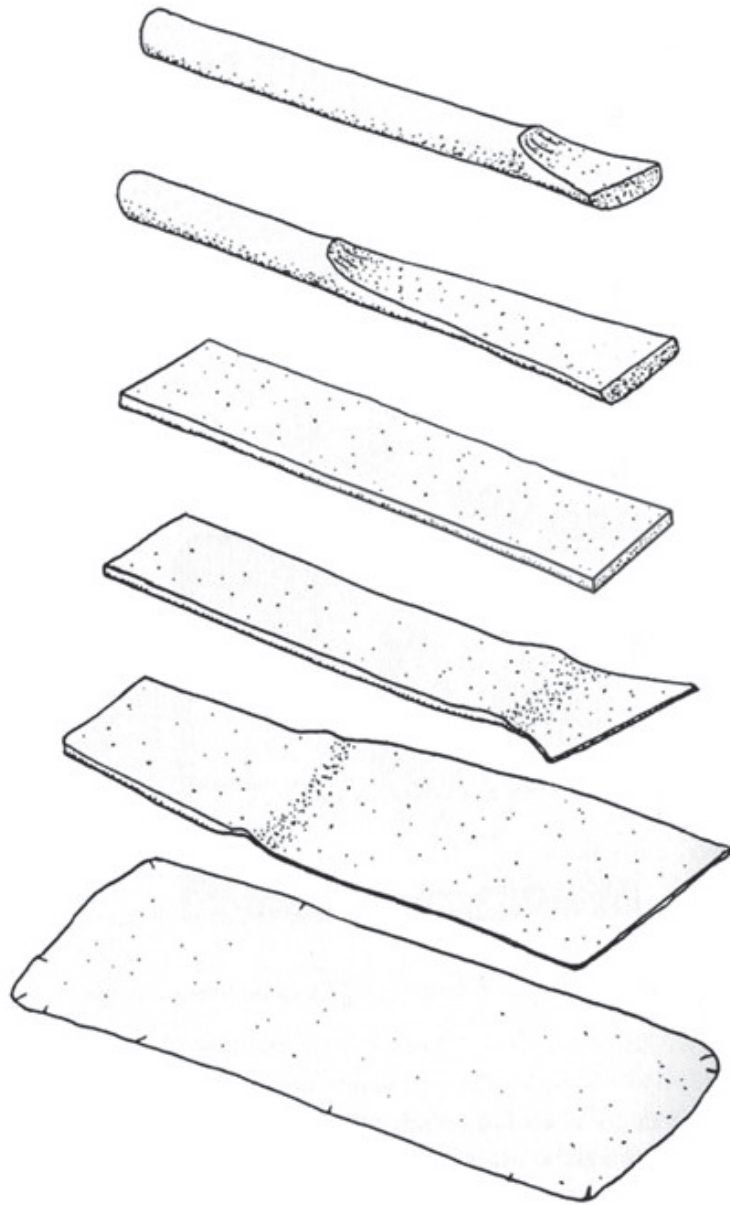
## 2.2. Plastic Deformation Techniques

In order to study the techniques of plastic deformation attested by the finds from Arzhan 2, we turn to the preliminary and final products made of plates, sheets, and rods that were shaped through twisting, bending, chasing, and hammering or repoussé.

Through the process of shaping precious alloys, the cross-section or thickness of the metal is changed, while the volume and weight remain the same. Therefore, the initial and final products of the crafting sequence, which usually begins with an ingot precursor, have the same weight, since no material is lost. Some methods of plastic processing—notably, hammering, twisting, bending, and chasing—render the material hard and brittle. This effect can be counteracted through intermediate stages of annealing. This procedure requires a workpiece of gold to be heated periodically in a charcoal kiln and then cooled once it has reached a red-hot state before the plastic deformation can proceed. The experienced goldsmith must, therefore, know exactly the point at which annealing becomes necessary; otherwise, cracks or fractures may occur. This would render the piece unfit for purpose.

**Plates and sheets:** As preliminary or final products, gold-sheet works are made by manual forging with hammer and anvil (Figure 31). The striking tools may have been made of stone, bronze, or iron. Furthermore, deer antler, bone, and hardwood implements may also have been used.

The sheet-metal work from Arzhan 2 is of supreme craftsmanship. The uniform thickness of materials in the individual pieces is remarkable, as is the corresponding evenness of smooth surfaces, such as on the man's boot fittings (Figure 32(1,2)). This high degree of accuracy led Chugunov to surmise that rolling mills were already in use by the Early Scythian period. Our study of the materials led us to conclude, however, that the evenness is due to the remarkable artisanal abilities of the Scythian goldsmiths, rather than the use of rolling mills. Sheet metal was also employed to make the countless tiny beads and small sheet-metal band eyelets, which were bent from a section of appropriately shaped sheet metal and then soldered to the ornamental elements, such as the figurines of predatory felines or the horses of gold sheet (Figures 3(2), 4(1,2), 5(6), 10(1,3), 16(2), 17, and 18(2)).



**Figure 31.** Working steps in the plastic deformation of a cast ingot into a sheet (after Nicolini 1990, pl. 217, e–j).

Whereas the flat metal figures in the shapes of specific animal silhouettes were chiseled from gold sheet (Figures 3(1,2), 4(1,2) and 5(1–6)), other sheets were cut out in rectangles and formed into tubular sleeves. Still others served as preliminary products for more complex objects, such as the woman’s decorative bands (Figure 33(1–4)), or for pressed sheet-metal work (e.g., Figures 18(1–3) and 24(1–4)).





(1)

(2)

**Figure 32.** (1,2) Boot fitting from the man's body made of smooth, undecorated sheet metal, with a contour of a stylized cloud or wing and perforated ends. Photos by B. Armbruster.

(1)

(2)



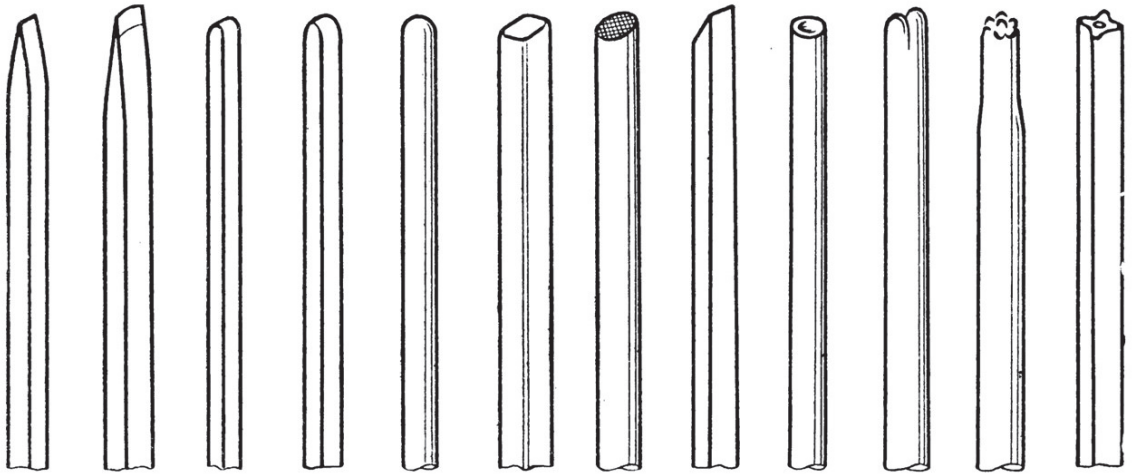
(3)

(4)

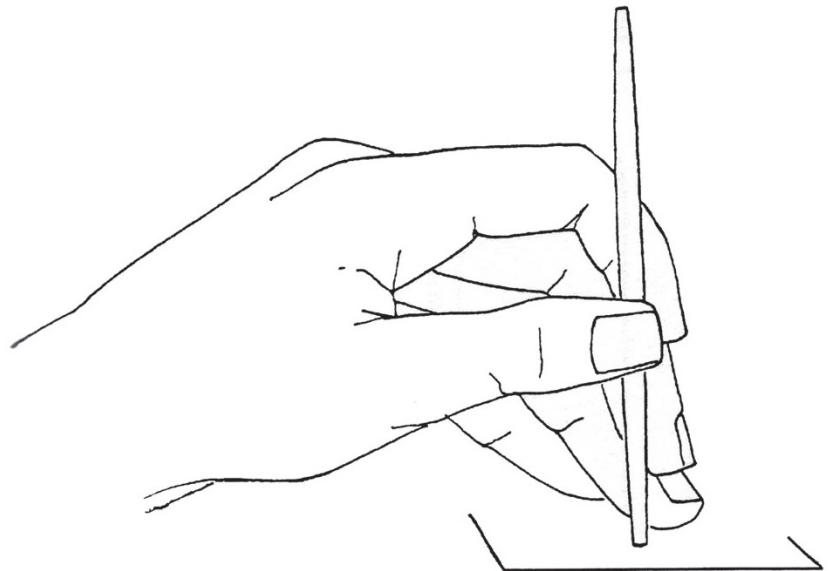
**Figure 33.** (1–4) Ornamental bands from the woman's boots showing surface granulation, filigree, enamel, and perforated ends. Photos by B. Armbruster.

**Chasing of sheet metal and of casts:** Chasing is the technique of shaping metal or adding relief decoration by applying indirect percussion with a hammer and punch to sheet metal resting on a resilient impact pad (Corwin 2010; Steines 2001). No material is removed during the process. The sheet is usually attached to a support by some elastic compound or putty, also known as chasing pitch. For shallow reliefs, softwood or thick leather may also serve as a striking base. The punches can be made of bronze, iron, hardwood, or deer antler (Armbruster 2003b). These pin-shaped tools have a prepared working end that can be blade-shaped, spherical, flat, domed, or hollow, or have an ornamental pattern in relief

(Figure 34). The other end is shaped to receive the hammer blow and indirectly transfer the impact energy to the sheet metal (Figure 35). In the process, the sheet is driven into the putty, creating a relief through plastic deformation. The material thickness of the metal sheet changes according to the degree of deformation through stretching or compression.



**Figure 34.** Schematic representation of various chasing punches (Brepohl 1980, p. 230, Fig. 191).



**Figure 35.** Handling of a punch driven into the sheet surface with a percussion instrument (Fröhlich and Fröhlich 1974, p. 44).

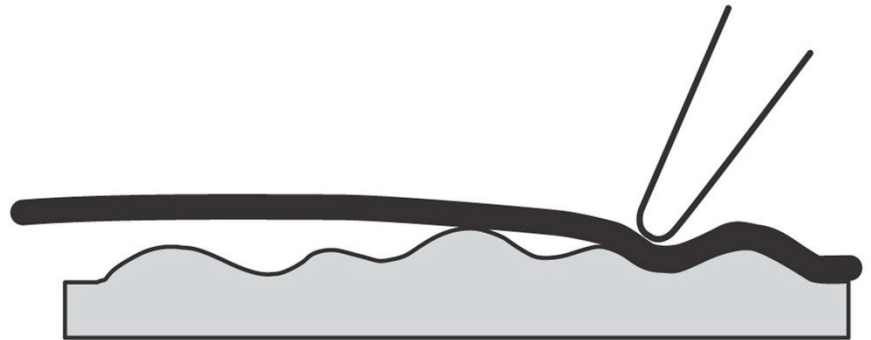
Among the finds from Arzhan 2, the use of sheet-metal chasing is clearly identifiable as a technique for both shaping and decorating objects on only one item: the single panther emblem on the woman's headdress (Figure 16(1,2)). Chasing, however, also served as a decorative technique and for finishing the surfaces on the numerous pressed sheet-metal works in the form of identical figurines of small predatory felines (e.g., Figure 18(2)).



In cast objects, chasing can also be used for finishing—as opposed to shaping—surfaces with punches. In this process, the principle of plastic deformation, with the aid of a punch and hammer, is employed to compact and smooth the uneven areas of the cast surface. The notch-cut works from Arzhan were therefore reworked not only through cutting techniques, such as scraping, chiseling, and engraving, but also through deformation with punches.

**Pressed sheet work with dies and serial production:** The working of sheet metal with dies and decorative punches or stamps is generally used for the serial production of a considerable number of identical sheet-metal objects, as is the case for the more than two thousand panther figurines on the cloak or cape of the deceased woman (Figure 18(1–3)). This shaping technique is based on the deformation of a thin sheet of metal with the aid of a prefabricated relief that is incorporated positively or negatively into a die (Armbruster 2003a).

As a rule, such relief-bearing dies are made of bronze or hardwood. The thin sheet is simply pressed into the depressions of the relief (Figure 36). Pins or punches made of wood, antler, bone, or bronze can be used for this purpose. This work is usually done, not in one stroke, but rather, in several steps, during which the sheet slowly takes on the shape of the die. The die can also be stamp-shaped, especially in the production of small pressed-sheet items.



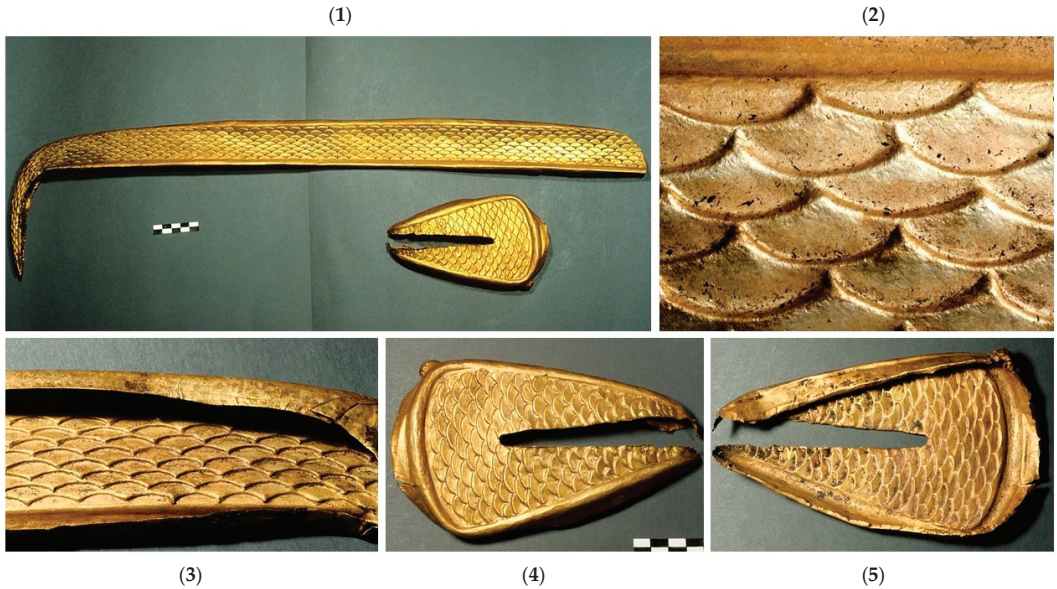
**Figure 36.** Schematic of the use of a die (gray) for plastic shaping of a gold sheet (black) using a pin with a rounded tip (white) (Armbruster 2004, Fig. 13, 1).

The pressed sheet-metal figurines differ from the cast examples worn by the man only in minor details; morphologically, they look very similar when viewed from a distance. While the sheet of the pressed examples is of regular thickness and the relief pattern is clearly visible on the reverse, the cast panthers have irregular walls, show no relief on the back, and have a solid-cast tail (Figure 37(1,2)). Both types of appliqués are provided with two, sometimes three, soldered sheet-metal eyelets.

Among the finds from Arzhan 2, there are also three pressed-sheet works that contain a wooden die as a stabilizing material and had been shaped on this carved wooden relief core. In some instances, the wood with relief was still preserved in the objects when they were excavated (Čugunov et al. 2010, pl. 43). The peculiarity of this technical execution of a relief is that the die is intended to remain in the workpiece to reinforce the object's structural integrity. The items are rare individual pieces, such as the scaled golden plating of the gorytos (bow-and-arrow case) (Figure 38(1–5)) and the wooden bowl (Figure 24(1–4)), both of which were made with wooden dies. This category of objects with impressed designs on wooden cores bears remarkably thick gold-sheet plating. Although these gold-sheet parts would have been fairly stable, the wooden backing was nevertheless retained to reduce the mechanical stress on the objects during their use. Such an internal scaffold was certainly required inside the handle of the wooden bowl, which was made of a single piece of wood.



**Figure 37.** Significant differences can be recognized in the detail of the contour, material thickness, and hollow tail; (1) pressed sheet with uniform and modest wall thickness; (2) thick-walled cast with solid tail and cutout between front and rear legs. Photos by B. Armbruster.



**Figure 38.** (1) Side-and-bottom reinforcements of the quiver (gorytos), made by pressing the gold sheet over a relief wooden model used as a die; (2,3) pressed sheet of the side reinforcement; (4,5) pressed sheet of the bottom. Photos by B. Armbruster.

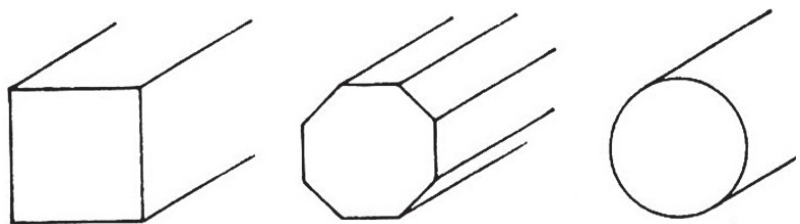
**Openwork in sheet metal:** Openwork in sheet metal occurs in Arzhan in both animal-style objects and other work (Figure 39(1–3)). The openings are made by chiseling and engraving. The cut-out areas of the gold objects allow the color of the support material to show through. In the case of the pierced decorative plate of the female’s headdress (Figure 39(1,2)), which was fixed upright, the ambient light and colors shine through.



**Figure 39.** Openwork on the (1) horse plates, (2) a plate of the female’s headdress, and (3) a decorative element of a pin. Photos by B. Armbruster.

**Wire-making and chain-making:** Wires occur at Arzhan in various thicknesses and mostly have a circular cross-section. They are used as chain links, ring-shaped constructive components of complex earrings or clasps, decorative elements for filigree work, and borders for enamel fields. Among the very few textured examples is the twisted square wire that borders the disc rings of the woman’s ear ornaments (Figure 15(4)).

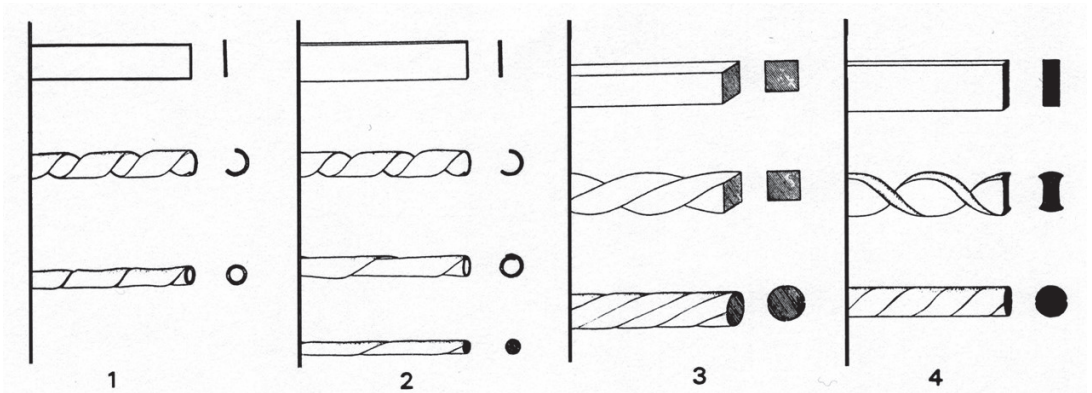
In the Iron Age, manual hammering could produce strong wires with square or round cross-sections with a diameter of about 0.9 mm (Drescher 1986). A round wire is obtained by hammering a square wire over the edges (Figure 40). This initially produces a polygonal cross-section and then, with further shaping, a round one (Untracht 1987, p. 248, Figs. 6–239). A metal or hardwood block with semicircular grooves, also known as a swage block, can facilitate this time-consuming work. As in other techniques of deformation, periodic annealing is an indispensable prerequisite for successful wire production.



**Figure 40.** Hammering of wire, from square to polygonal to round cross-section (Untracht 1987, p. 248, Figs. 6–239).

Thin round wires, conversely, are twisted and rolled from narrow strips of sheet metal (strip twisted) or square precursors (block twisted) (Figure 41). This technique of wire manufacture was the common process before the introduction of the draw plate (Oddy 1977; Ogden 1982, pp. 46–58; Formigli 1993). It leaves quite characteristic manufacturing marks in the form of circumferential, helicoidal lines on the round wire. Wire-making by rolling has been widely studied and well documented for ancient gold-working.





**Figure 41.** Schematic diagram for the production of thin filigree wire by (1,2) “strip twisting” and (3,4) “block twisting” (Formigli 1993, Figs. 2–4).

The ring-shaped chain links of the ear pendants (Figure 15(1)) and several links of the loop-in-loop chains (Figure 6(1,2,5,6)) from Arzhan 2 were closed by soldering. Other wire elements were also fixed by soldering the components to a support made of sheet metal, such as the one on the flat sheet horse and the woman’s ribbon-shaped boot trimmings with filigree, granulation, and enamel decoration (Figure 42(1,2)).



**Figure 42.** Helicoidal traces of wire rolling on (1) the man’s horse plate and (2) the woman’s boot fitting. Photos by B. Armbruster.

Particularly important wire works from Arzhan include the complex ring elements of the ear pendant, consisting of numerous filigree wires (Figure 15(1–7)), as well as the small-linked loop-in-loop chains on the woman’s necklace (Figure 6(1,2,5,6)) and on the miniature cauldron (Figure 7(1,3)). Otherwise, the use of wires plays a relatively subordinate role in the overall picture of the examined goldwork.

Each of the filigree rings of the woman’s paired ear ornaments is composed of an open ring formed of innumerable wires and a hollow conical sheet-metal body soldered directly to it and decorated with filigree, granulation, and enamel (Figure 15(1–7)). The open composite ring has a rectangular cross-section. The numerous gold wires were attached to each other through soldering to form a band, as we can see at the open end, where the countless wires were left visible (Figure 15(7)). The filigree work follows a scheme in which strands of five similar wire-forms were laid out parallel to each other in a zigzag pattern. Smooth round wires and wires corded from two fine round wires were used. The two rings were worked with extraordinary regularity.



**Link chain:** The chain found by the woman's ear pendants consists of 12 ring-shaped links made of round wire, which were hung into each other and closed by soldering (Figure 43).



**Figure 43.** Chain with ring-shaped links, found on the woman's ear pendants. Photo by B. Armbruster.

**Loop-in-loop chains:** Loop-in-loop chains occur in Arzhan 2 as two chain-strands on the woman's neck ornament (Figure 44(1,2)) and for the suspension of the miniature cauldron (Figure 7(1,3)) (Čugunov et al. 2010, pls. 78. 7a–b and 79. 2a).

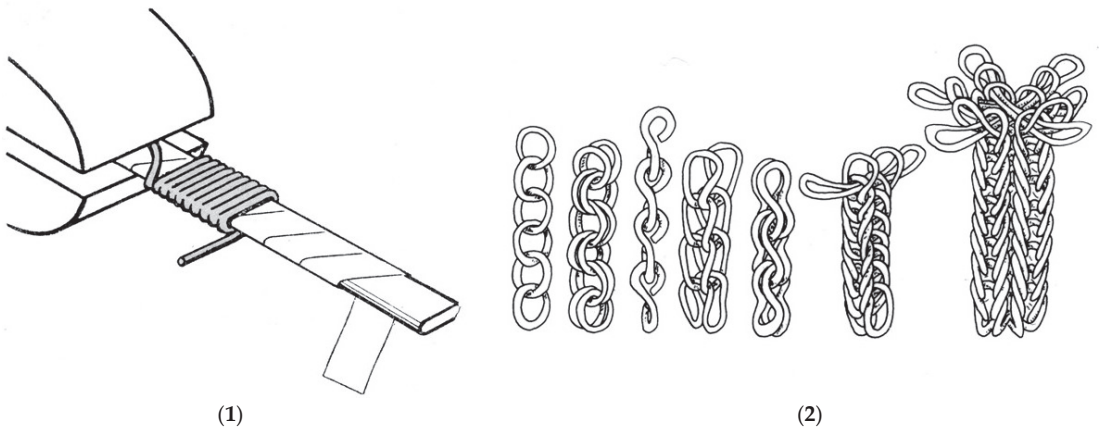


(1)

(2)

**Figure 44.** Loop-in-loop chain (1) of the woman’s neck ornament and (2) of the miniature cauldron. Photo by B. Armbruster.

The manufacture of a loop-in-loop chain requires numerous identical wire rings or eyelets (Lemaigre 1983; Ogden 1982, p. 58). To produce these elements, a wire is usually wound tightly around a pin of appropriate diameter. The goldsmith then separates each coil using a chisel. Each individual ring is first closed by soldering the ends together. One after the other, each individually elongated wire eyelet is then pushed through the next, bending over each eyelet with looped ends to accommodate the next eyelet in the loops thus formed (Figure 45(1,2)).



(1)

(2)

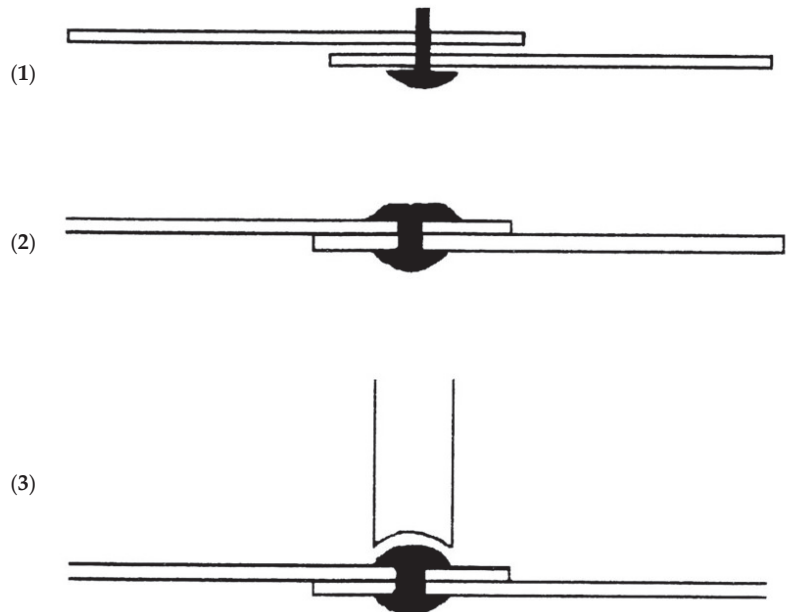
**Figure 45.** (1) Making equal-sized eyelets or chain links by wrapping wire around a rod (Brepohl 1980, p. 19, Fig. 142); (2) link and loop-in-loop chain-making (after Ogden 1982, p. 58, Fig. 4:45).

### 2.3. Connecting Techniques

Mechanical riveting or flanging and soldering have been identified as joining techniques for the construction of composite pieces. Both principles were used to assemble separate parts or to close eyelets.

**Riveting:** In riveting, the elements to be joined were first provided with rivet holes and then mechanically joined with a pin. In the case of cast objects, such as the woman's gold dagger handle, the holes were already devised during the casting process (Figure 21(4,5)). In the case of hammered sheet goldwork, by contrast, the rivet holes were pierced through the sheet metal with the aid of a metal point, as can be seen on the sheet-metal stag figurine (Figure 5(3,4)). The hammered rivet pin is then passed through the holes and compressed at both ends by plastic deformation in order to expand them slightly and firmly join the pieces together (Figure 46). This deformation can be achieved simply by hammering one end while the other rests on a firm support. Alternatively, one can also make use of a base with a recess, known as a rivet bench, or a hollow punch.

Riveting rarely occurred among the finds from Arzhan. In one instance, the technique was used to fix one half of the antler to the stag figurine made of sheet metal from the decoration of the man's headdress (Figure 5(3,4)). A second example of riveting can be found on the woman's dagger, as a connecting element between the golden handle and the iron blade (Figure 21(4,5)). Furthermore, in some instances, such as the gold sheet fitting of the wooden vessel, rivet holes indicate that nail-shaped pins had originally been used and are now missing. The perforations on the sheet-metal appliques from the boots of the man and woman are probably not for rivets but for sewing the plaques to their leather backing (Figures 32(1,2) and 33(4)).



**Figure 46.** Rivets; two overlapping sheets. (1) Rivet pin with head; (2) deformation of second rivet head; (3) rounded rivet head and hollow punch (after Hodges 1964, Fig. 13).

**Flanging:** Flanging is a technique of physical connection that binds metal parts by interlocking or bending. As an example, the sheet-metal stag figure found with the male was joined to its base plate by flanging (Figure 5(6)).

**Dynamic physical connections:** Possible methods of physical fastening also include movable links, such as hooking (see, for instance, the ring-shaped decorative element of the

ear ornament, (Figures 15(2) and 52(2)), mobile eyelet connections of chain links and their attachment to an object (Figures 6, 7(3) and 44), the application of slides to a belt of organic material (Figures 22 and 28), and the sewing of beads or metallic decorative elements with small back eyelets to fabric, felt, or leather (Figures 18, 19 and 37).

**Soldering:** Soldering was used to join chain links or other individual elements into composite objects, such as the woman's wire and sheet-metal ear ornaments, made of two gold-sheet parts (Figures 15(1–7) and 47(1,2)) (Lang and Hughes 1980; Maryon 1936; Wolters 1975). Soldering was also used to attach small eyelets to the back of appliquéés or to fix small elements in the form of wires or granules onto surfaces to create decorative filigree, granulation, and enamel.

The soldered pieces exhibit remnants of metallic solder, indicating that, by adding small amounts of copper, the goldsmith was able to produce a gold alloy that had a lower melting point than the gold alloy of the pieces to be soldered. Small pieces of this solder alloy were cut from sheet metal or wire in the appropriate alloy and placed on the area to be soldered. In order to protect the soldered area from oxidation, the Scythian goldsmith used a flux of unknown composition. The piece was then heated in the furnace until the solder melted and diffused into the base metal, thus joining the individual parts. Remnants of the solder alloy can be seen particularly clearly on the back of the gold-sheet horses.

**Subtractive techniques—Chiseling, cutting, engraving, and scraping:** The techniques of goldsmithing that remove material from the base by chipping include chiseling, cutting, engraving, and scraping. The abrasive processes of finishing by grinding and polishing can also be included in this category. Chiseling and cutting were used on the Arzhan goldwork to cut out sheet-metal motifs along the contours, as well as for the openwork of pierced pieces (Figure 48(1–3)). Traces of the chisel can often be seen on the edge of the sheet-metal work and on the openings. Engraving was also used as a decorative technique to create engraved decorative lines. One can observe, however, the traces of engraving and scraping most commonly where the relief surface of cast notch work was finished after casting (e.g., Figures 6(3,4), 9(3–6) and 12(1,4)). Hardened iron tools were necessary for this technique.



**Figure 47.** Cylindrically curved and disc-shaped sheet-metal parts of the woman's ear ornaments, (1) soldered joint of the cylinder, and (2) soldered connection between the vertical and horizontal sheet elements. Photos by B. Armbruster.

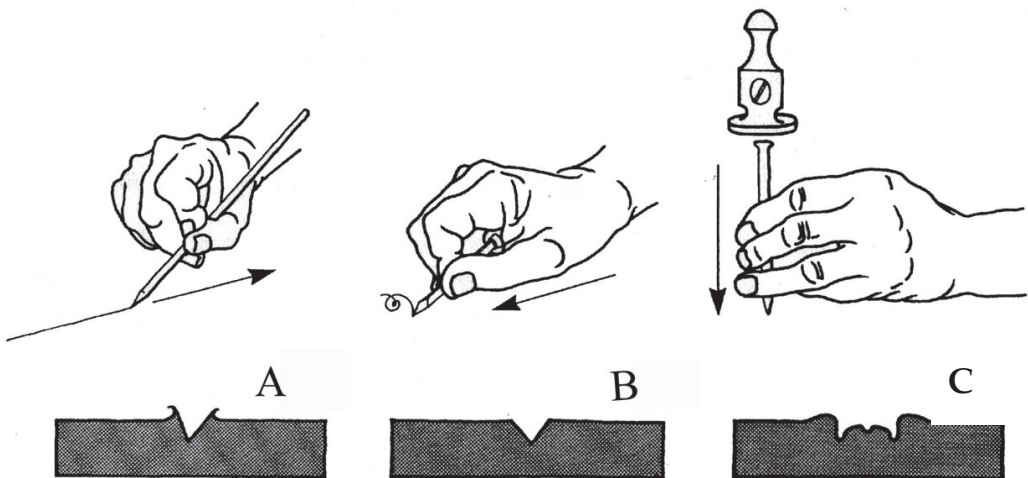




**Figure 48.** (1) Horse plaque from the woman; (2,3) engraved and chiseled lines and openwork on the horse's head and tail. Photos by B. Armbruster.

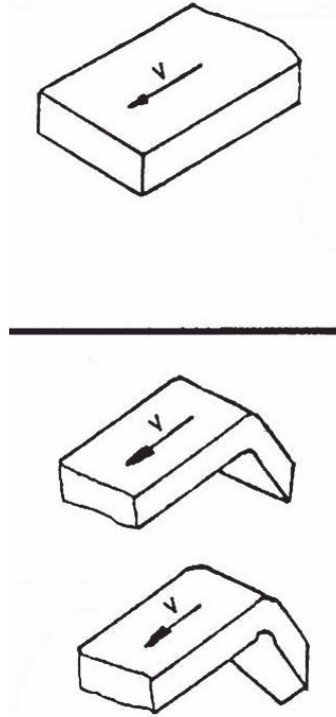
In chiseling, one hand holds the cutting tool while the other hand guides the percussion instrument and transfers pressure to the chisel. The chisel is a metal pin with sharpened cutting edges at one end that produces chips, thus lifting the material.

Engraving differs from chiseling in the handling of the cutting tool. The engraver's burin consists of a metal pin with cutting edges, sharpened in a specific way and set into a wooden handle (Bunte 1985; Untracht 1987). The graver is not struck with a hammer like the chisel; rather, the palm of the hand exerts the necessary pressure on the tool's wooden handle, while the engraver guides the burin. The technique produces chips and, therefore, a loss of material (Figure 49B).



**Figure 49.** Differences in the handling and operational procedures for (A) the tracing of lines (with material displacement); (B) engraving (with chipping); (C) chasing (solely through plastic deformation) (after Lowery et al. 1971, p. 171).

Scraping covers a larger area than engraving or chiseling. A sharpened tool is scraped over the metal surface with pressure, thereby smoothing the surface through compression as well as abrasion. In modern metalwork, a distinction is made between impact scrapers and cranked drawing scrapers (Figure 50).



**Figure 50.** Flat impact scraper and cranked drawing scraper (after Autorengruppe TAG 2016, p. 38).

#### 2.4. Decorative Techniques

**Tracing preliminary drawings:** On some objects, preliminary drawings can be observed on the surface. The sketch-like traces served to distribute the decoration over the available surface. Such preliminary drawings are scratched with a pointed, pin-shaped tool known as a “scraper” made of bronze or iron (see Figure 49A). A small point fixed into a wooden shaft is sufficient for this purpose. Tracing differs from engraving in that it does not remove material but merely displaces it.

**Filigree and granulation:** The decorative techniques of filigree and granulation are based on soldering tiny granules or small decorative elements made of wire to a metal surface (Wolters 1986, 1987). The filigree technique uses sections of thin, usually coiled, wire that have been bent into decorative elements. The numerous tiny granules needed for granulation are made by melting small pieces of gold clipped from gold sheet or wire. The technique’s principle is based on the special material property of metals that causes them to contract into spheres when in a liquid state. It is possible to produce a large number of granules by heating many small pieces of gold, separated by charcoal powder, in a clay crucible to the melting point so as to form small spheres (Nestler and Formigli 1993). After cooling, the spheres are separated by washing away the charcoal powder and can then be used as decorative elements. To attach the spheres, a gold solder that can be broken into tiny grains with coarse grinding stones is employed. The solder grains are then sprinkled over the granules and soldered in the furnace.

Both filigree and granulation occur among the Arzhan finds, mostly on sheet-metal bases, as can be seen, for instance, on the decorative elements of the woman's ear ornaments (Figure 15(1–7)) and bootlaces (Figure 33(1–4)). Three types of granulation patterns can be identified: linear, triangular, and scatter (Figure 51(1,2)) (Nestler and Formigli 1993; Wolters 1986). In all instances, the granules are heterogenous in size, indicating that they had not been sorted.



**Figure 51.** (1,2) Small beads and a conical slider with enamel decoration and scatter or triangular granulation. Photos by B. Armbruster.

Two unusual applications of filigree and granulation among the Arzhan finds deserve special attention. Among them is the filigree work on the two ring-shaped elements of the ear ornaments that consisted, as already mentioned, entirely of wire and were additionally decorated with granulation and enamel (Figure 52(1,2)). Granulation occurs among the Arzhan finds not only on sheet-metal bases—on which granulation is, to this day, most commonly applied—but also on solid cast objects, such as the miniature cauldron (Figures 7(1,3) and 25(2)) and the long jewelry pin (Figure 25(1)).

**Enamel:** Enamel is a glass mass that is crushed into granules or powder in a mortar. In the form of small fractions, the enamel grains are placed in the designated fields before the workpiece is heated in the furnace until the enamel mass melts and begins to adhere to the metal surface while cooling (Maryon 1971; Wessel 1971).

As a decorative technique, the process of enameling involves the application of crushed glass crystals to object surfaces. In the Arzhan finds, enamel decoration is achieved through cell fusion, also known as cloisonné enameling, a method in which the glass powder is deposited in a compartment previously delineated with wire that was soldered to the sheet-metal base for this purpose (Figures 5(1,4), 15(1–3,7), 33(1–4), 42(1,2) and 51(1,2)).

**Gold and silver inlays on iron objects:** The gold decorations of the iron objects from Arzhan are also of extraordinary fineness and quality.

In the inlay method, a softer metal, usually in the form of small sheet or wire elements of gold or silver, is inserted into a harder metal, such as bronze or iron (Maryon 1971; Rieth 1936; Born 1994; Wolters 2002). The physical connection is based on the clamping and interlocking of the inserted element in the specially prepared pits, cavities, grooves, or roughened surfaces on the metal substrate (Figure 53). In cast bronzes, these pits can be created in the casting process. In the case of iron objects, the pits can be worked out either through plastic deformation with the aid of a chisel or punch, or through chipping with a chisel or burin.

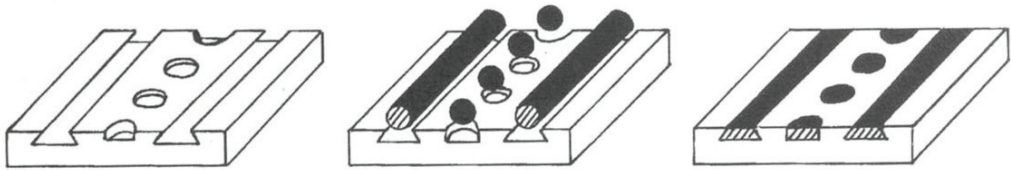




(1)

(2)

**Figure 52.** (1) Enamel remnants in the teardrop-shaped filigree cells and (2) surface enamel between the triangular granulation of the ear ornaments. Photos by B. Armbruster.



(1)

(2)

(3)

**Figure 53.** Three phases of inlay work. (1) Groove with undercut sidewalls in the surface of the harder metal; (2) inserts; (3) inlay of softer metal physically fixed into place through plastic deformation (after Manfredi et al. 1992).

As a rule, these pits are undercut at the sides so that the inserted material can interlock. This is done by exerting pressure with a percussion instrument. Plastic deformation usually takes place with the help of punches that transmit the hammer blow indirectly.

The man's dagger and one of the ring-handled knives show a half-relief on the blade and a three-dimensional relief on all sides of the dagger handle (Figures 13(1–4) and 54(1)). A relief can be worked into red-hot iron with the help of chisels, punches, and hammers. If the piece is worked on both sides, it is necessary to work on a bed of sand or ash so that the plastic deformation of the front side does not damage the back side. It is highly unlikely that the relief was shaped after the gold inlays had been applied. The women's dagger blade and another ring-handled knife show a flat inlay (Figures 21(1–3) and 54(2)).

To judge from several 0.3-mm-thick gold inlays from Arzhan that have fallen out (Figure 13(5)), these elements are clearly not thin pieces of foil but stable pieces of sheet metal. The backs have slight protrusions at the edges, devised to fix the inlays to the metal base or to a putty. These extensions are not visible on the front side, suggesting that the individual elements were made separately and then inserted into the surface. Perhaps additional organic adhesives were used to create a stronger bond.





**Figure 54.** (1) On one of the knife handles, the gold inlays were sculpted to match the relief of the iron base (Figure 13(1)). (2) Flat inlay. Photos by B. Armbruster.

### 3. The Goldsmiths' Tools

Given the complexity of their products, the goldsmith workshops that produced the finds from Arzhan 2 must have been equipped with versatile tools. Since no tools have been discovered that can provide direct insight into Early Scythian workshop practices, the range of equipment employed must be inferred indirectly from the traces of work and other features preserved on the objects' surfaces. Furthermore, we can arrive at a general picture of the equipment by drawing parallels with documented workshop remains from the Late Bronze Age and Early Iron Age. Explanatory models for the manufacturing processes that were potentially in use can also be developed through analogies drawn from an interdisciplinary approach to research that combines information from a range of scientific fields.

The workshops' utensils were no doubt highly adaptable without relying on any permanent installations. The furnace most likely consisted of a simple pit loaded with charcoal as fuel. The fire must have been fanned by a bellows, possibly made of goatskin. The bellows, crucible, tongs, and tools of plastic deformation could be stored in a sack or box and were easy to transport. In Mali, for instance, goldsmiths who smelt, cast, and forge, as well as produce goldwork with granulation and filigree, move about the country with mobile workshops (Armbruster 1995, p. 130); only the furnace and possibly the wooden pole for fixing the anvil must be set up at each temporary encampment. Mobile metal workshops of nomadic itinerant metal workers, like those we presume to have made the Early Scythian goldsmith art, can still be observed in non-European countries.

From the finds at Arzhan, the following goldsmith tools can be deduced. An Early Scythian workshop must have had molds for the casting process, with a furnace and bellows, crucibles, and tongs for holding, transporting, and tilting the crucible containing the melting material. For the lost-wax casting process, wax or hardened fat is needed for the models. Refractory clays and organic leavening agents are the presumed ceramic materials needed to encase the wax model as a clay mold and to create the casting crucibles. Solid molds made of wood or metal, and two-part molds were probably used for the serial production of the wax models. Furthermore, fuel was required, which may have included charcoal, animal dung, and other combustible organic residues, such as nutshells.

In addition to casting, the goldsmith's furnace was also used for the intermediate annealing of objects undergoing plastic shaping, such as hammering or chasing, to prevent them from becoming brittle during the process of plastic deformation. A furnace was also required for soldering and enamel work. It can be assumed that, for this purpose, the goldsmith made him- or herself a small muffle of clay that protected the workpiece in the furnace from ash and other dirt, and ensured uniform firing conditions.

In order to clean the casts, various substances for grinding and polishing the surface were used, among them stones or other abrasives, such as sand or ash, or dried siliceous plants, notably, horsetail. Subsequently, the surfaces of the cast objects could be further refined through plastic deformation with punches, most likely made of bronze.

In the next phase, chipping tools were employed, among them chisels, gravers, and scrapers. As various experiments and resistance measurements have shown, tools made of bronze or soft iron are unsuitable for chipping or notching precious metals. Tools made of carburized iron (that is, steel) must have been present in the tool inventory of the Early Scythian goldsmiths. Such tools may have consisted of small hardened and sharpened blades that were mounted in a wooden handle. The sharpening of the working end could have been accomplished through forging and grinding. Hardening soft iron tools by carburizing or nitrite-hardening is a relatively uncomplicated practice. In fact, this technique is still in use today among traditional itinerant goldsmiths. As an example, ethnographic observation in Mali has shown that this process can be performed with simple ingredients, such as salt, horn shavings, and charcoal. The procedures used by traditional African goldsmiths and ironsmiths to harden chisels, burins, or files are comparable in their chemical effects to the nitrite baths employed in modern industrial production (Armbruster 1995, p. 121).

Chisels were also used to remove casting protrusions, casting channels, sheets, or wires, and cut out the contours or openings of a sheet-metal object, while pointed mandrels served to punch holes.

For the techniques that involved plastic deformation, the equipment of the Scythian goldsmiths included hammers, anvils, chisels, punches, drawing needles, and dies. The hammer and anvil were used to produce sheet metal, rods, and wires for finishing casts and any necessary hammering work. Another type of tool for shaping metal is the forming or dapping block—a cuboid of metal, wood, or stone with depressions in the form of hemispheres (doming block) or grooves (swage block) of various dimensions. By pushing and pressing metal in the appropriate openings of such blocks, sheet metal can be transformed into domes for beads or wires with round or triangular cross-sections.

Finally, punches were used to smoothen the rough surfaces of the cast notched reliefs. An examination of the objects from Arzhan also shows that those shaped with the aid of a die were subsequently worked over with punches. Modeling punches of various shapes and sizes must have been in use. On some panther figures produced through the pressing of sheet with dies, a pointed punch was also employed to emphasize the feline's eyes with a punched border. Curiously, no impressions of decorative punches with a design at their working end appear to have been in use. In other geographical regions, such punches and dies are standard items in the goldsmith's tool repertoire.

Dies made of metal were used for the serial production of small, pressed sheet-metal work. Dies made of wood were used to produce large individual pieces of sheet metal in which the wooden lining remained in the object as reinforcement.

Apart from the aforementioned tools made of bronze, iron, stone, and ceramics, the Scythian artisans must also have used substances like salts and acids, which are commonly found in goldsmiths' workshops as cleaning agents for workpieces.

#### 4. Concluding Remarks

The extraordinary discovery of the intact elite tomb of Arzhan 2 offers new insights into the complex goldsmithing techniques of the Early Scythians in Siberia. While gold ornaments were made for both the living and the dead, most pieces known to us were intended exclusively for funeral ceremonies, as is evident from the lack of wear and the occasional presence of burrs and ridges from the casting process. They attest to the region's high technical and artistic level of goldsmithing craft in the late 7th and early 6th centuries BCE. The works bear out how highly developed the organization and specialization of the applied arts were and how extensive the cultural contacts of the equestrian nomads must have been. The early dating demonstrates that the precious metalwork from Arzhan

2 predates any parallels from Kazakhstan. The finds are considered the earliest evidence to date of this elaborate and versatile technology in Scythian Siberia, while the characteristic design features of the Early Scythian animal style clearly indicate local production. It should also be noted, however, that sophisticated techniques of goldsmithing—including lost-wax casting, soldering, filigree, granulation, and enameling—were known prior to the 7th century BCE, both further afield in the Near East, and in the Mediterranean.

This brief account of a wide range of virtuoso gold-working techniques among the Early Scythians reveals highly sophisticated traditions of material knowledge and technology. The gold objects from Arzhan also provide reliable (if indirect) evidence for reconstructing the equipment employed in the goldsmiths' workshops. Ethnological analogies show that the tools of a mobile workshop can be easily gathered in a bag or other container and transported over long distances. This observation is consistent with the Scythians' nomadic lifestyle. Four main groups of craft traditions can be identified among the objects: cast products with notched reliefs; chased and pressed sheet metal; objects with granulation, filigree, and enamel; and gold and silver inlays in iron.

The precious metal finds from Arzhan are both aesthetically and technologically of very high quality, and represent a considerable investment in material, labor, and knowledge. The details of their design and manufacture offer an unprecedented glimpse into a previously little-understood Early Scythian metalworking tradition. As mentioned initially, to date, no direct parallels for such a rich and highly developed knowledge of precious metalworking techniques are known anywhere in southern Siberia or further afield in the eastern steppe belt.

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## Notes

- <sup>1</sup> This publication also features the full dimensions and weights of the objects discussed in the present article (Čugunov et al. 2010, pp. 26–86). Since this information is either irrelevant to our examination or is visible from the scales included in the photographs, it has not been restated here.

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## Article

# The Spacetimes of the Scythian Dead: Rethinking Burial Mounds, Visibility, and Social Action in the Eurasian Iron Age and Beyond

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**Abstract:** The Eurasian Iron Age Scythians, in all their regional iterations, are known for their lavish burials found in various kinds of tumuli. These tumuli, of varying sizes, are located throughout the Eurasian steppe. Based, at least partially, on the amounts and types of grave goods found within these mounds, the Scythians are usually modeled as militant, patriarchal mobile pastoralists, with rigid social structures. Yet, such interpretations are also due to accounts of Scythian lifeways provided by “classical” societies from the Greeks to the Persians, who saw the Scythians largely as barbarians, much like their neighbors to the north of the Greeks, the “Celts”. Despite recent interrogations of the barbarian trope, and the opportunity to dissect the classic formula of large mounds = elevated status, I contend that many studies on Scythian mortuary practices remain monolithic and under-theorized, especially by Western scholars. Drawing upon different conceptual and methodological frameworks, I present alternative, multi-scalar understandings of Scythian mortuary landscapes. Utilizing a spacetime-oriented, dialogical approach supplemented with geographic information systems, I interrogate how and why various meanings and experiences may have intersected in these protean Scythian landscapes of the dead, rather than reducing them to monolithic symbolic proxies of ideological status.

**Keywords:** Scythians; mortuary practices; visibility; dialogics; multivalency

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A body’s symbolic effectiveness does not depend on it standing for one particular thing, however, for among the most important properties of bodies, especially dead ones, is their ambiguity, multivocality, or polysemy. Remains are concrete, yet protean; they do not have a single meaning but are open to different readings.

—Katherine Verdery (1999, p. 28), *The Political Lives of the Dead*.

## 1. Introduction

Burial mounds may be one of the most visible and yet complex and enigmatic forms of material culture found in archaeological records. While, ostensibly, burial mounds are constructed to memorialize, if not monumentalize, the dead, the overall sizes and locations of the mounds are usually understood as directly or indirectly related to “prevailing ideologies” as their material expression both singly and as groups or cemeteries (Arnold 2002; Ballmer 2018, p. 100; Parker Pearson 2005). For instance, in many, if not most, studies on burial mounds, larger monuments are seen to communicate elevated status via communal effort in comparison with smaller mounds (Arnold 1995, 2002; Ballmer 2018; Barfield 2020; Brown 1981, 1995; Branigan 1998; Buikstra and Charles 1999; Hanks 2002; Koryakova 1996; Morris 1987, 1991, 1992; Parker Pearson 2005; Parzinger 2017; Rolle 1989, 2011; Saxe 1970; Steinhaus et al. 2018; Tainter 1975; Voutsaki 1998). Yet, this tenuous connection to ideology is either too often taken for granted or overly reductionist in principle (and sometimes both). By this, I mean that the simplistic formula—the larger the burial mound, the more important the deceased—leads to a reliance on, which ultimately perpetuates, monolithic interpretive frameworks that omit a fuller range of experiences of

the mounds themselves. Indeed, Lynne Goldstein (1981, p. 56) stated that the result of such frameworks is the pigeon-holing of the (full) meaningfulness of mortuary practices and their studies, followed soon after by Ian Morris's (1991) testing of Saxe's Hypothesis 8 and Goldstein's expansion of it, finding that it did not fit in every social scenario.

While Goldstein (1981, pp. 56–57) praised Arthur Saxe's (1970) and Joseph Tainter's (1975) perspectives on measures of energy expenditure reflecting things like social organization and social structure, i.e., the importance and social positioning of the deceased, she also pointed out that we must not lose sight of the multi-dimensionality of mortuary practices, indicating that a more holistic approach is needed to explore the myriad meaning(s) of burial rites. At the same time, she rightly criticized fellow archaeologists for largely ignoring the spatial component of mortuary practices, including location. Since the publication of Chapman et al.'s (1981) *The Archaeology of Death*, the location of burial rites has, to a large degree, taken center stage, with a general focus on where mounds are situated in relation to other important archaeological sites, like settlements or other bigger mounds indicative of some sort of social positioning of the dead (Arnold 1995, 2002, 2010; Ballmer 2018; Buikstra and Charles 1999; Chapman 1981, 1995; Morris 1987, 1992). For instance, Bettina Arnold (1995, p. 43) noted that for early Iron Age societies in West Central Europe, social differences were not necessarily found among the living, e.g., houses and their sizes. Rather, burial rites, including the use of earthen tumuli, were not only emblematic of wealth-based ranking but also materially and symbolically signaled the presence of a broader spectrum of statuses. Arnold (1995, p. 45) further suggested that:

Tumuli were intended to function as highly visible communal monuments. They advertised the seniority and importance of the lineages associated with the late Iron Age populations that erected them. Their conspicuous location along major routes of transportation (often on terraces clearly visible from a considerable distance), and their additional demarcation by means of stone rings and stelae, supports this interpretation.

Arnold went on to suggest that other factors, much like what Goldstein suggested in terms of multi-dimensionality, including grave goods, need to be considered when interpreting Iron Age mortuary practices. The implication, then, is that burial mounds, while socially important pieces of architecture, can only be accurately interpreted via their contents. In other words, the formula of big = important remains prevalent in mortuary archaeology, especially if the contents mirror our expectations created and perpetuated through myopic considerations of individual mound size. Yet, if archaeologists are to interpret the multiple contextual dimensions of burial mounds, i.e., structure, contents, and multiple phases/periods of use and reuse, then should we also consider the multiple interpretive dimensions of the mounds themselves as complex, collective, and multivalent structures? Correspondingly, should we not more fully examine how and why the mounds were built, including how they were used and experienced differentially over time and space, not just singly but also as multi-scalar/sized groupings or even landscapes?

To begin answering these questions, we must confront the problematic epistemes, or supposed knowledge, entangled with the study of burial mounds. In a recent piece on the spatial configurations of Bronze Age burial mounds in Europe, Ariane Ballmer (2018, p. 107) suggests that it is unavoidable to "dive into the treacherous waters of interpretation" regarding burial mounds, as the results can only be hypothetical. But, if Ian Hodder (1999) is right (and I think he is), then the process of interpretation begins at the trowel's edge, not after fieldwork is completed. Rather than thinking of the interpretive dimension as treacherous, we might confront the episteme head-on, recognizing that our interpretation of burial mounds began before we even started excavations, and at times can mislead us in terms of scales of meaning. Our default assumption regarding burial mounds is that mounds and all their internal components, not to mention external links to other mounds, either reflect or are related to the status and/or social positioning of the dead by the living. This "interpretation" is so entrenched in our collective archaeological psyche, that few, if any, ever look beyond the mounds as proxies for status expression. We see each use of a



mound, or mounds in a group, as further concretizing the mound size = status formula. Yet, from Goldstein's (and others') perspectives, there are multiple dimensions to burial monuments and their associated rites that need to be accounted for. While I share Ballmer's chary mindset, I am open to exploring possibilities that have not been considered or tested yet regarding our shared interests in this subject. Ballmer, like Goldstein and Arnold, is correct in terms of (1) the spatiality of burial mounds being important (if not still understudied to a certain extent) and (2) the interpretive results being hypothetical. The past four decades of research into the "spaces/places" of the dead have revealed much that previous research had not illuminated. Goldstein's call for more attention to be paid to mortuary spaces seems to have been heeded on a much broader, if not global, scale (Šmejda 2006; Steinhaus et al. 2018), even as it was largely hypothetical at the time that specific spaces or places became meaningful through the internment of the dead. It is through the proposal, and subsequent testing, of hypotheses that we come to engage with innovative ideas or expansions/revisions of old ideas, paring down our ideas and, hopefully, proposing more firmly grounded interpretations.

But an important aspect of testing in science is the use of multiple *competing* hypotheses. By competing hypotheses (at least in this study), I mean that we need to allow for the possibility (if not probability) that mounds had multiple, overlapping, if not protean, meanings. To engage with such protean meanings, multiple conceptual frameworks may need to be employed. In this article, I revise old ideas and engage with new frameworks that reveal under- or even completely unexplored possibilities. By "revise the old", I mean repurposing Goldstein's "multi-dimensionality" to focus on the multivalency of burial mounds as meaningful visual and material culture in and of themselves rather than dependent on their internal contents to derive meaning from, and the (related and continued) over-reliance on mono-causal interpretations of size equaling status (a point I will confront head-on in subsequent publications (Johnson, forthcoming)). I also mean the social and temporal subject matter of this article: burial mounds from the Eurasian Iron Age steppe and the lower Dnipro/northern Pontic–Black Sea "Scythian epoch", all ca. 700–200 BCE, a region and time where burial monuments were unprecedented in size and complexity on the Eurasian steppe and beyond (Polin et al. 2020; Parzinger 2017). By "engage with new frameworks", I mean employing conceptual frameworks that are not new per se, but rather new for the study of burial mounds. I combine ideas of performance and "spacetimes" with aspects of Carlos Severi's "Chimera Principle" with Mikhail Bakhtin's concepts of dialogics" and heteroglossia" to reconceptualize how diverse Eurasian Iron Age mortuary landscapes might have been experienced visually and became differentially (and dialectically) meaningful under various conditions and contexts, i.e., different spacetimes via different scales of audience. I open these Iron Age mounds to re-interpretation even as I put them in broader social, political, and economic contexts, following Renate Rolle's (1979, 1989, 2011) and, more recently, Hermann Parzinger's (2004, 2006, 2017), attempts to bring these fascinating cultural complexes to a wider, if not global, audience. Before undertaking this, however, I start with a much-needed interrogation of how burial mounds have been conceptualized and studied, especially as they are some of the primary loci from which archaeologists have collected material culture and data about the Eurasian societies of the first millennium BCE, including, but not limited to, the steppe "nomads".

## 2. Reviewing the Study of Burial Mounds

While this contribution to the Special Issue, "Situating Eurasia in Antiquity: Nomadic Material Culture in the First Millennium BCE", focuses on the mortuary practices of the Eurasian Iron Age steppe and Scythian epoch of central Ukraine–lower Dnipro region, more specifically, it also engages with larger topics like how burial mounds should be treated as visual/material culture and how these mounds were experienced variably. It is necessary to recognize that the use of burial mounds, tumuli, barrows, kurgans, and mohyla (terms used interchangeably to symbolize monuments made primarily from soil with human internments, usually, found within them) is a near-global phenomenon and,

as such, requires a brief synopsis of the general trends in which the studies of tumuli are entangled. By “studies of tumuli”, I mean the targeted study of the (often) monumental structures themselves, which sometimes, but not always, contain burials within (a primarily methodological and epistemological problem I expand upon later in this section). When Goldstein (1981) mentioned not losing sight of the multidimensionality of mortuary practices, which, again, we can take to mean not being overly essentialist or monolithic when investigating burial rites, I suggest that more conceptually driven studies of burial mounds (in whatever form and with whatever terminology, mound, tumulus, kurgan, mohyla, etc.) are needed, studies that move beyond mounds as places, if not containers, for allegedly more socially important factors like burials. The mounds themselves may be multivalent and socio-politically (if not symbolically) charged material and visual culture. Indeed, one of the arguments I am making here is that meanings may change based on the number of burial mounds present, and subsequently, the visual experiences of the mounds by diverse types, if not scales, of “audiences” or participatory communities. There may be a cumulative effect of how the mounds as integral components in the production, if not performance, of a “landscape” are experienced, with meanings subsequently produced, performed, and carried away.

Despite the many similarities that exist in the use of burial mounds, such as the use of layering, the interment/deposition of bodies and grave goods, and the use of other ritual loci in association with the mounds, we should by no means consider mound use (and possible reuse seen through later burials), to be universal, and, therefore, the meanings of mounds should not be taken for granted. For instance, Arnold (2002, p. 130) suggests that “While not usually considered material culture in the same sense as grave goods, the mortuary landscape must be taken into account in the decoding of the syntax and vocabulary of death in past societies”. She notes both similarities and differences in mound structures, uses, and locations in the early Iron Age of present-day Southwest Germany, ca. 650–450/400 BCE. Some are located near settlements, others farther away. Some are designed with external features such as ditches, post rows, and stone circles demarcating the ritual space. Others appear individually or in very loose groupings, while others are densely clustered. For mound groups closer to the Heuneburg, one of the larger early Iron Age hillforts in Southwest Germany, constructed between 600 and 530 BCE, no basal demarcation is present. However, the mounds constructed between 530 and 440 BCE and within view of the Heuneburg, include some form of demarcation (Arnold 2002, p. 130). In addition to proximity to large settlements (in some cases), other mounds are usually found located along high ridges and waterways such as rivers (Arnold 1995).

Another study is Buikstra and Charles’s (1999) regional examination of the use of burial mounds in west-central Illinois, primarily along the Mississippi River in the American Midwest. Buikstra and Charles (1999) note that Native American populations used the flood plains and bluff crests as the primary locations for their burial mounds. By the Middle Woodland/Hopewellian period, ca. 2100–1500 BP, rather than placing single mounds along rivers, Hopewell populations began focusing almost entirely on bluff crests that eventually led to formal mounds clustered in linear patterns (Buikstra and Charles 1999, p. 212). Mound designs/shapes changed as well, with some of the later clustered mounds exhibiting more of an oval shape, 100 m in length and 6 meters in height, and located back on the floodplains (ibid.). Other, more recently studied, examples in other parts of the world can be found in abundance in Steinhaus et al.’s (2018) volume on burial mounds. It is important to note that both similarities to and differences from the case studies noted above are found in most regional examples covered in their volume. Geographic location, structural design, and change in use over time seem to be the most common attributes of prehistoric burial mounds, along with the obvious factor, that most mounds contain burials with bodies and grave goods. But this brings us back to the fact that despite geographic and symbolic differences (and similarities), burial mounds should be considered as meaningful material culture regardless of their cultural context or the types of things that they contain.

Despite this admission, I contend that there are still fundamental problems with how we conceptualize, and ultimately investigate, the role of burial mounds in prehistoric societies. One such problem is assuming the scale of action involved in a mound's use, and by extension, the meanings associated with different scales of action. Mike Parker Pearson (1993, 2005) stated numerous times that the dead do not bury themselves, implicating (commonsensically) that a community of living individuals must have not only arranged for the burial (along with any goods deposited with the body) but also that the very same community (or family/kin group) would have come together to build the mound to memorialize/commemorate the deceased individual(s). This has dramatic implications, and we can think of those implications as being multi-scalar. First, initial scales of action can be thought of as local or immediate in terms of proximity. While living individuals (kin or not) may well have traveled various distances to attend the funeral and/or burial, the effect would have remained largely local. This is especially salient in the case of a single mound being constructed, where an immediate kin group likely would have undertaken the post-mortem activities. Local, kin-based involvement can be important when we begin thinking about stratigraphy and how the mound layers might have been added through time, along with additional burials and other features. The mound then becomes emblematic of the types of sociality that the deceased individual(s) participated in when they were alive and again once they were dead. Perhaps the addition of layers to the mound structure is not only symbolic but links varying times and community engagements to these specific accretional locales.

For example, as archaeologists on the Landscape of Ancestors (LOA) Project directed by Bettina Arnold and Matthew Murray, and funded primarily by the National Geographic Society and the University of Wisconsin–Milwaukee (USA), Seth Schneider and I wrote about the connections between “curated” materials like ceramics and their performative relationship with the mound's stratigraphic layers and the audiences of early Iron Age communities of living building and (re)using tumuli in the Speckhau mound group located in Southwest Germany (expanding upon Schneider (2003) and Johnson and Schneider (2013)). In Schneider's (2003) master's thesis, he established that the ceramics in question, a small number of pottery sherds collected from a smashed vessel from the central grave in Tumulus 17 before the grave was sealed, were curated for some 150 years and then added to the last stratum of the mound. We argued that beyond just legitimating durable social positions and venerating ancestors, this curation performatively linked communities over time and space (Johnson and Schneider 2013). What we missed at the time was that performance links “spacetimes”, the connections of experiences, memory, imagination, and possibility in producing engagements with the world around us (Franklin 2021, p. 12), implicating distinct types and scales of social action. Where we fell short in our interpretive framework was reducing the mound itself to a stage upon which performances happened, rather than more fully exploring the role of audiences in terms of meaning making over space and time. In addition, we failed to recognize that for all the discussion of “landscapes”, we treated experiences with a mound or two as representative of landscapes of tumuli.

We were following an ongoing trend in the various iterations of archaeology (anthropological, classical, historical, etc.) that were, at the time, moving toward ideas of performance (Bauman 1977; Goffman 1959), which in turn was leading to archaeologies of performance (Bradley 1998; Joyce 2004; Inomata and Coben 2006; Laneri 2008; Johnson 2009; Pearson and Shanks 2001). More specifically, archaeologists were exploring the “staging” or “performing” of death in terms of burial mounds, which, in turn, became an enduring focus on theorizing social action in relation to the places/spaces of death and burial, not to mention subsequent commemoration (Arnold 2011; Dakouri-Hild and Boyd 2016; Johnson and Schneider 2013; Laneri 2008; Parker Pearson 2005; Panagiotopoulos and Santo 2019). While performance is an intriguing, if not provocative, lens through which to explore the funeral rites associated with the use and reuse of burial monuments in terms of the production of meaning, it also reifies the idea of tumuli as spaces/places, or even stages, where social death is recognized and performed, with the identity of the deceased

celebrated, i.e., status. Interestingly, because of the centrality of the primary–central burial, we, as archaeologists, assume that the meaning of the mound, then, must also center on that individual. But, from a performative perspective, we need to account for how meanings are made and carried away by different audiences, sometimes symbolized by the addition of strata or features to stratum, and sometimes meanings that were created beyond such evidentiary actions.

This brings us back to the quote from the beginning of this article. While not discussing burial mounds per se, Verdery (1999, pp. 26–29) uses the dead body as a locus for political expression and action, protean capacities for meaning making. The quote is a part of Verdery’s discussion of the enchantment of the politics surrounding and embedded in the use of the dead. Indeed, she (Verdery 1999, p. 26) astutely observes, “Where else, I ask, might we look for “politics”, in perhaps unexpected places that arrest the imagination?” Focusing on the body, a growing trend at the time (one which, for the past two decades, has been a compelling topic in archaeology (Boric and Robb 2008; Gramsch 2013; Giles 2013)), Verdery (1999, p. 27) states “Bodies have the advantage of concreteness that nonetheless transcends time, making past immediately present”. Ultimately, Verdery explores the body’s materiality or capacity to create and express meaning. This capacity to generate and express different meanings in various contexts is the heart of what is being discussed. However, rather than the body, the focus here is how burial mounds generate and sustain protean expressions through interactions with them. Questions central to such an undertaking include the following: Does materiality change in terms of differing numbers of mounds? Can landscapes or groups of burial mounds affect spacetimes, or meaning making, in terms of how different audiences experienced the mounds? Finally, how does the visual experience of a single burial mound differ from traversing and viewing landscapes of the dead? Such questions emphasize an important epistemological point that spacetimes created through visual, interactive experiences with a single mound versus a landscape or “cemetery” should be considered fundamentally different or, at the very least, potentially different.

Following this, I come back to the concept of spacetimes, which acts as a natural springboard for exploring the protean nature of burial mounds. Nancy Munn (1986, pp. 10–11) suggests that:

In sum, an intersubjective spacetime is a multidimensional, symbolic order and process—a spacetime of self-other relations constituted in terms of and by means of specific types of practice. A given type of act or practice forms a spatiotemporal process, a particular *mode* of spacetime. Defined abstractly, the specifically spatiotemporal features of this process consist of relations, such as those of distance, location (including geographical domains of space), and directionality; duration or continuance, succession, timing (including temporal coordination and relative speed of activities), and so forth.

Kate Franklin (2021, p. 12), drawing upon Nancy Munn’s (1986) work, notes that spacetimes allow her to think of how the plural worlds generated by the Silk Road were made and subsequently allowed for a shared cultural cosmos, yet co-existing with “difference at multiple scales”. She (ibid.) goes on to describe spacetimes as “happenings; a spacetime is the world of possibilities for actions, thoughts, dreams within it”. The idea of spacetimes is relevant to what is being discussed here as it implicates travel in how people, or *audiences*, experience different things, different worlds (if we think of people moving through these landscapes as being on a spectrum of local and non-local) that must be interpreted, or the meanings of which inferred, usually from our own experiences or “worlds”. The lingering question, then, is how we account for the protean, or mutable, nature of burial mounds as single and group entities. If spacetimes are worlds of possibilities for actions and thoughts, imaginary or otherwise, then we can begin to explore the various and different structural components, scales, tempos, and types of actions surrounding or interpenetrating mound use, and possible reuse, as material culture in single and group instances in the first millennium BCE on the Eurasian steppe.



### 3. Epistemology of Eurasian Iron Age Burial Mounds

#### 3.1. *The Spacetimes of Individual Tumuli: Single and/or Proximate Instances*

In *The Chimera Principle*, Carlos Severi (2015, p. 4) employs Wittgenstein's visual illusion of a rabbit–duck to demonstrate that what one sees (and, by extension, experiences) is largely dependent on how our vision and memory are culturally shaped and usually overlap. Indeed, without any external adornment such as menhir (standing stones) or stelae on top or situated around the exterior of the mound, burial mounds can look (more or less) like natural hills. Interestingly enough, and perhaps this is one of the points Wittgenstein was trying to make, without having much internal detail (or external detail besides an outline) at our disposal, it becomes a matter of experience and memory in terms of identifying one thing or another. In the study presented here, it is much the same, except replacing a hill and burial mound for a rabbit and duck. Severi's point is that without direct experience of the one (ritual and cultural in nature) over the other (being naturally made), we might mistake one for the other. But with cultural memory and imagination firmly in mind via specific ritual events that remind or even emphasize specific spacetimes to certain audiences, we can begin to fill in the burial mound's outline. From a close, exterior perspective, burial mounds reveal little evidence of different intentions in terms of single uses and/or reuse over time (Figure 1). Their outlines, beyond overall size, are often similar if not identical in shape, and from a diachronic perspective with the effects of time taking their toll on mounds (like slumping), match those of natural hills. But these different spacetimes (cultural and natural) are often more distinct at certain times and elusive in others. For instance, the primary difference emerges right after a mound's construction. Following its immediate use, and possibly reuse, the mound lays bare, denuded of most of the vegetation that would have grown on the surface, just as various types of plants take root on hills. Over time, the mound will increasingly take on the appearance of a hill, especially as natural forces and elements take hold. The growth of vegetation, erosion, and slumping might change the shape of the mound and may, in fact, change the internal composition as well, i.e., bioturbation (Figures 1 and 2). We might imagine that at least upon completion, and shortly after, the intentions of the "container" form itself were protean, signaling an artificial form at the start but becoming increasingly naturalized over time, perhaps an artifice to further protect the interior from intentional disturbance, like looting.

Those internal components, however, are what distinguish a hill from a tumulus for the local, and perhaps even regional, living communities. With the durable memories generated and maintained by past, present, and future burial rites, the mounds can be seen as different, fundamentally ritual, forms that persist through time. Severi (2015, p. 4) further notes that the relationship between culture and vision is balanced between narrative (and ritual) speech and memory. This fits well with the past two or more decades of research into burial mounds (or monuments in general) as mnemonic devices, ones intended to encapsulate, if not evoke, memories of past or present burial events, or even those that might happen in the future (Lillios and Tsamis 2010). Yet, somehow it still seems as if the general view of mounds as, at least in design and form, generic containers, and loci for meaningful, "proximate" (near in time and space) activities within persists. For our purposes here, it is worthwhile to return to Goldstein's perspective on multi-dimensionality to extend out from the interior components of the mounds to a broader scale of interaction with landscapes clearly populated by burial mounds.



**Figure 1.** Photo of a tumulus of the Speckhau mound group in Southwest Germany (photo credit: James A. Johnson).

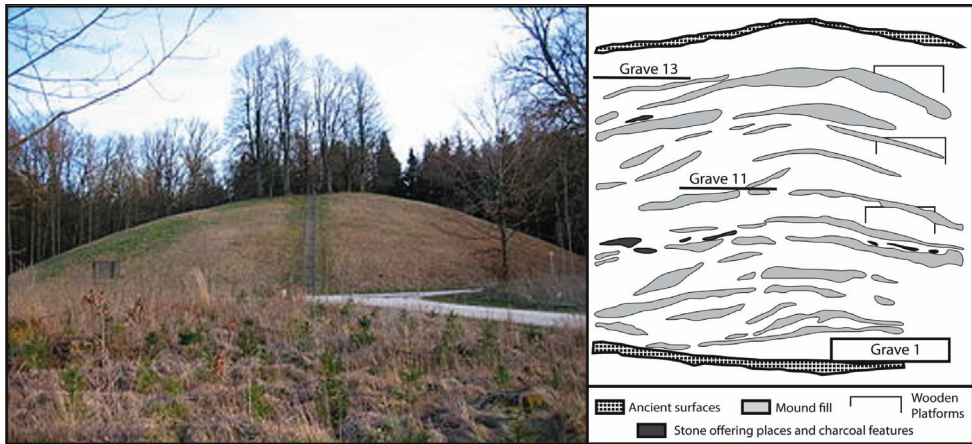


**Figure 2.** Iron Age kurgan in the steppe below the Ural mountain range (photo credit: James A. Johnson).

The issue here is one of methodology and method. By this, I mean our methodology, or the justification for the application of specific methods to research problems, is that we often assume a certain degree of representativeness of one mound and its capacity to stand as a proxy for whole groups of tumuli. Our methods, correspondingly, focus on the excavation of one or two mounds, and often the revealing and reading of the mound's internal stratigraphy. Tumuli, depending on size, scale, and complexity (number and connections between internal, stratigraphically situated components, such as features), can take a field season or more to fully excavate, with each stratum and its constituent parts being treated as separate, but often temporally, if not spatially linked, entities. Thus, stratigraphy, the natural and cultural levels revealed through excavation, with different strata signaled by (usually) differently colored and textured layers of soil and other materials, can often attest to the intentional design and timing of the use of the mound, emphasizing the simple point that the layers below are older than the ones above (Renfrew and Bahn 2008, p. 122). The stratigraphy of burial mounds reveals how (and perhaps why) the mounds might have been used/reused over time. The emphasis on stratigraphy, of course, is highly dependent on the national archaeological tradition of excavation and the equipment used.

For example, the Landscape of Ancestors Project excavated two tumuli (T17 and T18), each one measuring approximately 20 m in diameter and 2 to 4 m in height, over the course of three seasons in Southwest Germany (Arnold 2003). While a small trackhoe was used, the employed method called for shallow (1–2 cm) scrapes, going down gradually, if not incrementally, from the top of the mound to the ancient ground surface, following the mound stratigraphy. Each resultant mound stratum floor and profile was then cleaned by hand, using trowels and tile shovels (Arnold and Murray, forthcoming). This was carried out so that the project could account for any materials that were added to the mound core and fill, and one might go so far as to say that these materials were forms of temper (cultural additives) for the mound. Hundreds of pottery sherds were recovered ( $n = 1086$  sherds), with dozens appearing in each of the mound "floors" or plana that were cleaned, while others were found in various mound features including the burials. Pottery sherds were mapped, collected, and later analyzed (Schneider 2003). Of course, during excavation, graves were identified and excavated, as well as other small ritual features, including but not limited to small charcoal "packets" and charcoal stains with pottery, not to mention larger places of burning adjacent to the central burials (Arnold and Murray, forthcoming; Schneider 2003). Despite an identical methodology in place for the 2000 season excavations of T17 and then the 2002 season for T18, the internal components of the mound strata, especially in terms of materials present in the mound fill, were different (Arnold and Murray, forthcoming). But, in both cases, the mound stratigraphy was complex, revealing socio-cultural nuances in the use and reuse of the mounds over time, with their earliest use dating to between 650 and 600 BCE. In fact, despite the haphazard and partial excavation of the Hohmichele mound (the second largest burial mound in central Europe as well as the largest in the Speckhau mound group) (Figure 3), the stratigraphy of the Hohmichele mound, as complex and nuanced as T17 and 18, seems to have played an important role in terms of symbolizing community investment and participation over decades, if not generations, but later than the other two smaller mounds. Such matters are pertinent to the discussion of Eurasian Iron Age mounds as there are both similar and different foci in terms of the methodologies and methods involved in the excavation of the mounds and the widespread interpretations of single monuments as proxies for much larger groupings, or even landscapes, of funerary monuments like tumuli.





**Figure 3.** Image of the Hohmichele mound (reconstructed) and profile drawing (adapted from Johnson 2016).

In the case of the earliest examples of Eurasian Iron Age mounds, Arzhan 1 and 2 stand out. While, as burial monuments, there are clear similarities, such as each monumental form being at its core a ritualistic monument where burial rites took place, there are also clear differences between the burial mounds of Iron Age West-Central Europe and the burial monuments of the eastern Eurasian steppe, especially in the Tuva region and the Altai and Sayan mountain ranges. Arzhan 1, excavated in the 1970s by Mikhail Gryaznov, is composed of a reinforced stone foundation or platform, 100 m in diameter and 3–5 m in height, covering a wooden structural complex beneath (Bokovenko 1995a, p. 265; Parzinger 2017). The monument contains numerous and varied burial chambers, with the best known among them being Chamber 1—the “Tsar” and “Tsarina” burial. Dendrochronology conducted on the chamber planks and beams indicates that the monument was used as early as the end of the 9th century and early 8th century BCE (Parzinger 2017, p. 38), one of the earliest Iron Age monuments dated so far. Another nearby burial monument, Arzhan 2, is similar in design style but with a slightly later date close to the 7th century BCE. Arzhan 2, excavated in 2000–2003, also has a stone platform or foundation over the top of the burial chambers, like Arzhan 1 (Chugunov 2020; Parzinger 2017, pp. 338–39). Parzinger (*ibid.*) further notes that of the hundreds of Iron Age burial mounds ascribed to this period, only four were built using these types of stone platforms, with the mounds distanced 3–4 km from each other and arranged in a row. I am especially intrigued by his (*ibid.*) suggestion that “Members of this rider-nomad ruling class were buried in Arzhan over a longer time span; perhaps the beginning of dynasties even developed there”. Maybe even more than a “ruling dynasty”, this was the beginning of a monumental tradition, one which was intended to protect and/or make durable the monuments themselves and, by extension, their associated spacetimes. This tradition, the use of stone, became increasingly associated with the broader tradition of Iron Age tumuli, including those of the Scythian epoch to the west, even as its use declined in scale through time (and geographic space) as the overall custom of mound use became more widely used westward across the steppe.

In the eastern Altai Mountains, adjacent to the Tuva region, the well-known Pazyryk mounds (Mounds 1–5) were discovered and excavated; the first (Pazyryk 1) between 1925 and 1929 by M. Gryaznov, and the other four (Pazyryk 2–5) between 1947 and 1949 by Sergei Rudenko (Bokovenko 1995b; Rudenko 1970). Rudenko (1970, p. 14) notes that all the larger Pazyryk tumuli were composed of “low earthen mounds covered by cairn of rocks” and were likely to have been in use in the 5th century BCE, although Rubinson and Linduff (2024) suggest a broader date range for the culture and its burial monuments, ca. the 5th to 3rd centuries BCE. Rudenko further notes (*ibid.*) that small tumuli were likely to



be 13–15 m in diameter and medium mounds to be 24 m in diameter, and that the great barrows of Pazyryk were between 36 and 46 m in diameter. Rudenko also stated that the ratio of height to diameter was 1:10, indicating that the height of the barrows likely fell between just over 1 m to just under 5 m. Much like with the mounds of Arzhan, what we are primarily interested in is not so much size, except as it relates to stratigraphy. In the case of both the Arzhan and Pazyryk mounds, despite one group (Arzhan) being much earlier than the other (Pazyryk), there is a clear architectural style or tradition being maintained, one that focuses less on the reuse of the mound and the resultant buildup of stratigraphy emphasizing each mound's single use and then capping with the stone covering of the lower earthen level.

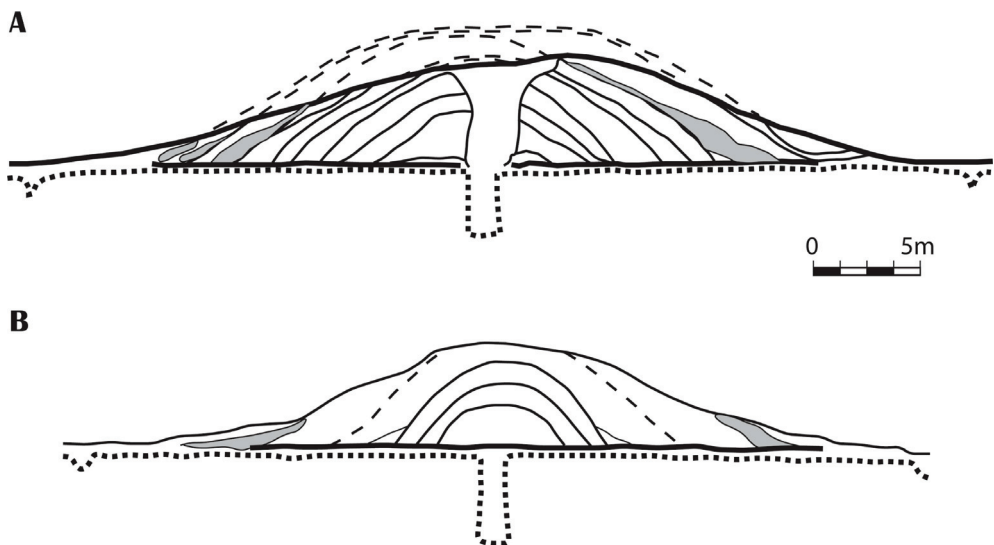
An interesting transition in mound design happens as one moves out of the permafrost-affected areas of the Tuva and Altai/Sayan regions and into the steppe grasslands to the south and west. There is a general shift away from stone cairn-capped tumuli to the use of earthen mounds over large central (and sometimes secondary) burials, with secondary uses of the stone. At the Issyk cemetery approximately 50 km east of Almaty in Kazakhstan, some 45 tumuli were found. These 4th- to 3rd-century BCE tumuli measure between 30 and 90 m across and 4 and 15 m in height (Satubaldin et al. 2020). Satubaldin et al. (2020, p. 503) describe the excavation of an unlooted mound, 60 m in diameter and 6 meters in height, as revealing that the tumulus had been built up over time in three or four stages, consisting of pebbles alternating with crushed stone and clay. This type of stratigraphy is reminiscent of, at least in part, the tumuli design and construction materials used earlier and to the east. Another well-known burial complex, the Taksai cemetery, in Northwest Kazakhstan is located just below the Ural mountain range and consists of numerous groups of mounds, including Taksai 1. This mound group comprises six mounds that form an interrupted or jagged row, with the excavated mounds dated to the 6th–5th centuries BCE (Satubaldin et al. 2020, p. 498). In the case of the Taksai 1 mound group, the excavations of the mounds revealed that their primary construction material was soil. If this is the case, then some time and somewhere between the construction of Issyk and Taksai, the burial mound design in terms of construction materials, and, possibly, stratigraphy in terms of the use and reuse of the monuments, may have shifted. This is a generalization, but one worth noting.

Moving further west, the Kelermes mound group—without a doubt one of the best-known Eurasian Iron Age, if not Scythian epoch, cemeteries on or adjacent to the steppe of the North Caucasus region—has been the subject of study for multiple decades. Ryabkoba (2020, p. 484) suggests that the earlier mounds of the group should be dated to pre-670 BCE and possibly even into the 8th century BCE. The later mounds, she thinks, should be dated to sometime between 650 and 600 BCE, although she does add the caveat that there are different perspectives on the dating of the mounds. Unfortunately, there are not as many descriptions of the mounds themselves in the broader set of publications, especially since many of the tumuli were excavated in the late 19th century, with a focus on the grave goods found in the mounds' burials. That said, there is some indication that the mounds themselves were constructed with soil, whereas the burial chambers consisted of wood, and, in nearby tumuli (Sultan-Bryk Kurgan), there is evidence of ashlar masonry (Galanina 1997; Parzinger 2017).

With the steppe ending for the most part in central and southern Ukraine, it is not surprising, then, that some of the largest and “richest” tumuli are found there, especially in the 5th–3rd centuries BCE. The Scythian epoch tumuli of the northern Black Sea steppe range in size between 10 m and 150 m in diameter and between 2 m and 25 m in height. Aleksandropol, the largest excavated kurgan, was the first “royal” Scythian mound to be excavated purely for scientific purposes between 1852 and 1855, with subsequent excavations continuing up to 2009 (Polin and Daragan 2020, p. 444). Other royal, but smaller, mounds include the Solokha, Chertomylyk, and Tovsta mohyla, among others. Aleksandropol stands out though, not only because of its massive size and complexity in the lower structural design, i.e., burial chambers, but also its later date (probably up to

the end of the 3rd century BCE) and its construction materials, including turf sods, i.e., humus, with the sod mound covered by a layer of stone “cladding”, or tiling, covering its sides up to the top (Polin and Daragan 2020, p. 463). Because of the early excavations, the information regarding its upper stratigraphy remains somewhat uncertain. However, other tumuli provide some insight into the importance of the relationship between the mound and its construction/use phases beyond being a monumental top for the burials beneath.

The Vodyana and Babina tumuli, both excavated in 1986, offer insights into how Scythian epoch tumuli can offer insights into the construction, use, and reuse phases of mounds (Mozolevskiy and Polin 2005). In the case of Vodyana (Figure 4), there is clear stratigraphy and, however slight but useful, the use of stone packing around the edge of the mound to protect it from major slumping, though this does not necessarily imply diachronic use. As we can see in Figure 4, this was only partially successful as the mound itself looks to have experienced some run-off and slumping from layer 4, which contained the stone packing at the base. In the Babina mohyla, again there is clear stratigraphy, seen in the numerous additions to the original mound, with several of those additional layers propped up by the stone packing around the slopes and bases in at least the last two or three strata. Also, in Figure 4, you can see that at least one of the outer layers would have consisted not only of a stratum of soil or humus but also of stone tiling, similar to what was recorded for Aleksandropol (Mozolevskiy and Polin 2005, p. 96).



**Figure 4.** Scythian period burial mound stratigraphy. (A)—Babina (after Mozolevskiy and Polin 2005, p. 96) and (B)—Vodyana (after Mozolevskiy and Polin 2005, p. 74).

Of course, there is so much more to be said about mound design and, of interest for many of the readers of this Special Issue, the relationship between the design and the contents of the mounds. I have intentionally skipped over discussing the burials and the goods from within the mounds in each of the regional examples, not because the burials and grave goods are unimportant but because very few, if anyone, questions their status as material, or even visual, culture, not to mention that the mound burials and their contents are covered in great detail in numerous regional publications and I explore them in a forthcoming piece (Johnson, forthcoming). But the mounds themselves, and when I say this, I mean the mound structure on and above the ancient ground surface would have been as important as the burials. From those in the Tuva and Altai (and Sayan) regions, with their stone platforms consisting of thousands of stones built into a mound over the primary–

central and secondary, non-central burials, to those in Kazakhstan, where soil and some stone tiling appear in the North Caucasus region and the Kelermes mound group, where, again, the mounds appear to be a mix of soil/sod and stone. Finally, we end up in the northern Pontic steppe/lower Dnipro region, where many royal tumuli appear, attesting to that potent mix of sod and stone in the design of Scythian tumuli. But, unlike some of their predecessors, some relatively intact mounds, at least before excavation, demonstrate a clear tendency toward a staged construction design visible through the addition of multiple layers or strata in the Vodyana and Babina mounds, but not quite as clearly at the Soboleva mohyla (Mozolevskiy and Polin 2005). There are some major differences in mound designs, seen in the ancient efforts to protect the mounds from looting and natural forces (slumping, etc.), as well as the buildup of the mound itself over time. But the meaning for each mound would have been localized, as only the community members that were a part of the burial rites and construction of the mound would have had insight into each mound's particular structural design.

This is also an epistemological problem for archaeologists as, again, we tend to treat the mounds that we excavate as stand-ins for the ones left uninvestigated. This, in turn, creates a kind of hyper-focus on the immediate or local perspective, whereby we tend to emphasize the connection between what is within the mound and, more often than not, mound size. Up to this point, I have focused on how the Iron Age steppe mounds from the Tuva and Altai/Sayan regions in the east compare with those in the west (Central Ukraine) and might be considered material culture more broadly. But I have left their possible status as visual culture relatively unexplored, at least beyond the immediate or local sense. To undertake this, I come back to the idea of spacetimes, where each mound, and, in some cases, mound strata, would have had its own relational spacetimes associated with it. But, again, this emphasizes, if not (over)privileges, a more proximate sense of meaning making rather than accounting for how not only single mounds or groups but also landscapes of tumuli might have been experienced and, ultimately, produced various meanings.

Again, I draw inspiration from Franklin (2021), employing the work of Mikhail Bakhtin (1981) to help elucidate how and why spacetimes become not only possible lens through which meaning is inferred from the presence of a single burial mound or groups of them, but also a potent political tool upon which observers of the mounds, especially in greater numbers and densities, could have experienced a shared, multi-scalar collection of meanings. Even as Franklin (2021) discusses the concept of spacetimes and worlds connected through the different times/chronotopes of Bakhtin, all integral to her idea of everyday cosmopolitanism (and travel) in medieval Armenia, I draw upon Bakhtin's ideas of novelization to illustrate how meanings may have changed depending on the participants, travel route, scale, and visibility.

### 3.2. *Beyond the Proximate: Engagements with Scythian Period Tumuli as Visual Culture*

As a theorist of the novel, Bakhtin (1981, p. 7) was especially interested in how different meanings could be extracted from the same text via the process of novelization. When discussing the novelization of genres, he stated that:

They become more free and flexible, their language renews itself by incorporating extraliterary heteroglossia and the “novelistic” layers of literary language, they become dialogized, permeated with laughter, irony, humor, elements of self-parody and finally—this is the most important thing—the novel inserts into these other genres an indeterminacy, a certain semantic openendedness, a living contact with unfinished, still-evolving contemporary reality (the openended present).

Indeed, Bakhtin is most strongly associated with two concepts that grew largely out of his work on novelization: heteroglossia and dialogics. Heteroglossia is commonly understood to be two or more voices expressing viewpoints regarding a text or other work of art. With dialogics, there is a clear overlap as it basically contends that by using conversation or discourse, those involved can explore the meaning of...something (text, art, etc.). One of the best examples I can think of is a personal anecdote, concerning my

brother's first gallery showing of his art. Before the gallery opened, he said to me that he wondered if the audience would comprehend the meaning of his work. I responded that it was more important for the audience to feel that they could derive their own meaning of the work than reduce the work to a single meaning, even that of the artist. Even though this is a personal story, its lesson (at least for me) rings true. In this case, the process of novelization, according to Bakhtin (1981), is rooted in open-ended imagination, as groups of people will experience the novel and bring to that experience their own background stories, identities, and understandings of the world (spacetimes). That said, the flipside of the novelization coin is the *epic*, which Bakhtin saw as connected to a national, heroic past, full of peak times (firsts and bests) (Bakhtin 1981, p. 13). He (ibid.) states that, "The world of the epic is the national heroic past: it is a world of "beginnings" and "peak times" in the national history, a world of fathers and founders of families, a world of "firsts" and "bests". The important point here is not that the past constitutes the content of the epic. The formally constitutive feature of the epic as a genre is rather the transferal of a represented world into the past, and the degree to which this world participates in that past.

This is where the hyper-focus on single mounds comes into methodological, and possibly epistemological, play. Archaeologists tend to valorize the deceased found in the earliest mounds and then elevate their status through the number and types of goods with which the individual was interred. This is then reified by connecting it to mound size. I am not saying that it is necessarily wrong to make these assumptions, but, rather, I am suggesting that there are other dimensions that might be equally relevant when studying tumuli, especially Scythian period mounds.

Even though as archaeologists, we cannot always rely on texts (and sometimes we should not, even when they are available) or treat material culture as text *sensu* Tilley (1991), there is a potential here to use the understanding of spacetime in tandem with heteroglossia, brought together in a dialogical approach to more fully explore the meaningful worlds of the Eurasian Iron Age and, more specifically, Scythian epoch burial mounds. For instance, we might think of each mound and its contents as being related more to the epic than the process of novelization. For both ancient groups and the archaeologists who excavate their activities, we are talking about the application or transferal of a "constructed world" into the past, which, in turn, shapes how that world engages with the past. Each successive stratum, then, is an encapsulation of that world in the past, including the burial chambers below the mound itself, and is often framed within archaeological discourse as "beginnings", "origins", and "firsts", if not "bests". This might, too, have held true for community members on the local or proximate scale, as they interacted with the monuments containing the dead on a regular basis, i.e., often involving periodic ritual events. On another scale, we can think of the production of whole landscapes of tumuli as a form of novelization, where meaning making was open-ended and left to the imagination of the viewer, visitor, audience member.

A key component for this type of framework is not just the treatment of mounds as examples of material culture but also tumuli as fundamentally *visual* culture. While often beyond the traditional purview of archaeologists, visual culture, at least in the terms of Marita Sturken and Lisa Cartwright (authors of *Practices of Looking*), focuses on the shared practices of a group, community, or society, through which meaning is made from the visual, aural, and textual world of representations (Sturken and Cartwright 2001, p. 3). In other words, at play here are aspects of culture that are captured, framed, and expressed via visual imagery. In this case, I treat tumuli as visual culture due to their representativeness of an evolving intersection between multiple pasts, the present, and open-ended futures encapsulated in sometimes visually compelling imagery that unfolds as one travels through "produced" landscapes of the dead. But, unlike modern or current uses of *visual culture*, utilizing the conceptual framework to explore the distant past requires some use of the imagination and a focus on the possible rather than the provable.

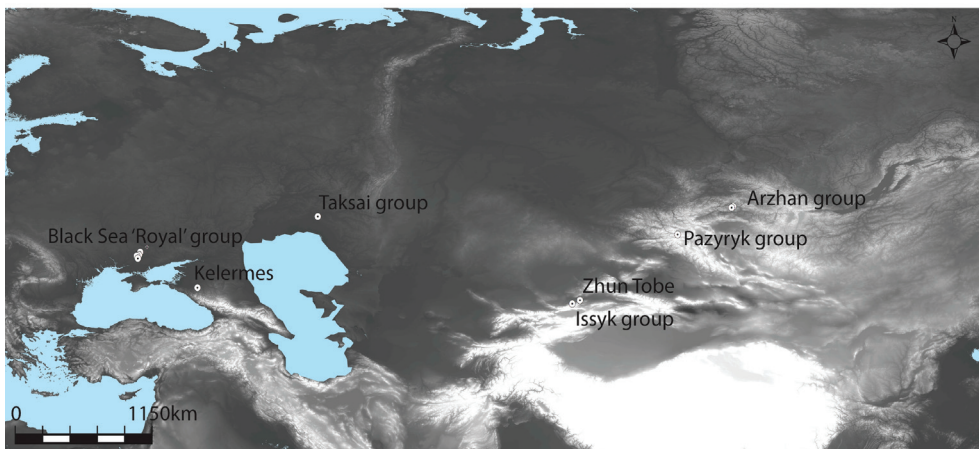
For example, we can certainly discuss the arrangement of Iron Age burial mounds in the area surrounding the Heuneburg hillfort in Southwest Germany. Some of the



mound groups identified in that landscape are arranged in such a way as to indicate certain ways of moving through the mound group and/or broader landscape (Arnold 2010, 2011; Johnson 2016). However, I think the Via Appia Antica or “Appian Way” is a striking, if not provocative, example of funerary monuments situated on a travel route. Along with the movement of people and goods to and from ancient Rome (beginning in 312 BCE), the road became a focus for different types and sizes of funerary monuments celebrating or commemorating a range of individuals from various classes, elites–sub-elites or commoners (Borg 2019; Toynbee 1971). While the Appian Way is usually discussed in terms of it being the location of specific funerary monuments, it is rarely discussed or investigated collectively (in terms of the monuments), nor is it connected to broader social changes, such as the eventual transition from the Roman Republic to the Roman Empire. What seems clear is that while each monument can be individually engaged with by both travelers to and from Rome, not to mention by modern scholars, traveling through what can only be considered a landscape of the dead before entering or after leaving the city surely was a meaningful, if not protean (and profound!), “gateway” visual experience. I believe that this type of structured, or produced, visual engagement may have also been in play with the use and location of Iron Age steppe tumuli. To help explore this notion, I use viewsheds as a window into how and what could be seen, moving from the earliest stone-built tombs of the Arzhan groups to those constructed primarily of soil and sod culminating in the densely populated landscapes of royal and non-royal Scythian tumuli that dominate the lower Dnipro region of central Ukraine.

### 3.2.1. Travel, Visibility, and the Eurasian Iron Age Burial Mounds

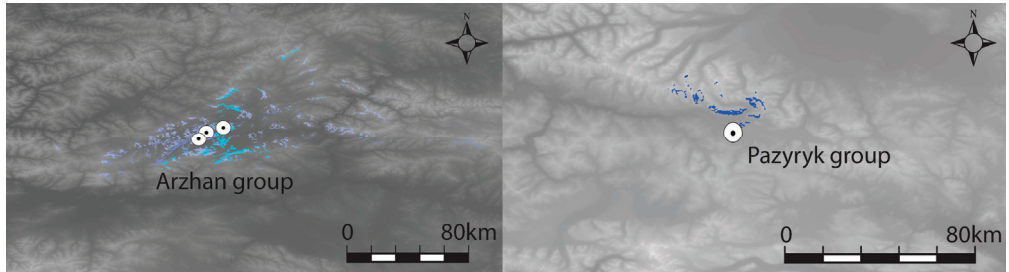
While I spent much of the previous section discussing the binary character of the “epic” and “novelized” nature of mounds and their stratigraphy (when present), I did not explore one of the most basic considerations of Eurasian Iron Age burial mounds from across the steppe: their size and location in relation to their visibility. Following the comparative work already done on Iron Age mounds across the steppe (Ochir-Goryaeva 2014; Parzinger 2017), I focus on the scalar nature of the visual engagements with such mounds from the Tuva–Altai–Sayan region to the lower Dnipro of central Ukraine (Figure 5). I used Viewshed Analysis (ESRI/ArcGIS 10.8.1) to explore how visible some of these monuments would have been, moving from the local/proximate scale to the regional and the supra-local/pan-regional scales. Of course, the hope was that patterns in visibility would emerge, and if not patterns, then at least some compelling points related to location could be more thoroughly explored.



**Figure 5.** Map of the Eurasian steppe Iron Age burial mound sites and areas analyzed in the following section (map produced by James A. Johnson).

### The Arzhan Group and Pazyryk Groups

While the image depicts the collected viewsheds from three monuments of the group (Arzhan 1, Arzhan 2, and Tunnug 1) (Figure 6), there is clear indication that the mounds within the group, while several km apart, could have been seen from up to 80–120 km away, representing a regional engagement in terms of visibility, memory, and cultural imagination. Located in the Tuva region, Iron Age pastoralists would not have had to travel too far to find a vantage point within the immediate or even extended area to visually engage with the mounds, with the viewsheds themselves being suggestive of a broader east–west orientation.

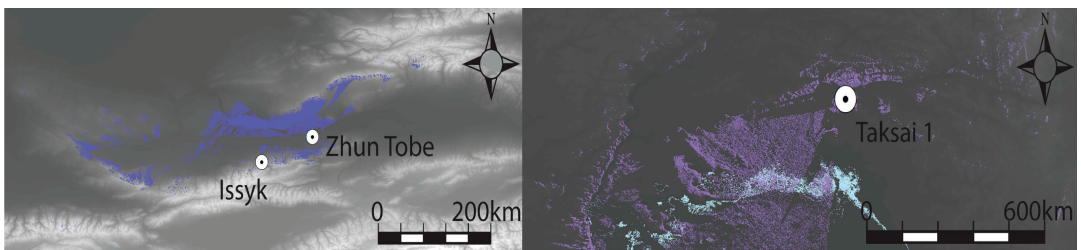


**Figure 6.** Viewshed analysis of the Arzhan mound group, including Arzhan 0/Tunnug 1 (per Caspari et al. 2018), Arzhan 1, and Arzhan 2 to the left and the Pazyryk group/Mound 5 to the right.

In the case of the Pazyryk group, I chose Mound 5 to explore its visibility. Located in the Pazyryk Valley of the Altai Mountains, the general visibility of the mounds is somewhat restricted by the valley slopes and surrounding mountains, perhaps indicative of a (micro)regional sub-culture, as mentioned by Rubinson and Linduff (2024). That said, there is a clear ridgeline atop the valley running east–west from which the mound/mound groups could clearly be seen for at least a few dozen kilometers, perhaps indicating a pathway to the mound group itself.

### The Issyk, Zhun Tobe, and Taksai Groups

Moving west, the Issyk and Zhun Tobe mound groups reveal some interesting patterns in terms of visual engagement (or lack thereof) (Figure 7). For the “royal” grave of Issyk, a mound that is part of a larger mound group, the visibility is limited due to the steep slopes of the surrounding hills and mountains, not unlike the Pazyryk Mound 5. The viewshed for Zhun Tobe, however, reveals a much larger field of visibility, one that rivals those of the Arzhan group. With an overall east–west orientation, the Zhun Tobe mound would have been visible from a great distance given certain vantage points, indicative of a regional or supra-local visual engagement.

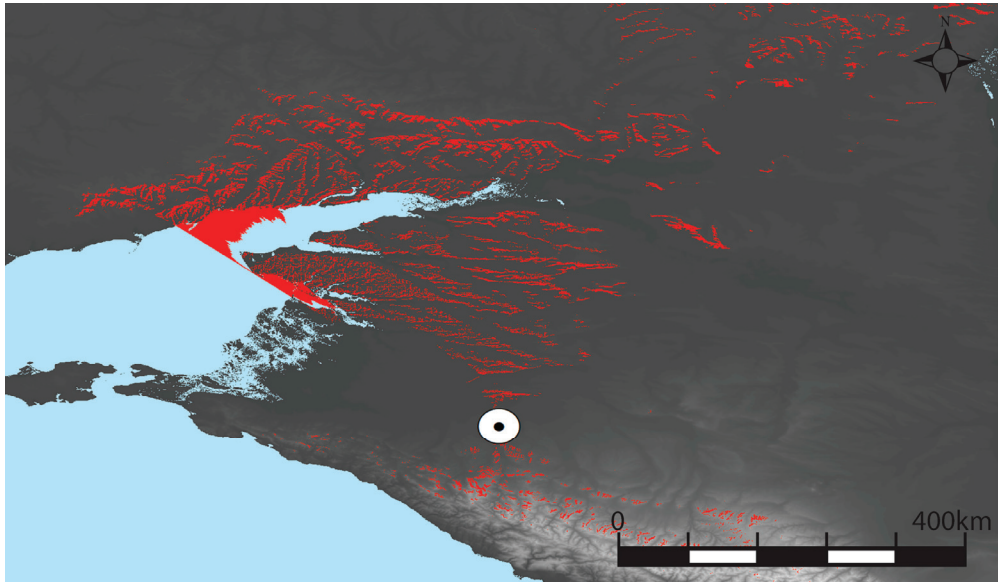


**Figure 7.** Viewshed analysis of Issyk and Zhun Tobe with the visible viewshed generated from Zhun Tobe. To the right, is the viewshed of Takasi 1.

Moving west across the steppe, the Taksai mound group in Northwest Kazakhstan, situated right below but slightly to the west of the southern extension of the Ural Mountains, reveals a dramatic change in the amount of area visible from the mound and general orientation. The mound, made up primarily of soil/sod, has a viewshed that initially starts more locally and regionally east–west, but becomes pan-regional to the south along the Caspian Sea and terminating on the slopes of the North Caucasus mountain range. This is likely due to being squarely on the steppe grassland where visibility increases a great deal.

#### Kelermes Mound Group

The Kelermes mound group, located in the foothills of the North Caucasus mountain range, has a blocked view to the south but one that opens to the north, where some of the coastlines of the Azov Sea are visible, as well as the steppe grasslands to the east and west (Figure 8). Given the designation of the Kelermes mound group as “royal”, it makes sense that its viewshed would be much larger than others. At the same time, the Kelermes mound is an anomaly, given that even as we move west across the steppe, we also move up through time. But with Kelermes, we return to the 7th century BCE, slightly after the Arzhan group (for the most part), but earlier than most of the other mounds discussed here.



**Figure 8.** Viewshed of the Kelermes mound group in the foothills of the North Caucasus mountain range.

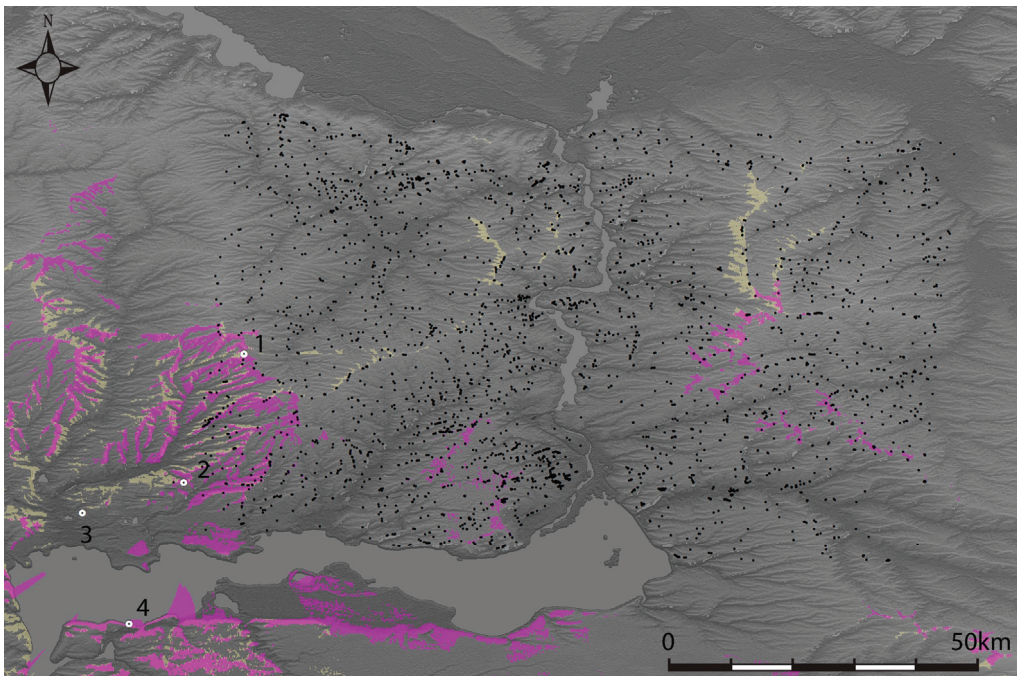
Leading up to the royal mounds of central Ukraine, some patterns become visible. For the most part, the areas of visibility around the Iron Age, probably Scythian epoch, mounds can be thought of as moving from a predominately local and regional focus in the mountainous areas of the east to a regional and pan-regional focus on the steppe grasslands further to the west. This is to be expected, as hilly and mountainous areas highly restrict visibility in various directions. But the fact that the mound-building traditions change from being stone-focused to soil/sod-focused, with smaller stages or phases of stone additions complementing the changes in visibility, suggests that there are some general, changing trends as we move through space (to the west) and time (from the 8th century BCE onward). It should also be noted that while I chose the mounds to be analyzed in terms of their location and visibility, for the most part, their selection was based (more or less) on a line moving from the Arzhan group to the tumuli of central Ukraine. In just about all the



instances mentioned here, we are talking about single mounds chosen from smaller groups of tumuli, often containing from up to ten or so mounds to large cemeteries containing 60–70 mounds.

#### Scythian Royal Mounds of the Lower Dnipro River Region of Central Ukraine

It probably makes a great deal of sense to start with one of the largest mounds in the Scythian world, and that is Aleksandropol. The visibility associated with Aleksandropol is nearly unprecedented as it offers a commanding view of the Black Sea region. The mound itself, which would have been some 22–25 m high, would also have been visible for some distance, representing a much greater field of visual engagement with the mound. It would have towered over its neighboring mounds in the lower Dnipro region and was likely related to a large Scythian settlement. Even though Aleksandropol's viewshed is nearly unprecedented in size, Chertomlyk, another of the famous royal Scythian mounds, has a nearly identical viewshed in terms of scale and the field of visual engagement centered on that location. In each of these two cases, both overlook the entirety of the immediate Black Sea region and some of its adjacent areas (Figure 9).



**Figure 9.** Combined viewshed analysis of Aleksandropol (no. 1, in light brown) and Chertomlyk (no. 2, in purple). Nos. 3—Tovsta Mohyla and 4—Solokha did not have viewshed analysis conducted on them. Black dots are Scythian burial monuments with visible mounds (sometimes, each dot represents groups of mounds due to their proximity).

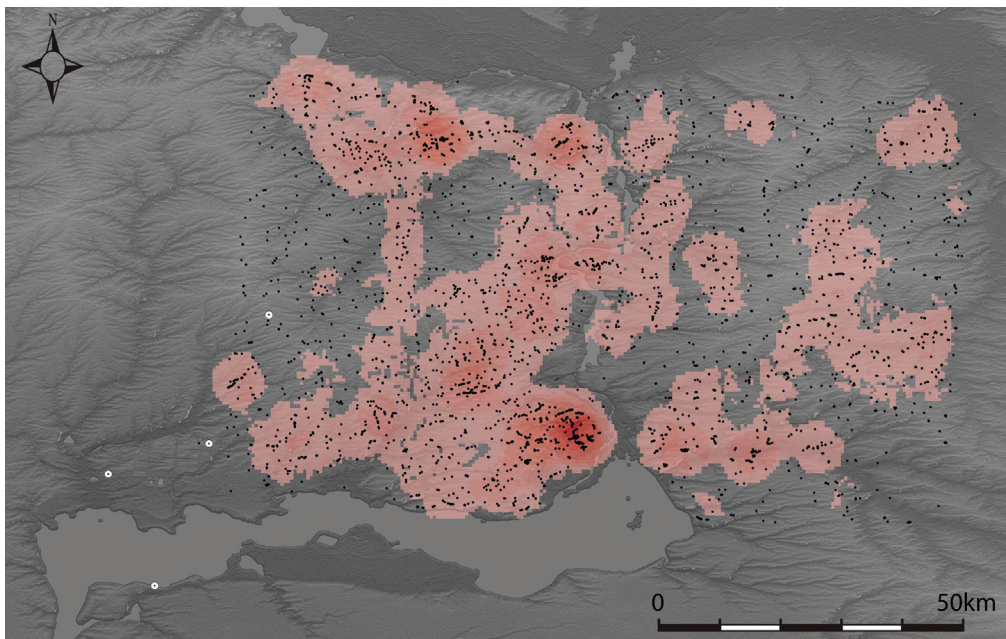
As compelling as those viewsheds are, the patterns we have identified as we move west across the steppe, with the viewsheds becoming ever larger along with the mound themselves, generate some testable hypotheses regarding the “wealth” found within the mounds, the sizes of the mounds, and their viewsheds. Yet, we still have not discussed much about how the mounds might be seen as visual culture beyond the local, proximal, or even regional audiences/communities. Indeed, while I have mentioned several times movement across the steppe, what is missing is the visual engagement with not only



the mounds themselves but also the connection between movement/travel and visual engagement as travelers move through landscapes densely populated by Scythian tumuli.

For this purpose, a grid was created in Google Earth Pro, using satellite imagery of central Ukraine, and the lower Dnipro region more specifically, from the Chertomlyk mound extending to the bank of the Dnipro River to the north, south, and east, and then onto the opposite bank of the Dnipro for an approximately equal distance. In the end, the grid contained some 120 squares, covering an area of approximately 18,000 sq. km. This was carried out to help identify the presence of Iron Age “Scythian” mounds within each square and explore how this might happen using a widely available program like Google Earth Pro. This was also in large part driven by the some of the compelling work that Marina Daragan (2013, 2016; Polin and Daragan 2020; Polin et al. 2020) has been undertaking with Geographic Information Systems (GIS) in relation to Iron Age cultural phenomena. I was likely more conservative in my identification of Scythian mounds; however, I only counted those tumuli with visible mounds, rather than counting the monuments with no mounds but clearly visible sub-surface architecture, including circular ditches. As it turned out, an analysis of the grid squares yielded a total of 3474 Scythian burial mounds (Figure 9).

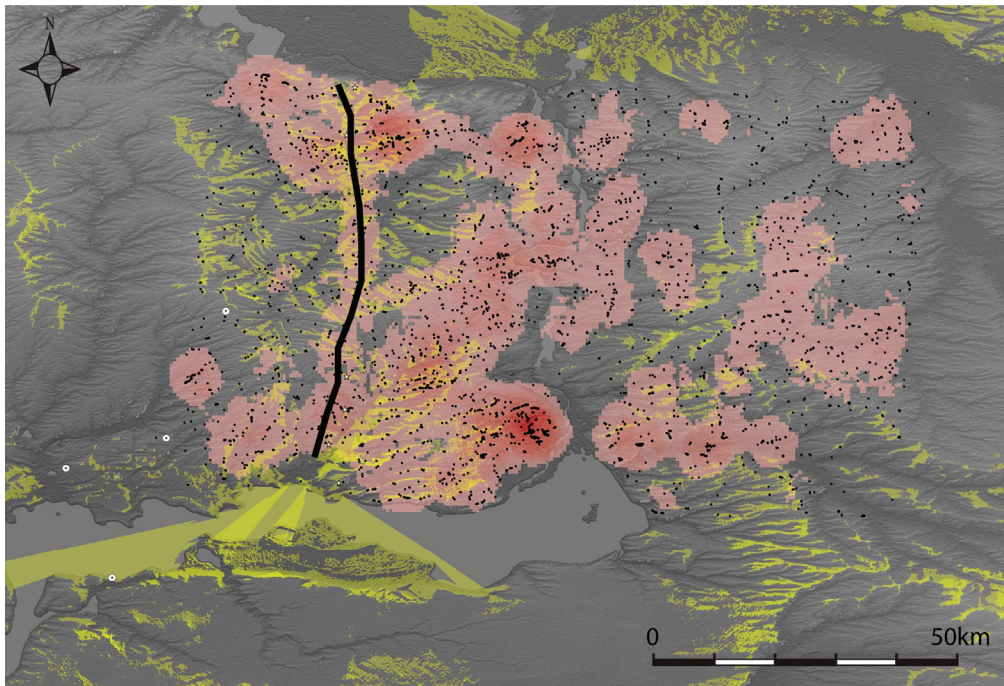
Of course, this must be taken with a grain of salt as some of the mounds might not be Scythian in date or nature, not to mention that there are numerous villages, towns, and cities that may well have been built on top of the Scythian mortuary landscapes. But, overall, the method proved successful in terms of offering an insightful, if not provocative, picture of just how densely populated the lower Dnipro region is with Iron Age Scythian burial mounds, which also correlates well with Daragan’s work mapping out the micro-region around Aleksandropol (Polin and Daragan 2020, p. 468). Beyond just putting dots on the map, I also ran the point density tool in ArcGIS to better determine clusters (or neighborhoods with densities of points) (Figure 10).



**Figure 10.** Lower Dnipro region/Scythian mortuary landscape with point density plots.

What came of this painstaking work was not only a better idea of just how densely packed the broader lower Dnipro landscape was with Scythian mounds, but also that they would have been nearly impossible to avoid seeing depending on the travel routes used. In

a previous publication (Johnson 2020), I mapped out possible trade/travel routes between the forest-steppe hillforts/fortified settlements (such as Bil'sk and Trakhtemirov) and the Greek colonies along the Black Sea coastline using the tools associated with least-cost pathways using ArcGIS. I did not weigh the pathways (in terms of known obstacles). But one of those pathways stood out, moving from one part of the lower Dnipro to the southern part of the Dnipro (Johnson 2020, p. 206). Whether or not that “pathway” would have been used, it was a surprise to see that once the point density tool was run on the identified Scythian mounds, a line in approximately the same place running north–south appeared. This, then, sparked my interest in wondering how many mounds would be visible if one were to travel through this dense landscape of Scythian mounds. To better assess this, I placed points (symbolized by orange stars) at approximately equal distances from each other running from the north to the south. I then ran viewshed analyses based on each of these points. The results can be seen in Figure 11, indicating that as you move either north–south or south–north along the black line (which covers the orange stars), it would be nearly impossible to avoid visually engaging with this densely packed landscape.

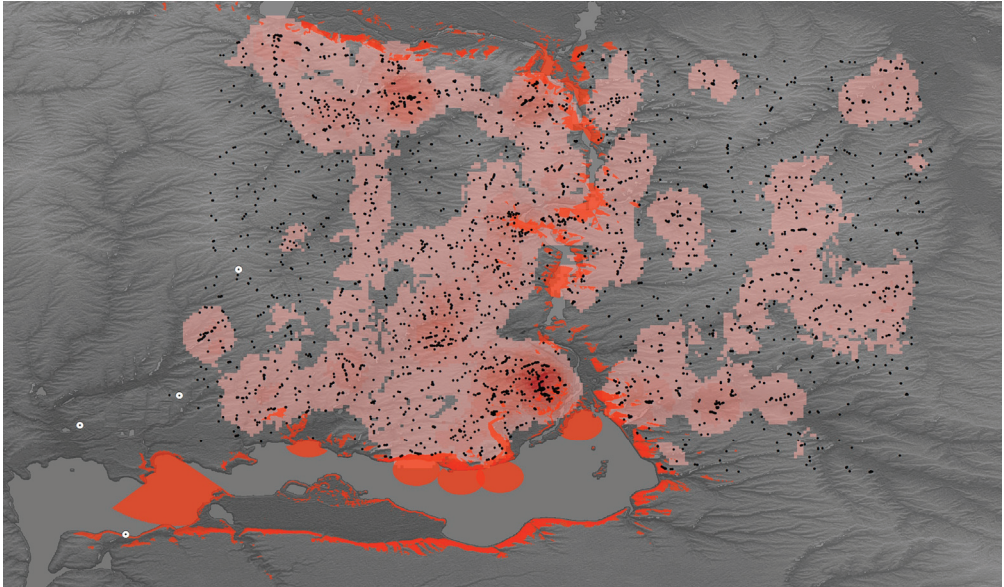


**Figure 11.** Viewshed analysis (in yellow) of ten points spread equidistant from within the Scythian point density mound landscape following the previously identified route (identified with a black line) (Johnson 2020).

Each mound, singly, would have been less important in relation to the cumulative effect. This experiment also led me to question how many of the mounds might be seen from a river-based pathway following the Dnipro downstream to the Black Sea Greek colonies. To examine the possibility of a similar visual engagement, I placed white stars along the river and ran viewsheds based on their locations (Figure 12). This did not yield the compelling picture that the overland route generated in terms of numbers of mounds, but it does suggest that travelers along the Iron Age Dnipro most likely would have been aware they were moving through this monumental landscape, as the viewsheds focused almost exclusively on the Dnipro River shoreline and yet still showed visual engagements



were possible with the tumuli. Both routes and their viewsheds indicate that travelers would have been acutely aware of the fact that they were traveling through this “produced” Scythian landscape.



**Figure 12.** Viewshed analysis (in solid orange) of 15 points along the Dnipro River moving north–south with the point density-analyzed Scythian mound landscape in black dots and density/heat clusters in reddish orange.

As archaeologists, we can think of how impressionable and memorable individual funerary monuments may be, especially as we excavate them. But to see a landscape so densely populated with these monuments would have been quite a distinct experience. The experiences of the mounds, and the meanings generated through those engagements, would have been highly dependent on the background (ethnic, cultural, age, gender, etc.) of the viewing audience. For non-locals (maybe Greek travelers/traders or those from the forest-steppe urban centers), the densities of these mounds in this region alone would have been less about firsts and origins, and more about scale, if not the scope of the landscape, creating durable memories from what could probably be considered an uncommon experience in an unusual place by different travelers.

#### 4. Discussion and Conclusions

My contribution to this Special Issue is primarily meant to be more of a heuristic stepping stone, one that builds upon the exceptional work already being undertaken within the Institute of Archaeology in Kyiv, rather than setting out to conclusively demonstrate a new solution to an old problem. I have spent the better part of two and half decades (on and off) working on issues related to burial mounds and, more recently (the past decade), on the pastoralists of the steppe, from the Bronze Age to the Iron Age. There are, without a doubt, some issues that can emerge alongside some of the analyses presented here. Viewsheds are notoriously tricky, as they can be manipulated via several factors and/or variables. But I ran them with the same factors/variables so that, all else being equal, we obtained a clearer picture in terms of the scale of the possible range of the viewsheds themselves. Given that at least one of the factors usually brought up in the literature on burial mounds is their size, this puts size and location together into perspective.

Perhaps more importantly, in this piece, I have attempted to move the study of Eurasian Iron Age burial mounds more generally, and those of the Scythian epoch more specifically, into other (perhaps broader) considerations of just status and wealth, in what I hope is a successful attempt at thinking in Goldstein's terms of multi-dimensionality and Arnold's ideas of burial mounds as material culture. Indeed, given the long-term debate regarding the applicability of the term "Scythian" to all Eurasian Iron Age cultural developments (Rubinson and Linduff 2024; Yablonsky 2000; Yablonsky and Bashilov 2000), the description of the single mounds and the application of viewshed analysis to each case study indicates important regional differences (and some similarities) from the Altai Mountains to the central Dnipro region of Ukraine. This provides support to the idea that while there may have been cultural similarities between the mobile pastoral populations of the Iron Age steppe, there were also equally important differences, enough to argue that the term "Scythian" may only have limited value when moving beyond the immediate environs of central Ukraine.

Methodologically and theoretically speaking, when we back away from our myopic focus on the internal components of tumuli and begin to see the mounds themselves not just as single entities or even as groups, but rather as whole landscapes, we might see where a new approach, or set of approaches, that focuses on exploring the visual engagements with the mounds via myriad audiences might be useful in identifying the multivalency of landscapes. This suggestion is not just for archaeologists, but rather provides a more holistic and fleshed out picture based on heteroglossia in thinking about how such landscapes would have been differentially experienced as different audiences/groups traveled through them, creating durable, potent engagements with the different spacetimes represented by the travelers and the mounds, producing worlds rooted in the imagination, memory, and possibility.

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## Article

# Golden Swords of the Early Nomads of Eurasia: A New Classification and Chronology

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**Abstract:** The “ceremonial” forms of swords and daggers—that is, bladed weapons decorated with precious metals—occupy a special place in the culture of the early nomads. For the Scythian period, we know at least 76 ceremonial objects from 61 sites, corresponding to 3.5% of the total sample. More than half of the finds come from the northern Black Sea region (mainly Ukraine). Ceremonial forms are represented in all morphological categories (from daggers to extra-long swords), but their distribution is slightly different. Most *akinakai* belong to the average and long swords. Most Scythian *akinakai* in Eurasia belong to the dagger and short sword groups. Although most Scythian swords and daggers fall into the Middle Scythian period, most ceremonial forms belong to the last phase of Classical Scythian culture. This period is a veritable “golden autumn” of Scythia with its huge royal burial mounds and abundance of gold, perfectly illustrating our argument that conspicuous consumption coincides with periods of political and social instability. After the peak of the proliferation of ceremonial *akinakai* in the third quarter of the 4th century BC, we observe a generation later the complete disappearance of Classical Scythian culture, along with its characteristic weapons, horse harnesses, and animal style.

**Keywords:** *akinakai*; Eurasian nomads; swords; daggers; ceremonial weaponry; Scythian

## 1. Introduction

The first millennium BC was marked by the spread of iron, the rise of nomadism, and the cavalry revolution. It was also the time of the emergence of new social and cultural standards, thanks to which the nomadic world was to influence the historical landscape of Eurasia for the next two millennia. A completely new cultural space takes shape, commonly referred to as the “Scythian-Siberian world” or the “Eurasian steppe cultural continuum of the Scythian period”. The spread of nomadism at the turn of the second to the first millennium BC led to a veritable explosion in the development of offensive weapons, for weapons are one of the most sensitive indicators of social or ideological change. The sword or dagger and its form became a calling card of early nomadic culture, alongside horse harnesses, funerary architecture, metal vessels, and jewelry. The particular attitude towards weapons reached its highest point in the Scythian period, when the *akinakes* became an object of worship and the embodiment of the god of war (Hdt. 4.62; Mela 2.14). All this suggests that the turbulent cultural processes of the steppe continuum had to have an impact on the appearance of bladed weapons, which were closely linked not only to the everyday lives of nomadic warriors but also to the religious or funerary spheres of nomadic communities.

The object’s history of research began more than two-and-a-half centuries ago with the first steps of Scythian archaeology. In September 1763, A. Melgunov carried out the first documented excavations of a Scythian burial mound in the northern Black Sea region. Among the significant objects of the “Melgunov hoard” discovered at that time, an archaic *akinakes* in a gold scabbard occupied the central place (Pridik 1911, Figures 1–6, Table 1, 3, 4). In the 19th century, the first enthusiasts, no doubt in pursuit of magnificent finds,

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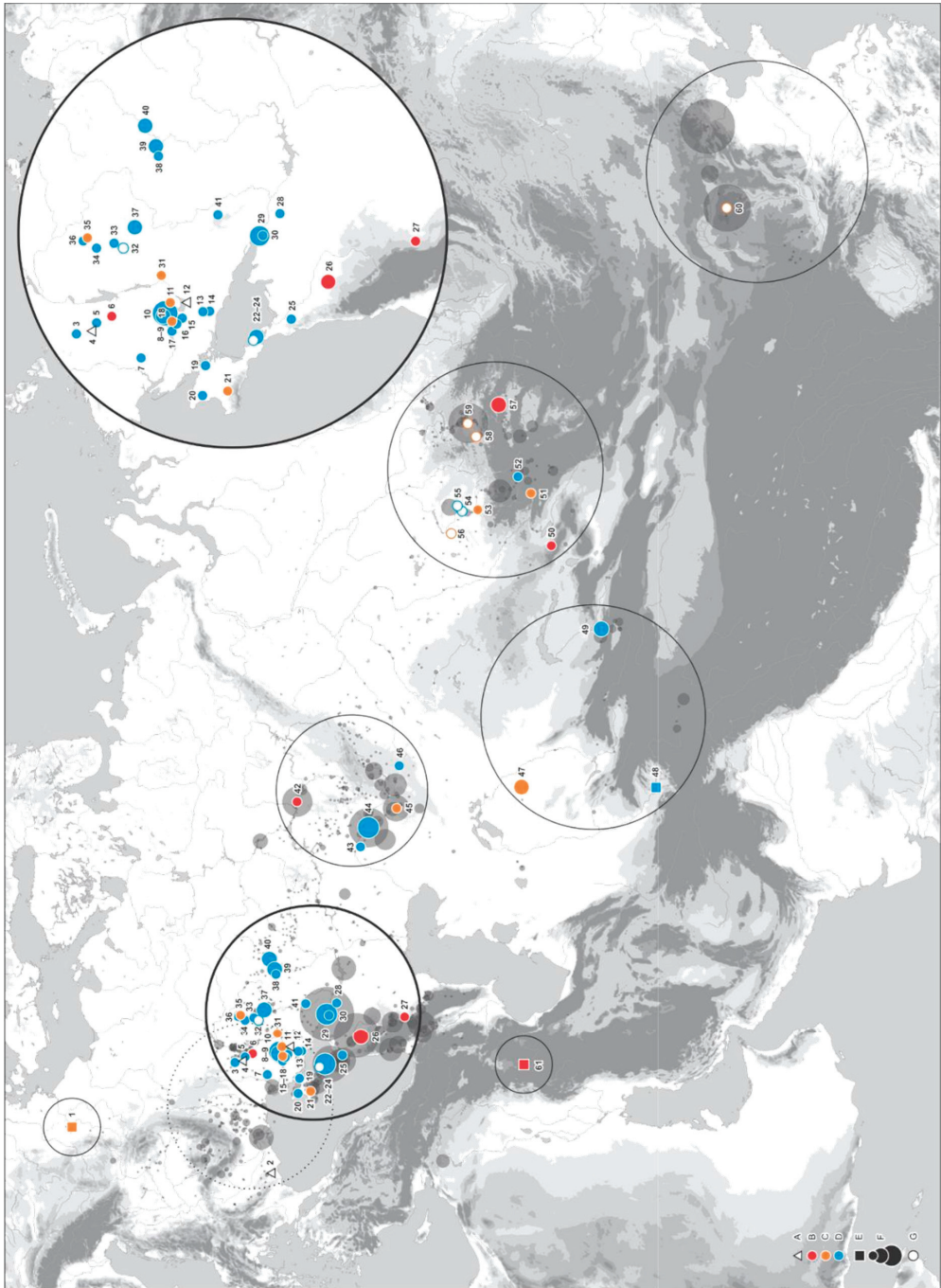
excavated the famous aristocratic tombs of Pontic Scythia. Most of them were equipped with ceremonial swords, for example, Kul-Oba (DBK 1854, Table 26, 2; 27, 10), the Keku-vatsky barrow (Reinach 1892, Table 27, 9), the Hostra Mohyla (DGS 1872, Table 13, 16–18, 26), and the Chortomlyk burial mound (DGS 1872, Table 35, 1, 2; 37, 3; 40, 9, 12, 14). At about the same time, far to the west, a Scythian gold sword turned up in a hoard near Vetersfelde (Furtwängler 1883, Taf. 3). These fantastic finds probably prompted Scythian archaeological research initially to examine the most common examples, which formed the basis for the first observations on the Scythian sword’s development, chronology, and local expression.

The “ceremonial” forms of swords and daggers, that is, bladed weapons decorated with precious metals, usually gold, occupied a special place in the culture of the early nomads. Among the most important warriors of the Achaemenid Empire (e.g., the Persian kings), gold swords frequently appear as royal gifts on special occasions (Hdt. 8.120.1; Xen. Anab. 1.2.27; 1.8.27–29). Among the Scythians, the sword was the embodiment of the god of war, the only one of the Scythian gods to whom altars were erected and sacrifices offered (Hdt. 4.62). It is known that gold was an exceptional metal for the Scythians, as it was for all ancient Iranians (Vertiienko 2021, pp. 29–30), and symbolized the so-called *khvarenah* or *xvarra(h)*—military luck, glory, or, in other words, the charisma of the warrior.

For the Scythian period, we know at least 76 ceremonial objects from 61 sites (Appendix A; Figure 1), corresponding to 3.5% of the total sample. Geographically, the ceremonial *akinakai* are unevenly distributed (Table 1): Thus, at least three-quarters of ceremonial *akinakai* are concentrated in the European part of the area (59; 78%), while 17 (22%) of such objects are found in Asia. Moreover, more than half (51%) of the finds (39 objects) come from the northern Black Sea region (mainly Ukraine), 11 (14%) from southern Siberia, nine (12%) from the Ural region, five finds each (7%) from the Caucasus, the Volga region, and Central Asia, and one each from China and Central Europe. Most Scythian *akinakai* in Eurasia belong to the groups of daggers (with a blade length of up to 20 cm; 37.8%) and short swords (20–30 cm; 27.2%). Ceremonial forms are represented in all morphological categories (from daggers to extra-long swords), but their distribution is slightly different—most *akinakai* belong to the average (30–40 cm; 50%) and long (40–70 cm; 27%) swords. The chronological distribution of *akinakai* in the European part of the area roughly corresponds to that of Gauss (which means the gradual appearance and gradual disappearance of the type), with most finds belonging to the Middle Scythian period (late 6th–early 5th centuries BC), which is closer to the end. Most ceremonial forms (51; 67%) are, on the contrary, assigned to the last stage or the Classical Scythian culture. The peak is associated with the last phase: the second half of the 4th century BC or the third quarter of the 4th century BC. Nevertheless, on average, there are four ceremonial specimens per region in a given chronological period. In other words, there was an average of one ceremonial *akinakes* per generation in each region. The only exception is the Black Sea region in the Classical period, where the number of ceremonial swords is 10 times higher. But before we deal with this anomaly, a survey of the geographic distribution and formal development of the relevant material is in order.

**Table 1.** Distribution of ceremonial *akinakai* by periods and regions.

	Danube	Pontus	Caucasus	Volga	Ural	Central Asia	Siberia	China	Total (Periods)	% (Periods)
Early (700–575 BC)	-	1	4	-	1	-	3	-	9	11.8
Middle-I (550–500 BC)	1	2	-	-	-	-	1	-	4	5.3
Middle-II (500–425 BC)	-	3	-	-	2	2	4	1	12	15.8
Classical (425–300 BC)	-	33	1	5	6	3	3	-	51	67.1
Total (regions)	1	39	5	5	9	5	11	1	76	100
% (regions)	1.3	51.3	6.6	6.6	11.8	6.6	14.5	1.3	100	



**Figure 1.** Distribution of the ceremonial swords in Eurasia (A—pre-Scythian, B—Early Scythian, C—Middle Scythian, D—Classical Scythian, E—hoards, F—burial mounds, and G—stray finds; other items are gray-colored); the numbers correspond to the list in Appendix A.

## 2. Swords from Hoards and Other Unusual Contexts

Less than half of the other Scythian *akinakai* were discovered as “stray finds” outside archaeological assemblages (912 out of 2130, 43%). For various regions, this figure ranges between 25 and 60% (Topal 2021, Table 4). Most finds of ceremonial swords (over 85%; 52 out of 62) are associated with aristocratic burial mounds, almost all of which are male burials (a ceremonial dagger accompanied a woman in a famous double tomb of the Arzhan-2 mound). For Eurasia, except for Arzhan-2, only a few cases of bladed weapons in women’s graves are known (Fialko 2015, pp. 65–75). However, almost all finds of ceremonial swords are associated with funerary monuments—aristocratic burial mounds. Only one sword, one scabbard, and one scabbard’s chape were found as part of a hoard, while two other swords and scabbards come down to us without any reliable archaeological context. However, the scabbard (Figure 2, 1) from Chayan (now the village of Zaporozizke, Saki District in Crimea) and a stray find from the village of Klyuchi in Tyumentsevo District, Altai Krai (Figure 12, 11), most likely belong to destroyed or looted graves (Shcheglov and Katz 1991, p. 114; Frolov 2016, p. 57). In this connection, we can assume that the scabbard described as an “accidental purchase from Kerch” (Alekseev 2006, 48, Figure 2, 4) was also part of the burial.

Two other swords were found in burial mounds, but in a somewhat unusual context. A sword in a gold scabbard from the Melgunov barrow, or Lita Mohyla (Figure 2, 3), near the village of Kopani (Znamianka District, Kirovohrad region) was found to the west of the center of the mound at a depth of about two meters in a stone box, among many other things lying together (Tunkina 2006, p. 136). Probably because of the absence of bone remains (Miller 1764, pp. 502–3), this assemblage entered the literature as the “Melgunov hoard” (Pridik 1911, p. 2). Additional investigation of the monument in 1990 revealed that the “treasure” was embedded in the Bronze Age mound and was probably a cenotaph (Kisel 2003, pp. 24, 27). The ditch with horse burials (excavated in 1990) and the Scythian burial in the catacomb (in 1892) date to the Classical period (4th century BC) and are not associated with the Early Scythian “treasure” or “cenotaph” (Bokiy and Mogilov 2014, p. 35). Archaeological proxies do not support the hypothesis of a burnt tomb because the identified traces of burning and slag belong to the iron workshops at the site in post-Scythian times.

An unusual case of an archaeological context related to a ceremonial sword was documented in Burial Mound 30 near the village of Velyka Bilozerka, Zaporizhzhia region (Figure 2, 4). The modest size of the mound, the burial feature, and the grave goods do not allow it to be assigned to the highest aristocratic rank. Probably the discrepancy between the status of the buried person and the ceremonial *akinakes* prompted the participants of the ceremony to place the sword with its gold-covered scabbard in a deep cache in the corner of the burial chamber (Otroshchenko 1984, p. 122).

In addition to these unusual ritual assemblages, several hoards included Scythian ceremonial swords and sheath details. Such a collection containing explicitly Scythian objects was allegedly excavated near Ziwiye Castle in Iran. It is still one of the main arguments for the hypothesis of the origin of Scythian art in the Near East. Around 1946–1947, a bronze sarcophagus containing many gold, silver, and ivory items was discovered near Saqqez in Iran. The coffin’s interior suggests its function as a container for treasures rather than a burial (Moorey 1971, p. 260; Wicks 2012, p. 156). In the 1950s, after the first publications (Godard 1949; Godard 1950; Ghirshman 1950), and probably due to the emerging interest in objects from “Ziwiye” on the antiquities market, the stream of finds from this region continued. The total number of items associated with the site soon exceeded 340 objects. Among them, four cultural groups can be distinguished: Assyrian, Scythian, Assyrian with Scythian elements, and local (Urartian, Mannaeans?) (Ghirshman 1950, p. 181). As purely Scythian items, they are usually described as a silver plate inlaid with gold, fragments of a belt (van Loon 1966, p. 178; Ghirshman 1979, pp. 19–26), and a gold sword scabbard’s chape or bouterolle (Stöllner et al. 2004, p. 757, Kat. 442). So far, we can say that the find from Ziwiye, regardless of whether it is a treasure or a tomb, contains objects from various



places that were looted or brought as gifts. Moreover, some objects are insignia made on behalf of influential local, Scythian, or Median rulers (Lukonin 1987, pp. 71–72). Weapons also occupy an important place among these insignia. The gold sword’s scabbard from Ziwiye (Figure 2, 5) belongs to the same line of Scythian ceremonial objects as those from the Kelermes and Melgunov barrows.



**Figure 2.** Akinakai in unusual context: 1—*Chayan* (Picón et al. 2007, cat. 59), 2—*Oxus treasure* (Curtis 2012, fig. 9), 3—*Melgunov barrow* (Alekshev 2012, pp. 80–85; 116–19), 4—*Velyka Bilozerka barrow* (Rolle et al. 1991, cat. 89), 5—*Ziwiye* (Stöllner et al. 2004, Kat. 442), 6—*Vettersfelde* (Topal 2021, ill. 5).



The contents of the Oxus or Amu Darya hoard present similar difficulties to those from Ziwiye. Deriving most likely from a site near Takht-i Kuwad or Takht-i Sangin in southern Tajikistan, the exact composition of the hoard (which now consists of more than 180 gold and silver objects and over 1500 coins) and its find spot are exceedingly difficult to establish (Muscarella 2003, p. 264). In addition to numerous vessels, bracelets, plates, and figurines made of precious metals, this hoard also yielded a gold sheath for a small dagger. The reliefs on the scabbard show scenes of a royal lion hunt, an allusion to the Assyrian art of the time of Ashurbanipal. It is probably this fact that has led scholars to date the find to the pre-Achaemenid period, and the images of *akinakai* on reliefs from Persepolis with Median captives to a “Median” attribution of the find (Herzfeld 1921, p. 154; Barnett 1962, pp. 78–80; 1968, pp. 36, 38; Ghirshman 1962, p. 79). J. Boardman (2006, p. 118) believed that the decoration on the edge of the sheath in the form of an eye and a beak also argues for the pre-Achaemenid origin of the Takht-i Kuwad dagger. Some scholars date it to the Achaemenid period (Calmeyer 1974, p. 118; Muscarella 1977, p. 192) since the treasure at the Oxus otherwise did not contain any pre-Achaemenid objects (Stronach 2001, p. 242). An Achaemenid date may also be suggested by the image of a winged disc on the upper part of the sheath, although winged sun disks are known even on Neo-Assyrian seals (Boardman 2006, pp. 115–16). The dagger is thought to have been made in the Achaemenid era—no earlier than the reign of Darius I, 522–486 BC (Curtis 2012, p. 340) or, more likely, in the era of Artaxerxes II, 404–359 BC (Curtis and Tallis 2012, p. 145)—perhaps as a gift from the Persian king to an official from a remote province of the empire (Stronach 2001, p. 244).

The most complete of these “treasures” with ceremonial *akinakai* is the set of artifacts discovered in 1882 in northern Lower Silesia (Figure 2, 6). The assemblage came to light near the village of Vetersfelde, now Witaszkowo in Poland (Gmina Gubin, within Krosno Odrzańskie County, Lubusz Voivodeship). This collection, now on display in the Altes Museum in Berlin, is still the westernmost findspot of elite objects with Scythian cultural associations. The contents are richly decorated, partly in a broadly geometric style (pendants, an ornament for the temple, a torque, and a whetstone) and partly in an animal-based one (ornaments in the shape of a fish and a clover-leaf phalera, bracelets, and part of a sword sheath) (Furtwängler 1883, pp. 4–11). According to D. Redfern (2012, pp. 43, 45), 19 different tools were used to make the items from the precious metals, with four of the seven items (bracelet, fish, phalera, and sheath) deriving most likely from the same workshop. At least three of them (fish, phalera, and scabbard) were made using the repoussé technique (Redfern 2000, p. 417). A. Furtwängler (1883, 32) and W. Ginters (1928, p. 18) were convinced of the Ionian origin of the items from Vetersfelde. A. Iessen (1947, p. 84) considered Olbia or Tyras to be the place of manufacture.

The analysis by D. Redfern (2000, p. 417) using the macro-laser imaging technique revealed that the items were all made in a workshop that could not be located more precisely than “in the Black Sea region”. V. Megaw (2005, p. 36) also pointed to Ionian and Persian “orientalizing influences” but linked the origin of the artifacts to the lower Dnieper. Scholars are relatively unanimous about the date of the hoard, with most suggestions falling between the 6th and 5th centuries BC (see Rostovtsev 1925, pp. 399, 410; Schefold 1938, pp. 8, 14, 36, 62; Onayko 1966b, p. 160), although G. Kossack (1987, pp. 30–35) insisted on a date of the 7th century BC. Z. Bukowski (1977, pp. 197–98) also dated the Vetersfelde hoard earlier, using the typological features of the sword to narrow the range to the late 6th to early 5th centuries BC. A. Alekseev (1991b, p. 47) initially proposed “the second quarter of the 5th century BC” as the upper limit and later “the last quarter of the 6th century BC” as the lower limit (Alekseev 2003, p. 198). L. Nebelsick (2014, p. 55) prefers a low chronology for the treasure—within the “second half of the 6th century BC”—and also considers the hoard a diplomatic gift, possibly related to the Scythian campaign of Darius I (Nebelsick 2015, p. 145). He suggests that some of the Scythians involved were the local elites supporting the “Milesian-Persian interests” during the Scythian-Persian conflict and that

the hoard was symbolically destroyed in a sanctuary near a sacred spring (Nebelsick 2003, pp. 78–79; 2006, p. 328; 2014, p. 73).

### 3. The First Ceremonial Swords in the Nomadic Milieu

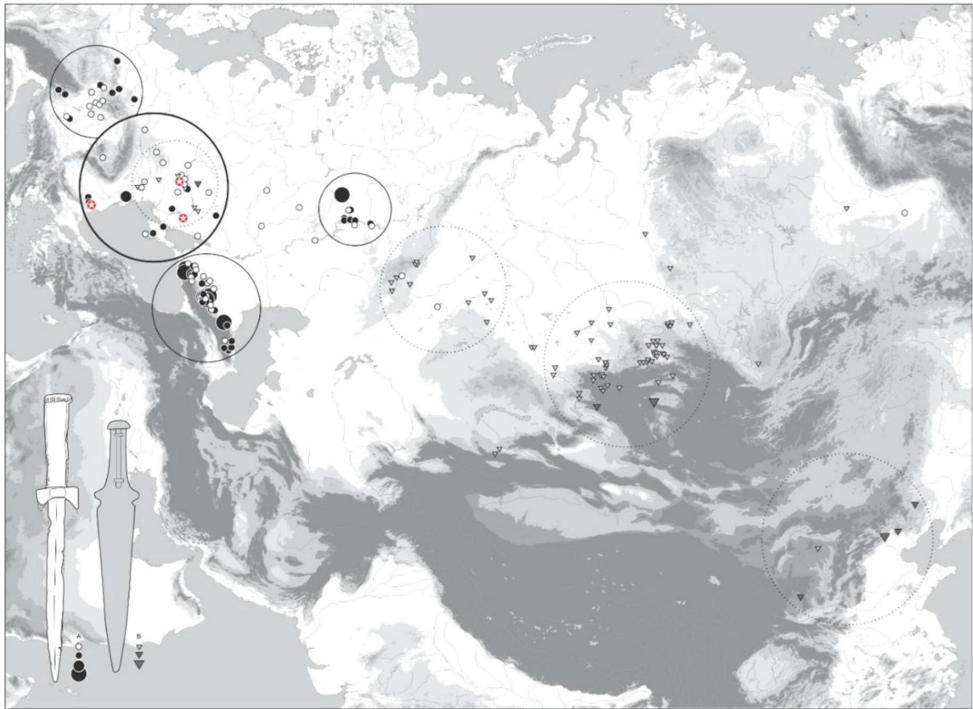
The tradition of decorating swords with gold in the nomadic milieu appeared shortly before the emergence of the Scythian *akinakes*. The best preserved pre-Scythian dagger with a scabbard decorated with gold dates from the middle of the 8th century BC and comes from the Ptichata Mogila mound (Figure 3, 1–4) near Belogradets in northeastern Bulgaria (Tončeva 1980, pl. 22). Elements of gold scabbards, similar to those found at Belogradets, are also known from pre-Scythian graves in Ukraine—for example, from the tumulus Vysoka Mohyla near Balky (Bidzilya and Yakovenko 1974, p. 150) and a barrow near Kvitky (Kovpanenko and Gupalo 1984, pp. 50–53). While it is difficult to reconstruct the shape of the latter example (only small fragments of the hilt and blade are preserved), the daggers from Belogradets and Vysoka Mohyla (Figure 2, 5–7) can nevertheless be attributed to a specific variation of the pre-Scythian weapons, notably the daggers of the *Kabardino-Pyatigorsk type*.

The origin of the Kabardino-Pyatigorsk-type daggers (Figure 4) has traditionally been associated with the Karasuk material repertoire (Terenozhkin 1975, pp. 19, 20). The chronological position of the type generally ranges from the 8th century to the first half of the 7th century BC (Valchak 2008, p. 19). If we try to summarize chronological observations for this category of material culture, we can trace some evolutionary patterns of the Kabardino-Pyatigorsk-type daggers. For example, the round or oval cross-section of the handle is considered a somewhat earlier feature, while the flattened handles with multiple rows of openwork ring-shaped decorations are typical of later products (Podborský 1970, p. 159; Dudarev 1991, p. 45). The length of the hilts decreases over time. Moreover, the straight guards evolve into ones curving towards the blade (Dudarev 1999, p. 100; Valchak 2008, pp. 18, 19; Topal and Bruyako 2012, p. 134). S. Dudarev (1999, p. 100) detected in such changes the influence of iron swords without guards, while S. Valchak (2008, p. 18) explains this process with the gradual withdrawal from circulation of long-bladed weapons, for which wide hilts were an essential technological feature. Bimetallic daggers with a flat handle and a short-curved guard with triangular wings aligned almost directly against the blade are dated later than the others and, most likely, survived until the middle of the 7th century BC. Therefore, the iron daggers from Belogradets and Vysoka Mohyla and another piece from Kvitky belong to the youngest variety of pre-Scythian bladed weapons.

The daggers of Kabardino-Pyatigorsk can undoubtedly be claimed to be a prototype for the Scythian *akinakes* in the North Caucasus, and the size groups of Kabardino-Pyatigorsk swords and daggers are close to those of the early Scythians. Nevertheless, the evolutionary line of the European experiments may have developed in parallel in Asia based on the same Karasuk weapon traditions. The discovery of a bronze dagger in a gold scabbard in Burial Mound 4 of the Eleke-Sazy cemetery (Figure 3, 8–11) in 2018 led to such reflections (Samashev 2018, Figure 4, 5). Its hilt is designed in the form of two diamond-shaped guards, the pommel is decorated in animal style, and the shape of the sheath in the lower part is strikingly reminiscent of the paddle-shaped chapes from the pre-Scythian period of Europe. On the pommel are two heads of feline predators with rounded, recessed ears turned in opposite directions—images familiar from both the well-known buckle in the shape of a rolled predator in the Siberian collection of Peter I and the decorations on the clothing from Arzhan-2 (Alekseev 2012, pp. 32–33, 58–59). Similar bronze daggers were previously known only from stray finds, and their chronological position could only be hypothesized.



**Figure 3.** Pre-Scythian and Early Scythian ceremonial daggers: 1–4—*Belogradets* (Echt 2004, Kat. 193a, 193b), 5–7—*Vysoka Mohyla (Balky)* (Rolle et al. 1991, 357, Kat 78), 8–11—*Eleke Sazy* (Samashev 2018, fig. 4, 5).



**Figure 4.** Distribution of the ceremonial pre-Scythian swords and daggers (A—Kabardino-Pyatigorsk type and B—Karasuk type; ceremonial items are marked with a star).

However, if the lower chronological limit of the preliminary dating of “8th–7th centuries BC” is correct (Samashev et al. 2019, p. 130), this specimen could indicate the chronological priority of the Asian version of the *akinakes*. Besides the dagger, the burial of the adolescent in Barrow 4 was accompanied by a gold torque, a *gorytos* with 40 three-winged arrowheads, and various gold ornaments (Samashev 2018, pp. 111–12). In addition to the *akinakes*’ pommel, the gold scabbard, decorated with deer heads in the granulation technique, is also worked in the animal style. Based on the features of the animal style found in the assemblage, it is most likely synchronous with the cultural and chronological horizon of Arzhan-2 (Čugunov 2020, p. 230).

According to K. Čugunov (2020, pp. 229–30), Arzhan-2 marks the final stage of this second cultural-chronological horizon, following the first, the *Arzhan-Chernogorovka* stage. The iron daggers decorated with gold from the Arzhan-2 mound (Čugunov et al. 2010, Taf. 8–9, 40, 61, 76) from the second half of the 7th century BC are undoubtedly of *Nurmanbet-Uygarak* design. One of them, known as the “king’s dagger,” is distinguished by a massive pommel and hilt decorated with half-reversed predators, as well as a ribbed edge showing a procession of animals. K. Čugunov (2011, p. 55) believes that the scrolls framing the cutting edge were made in the Chinese manner and that the dagger itself was not imported but made by a master who was well acquainted with the ornamental traditions of early Chunqiu (“The Spring and Autumn Period”). The *Nurmanbet* type was described by N. Chlenova (1981, p. 7) based on a series of daggers united in the North Kazakhstan type by M. Gryaznov (1956, pp. 11–12). A flat handle characterizes these daggers with a wavy edge and a tip with rounded edges, which, according to N. Chlenova (1981, p. 11), allows them to be called “Karasuk-type” daggers with a mushroom-shaped pommel. The origin of the *Qin* type is associated with the Western Zhou’s leaf-shaped daggers and with the Eurasian steppes’ bladed weapons. A. Tairov (2007) finds parallels to the *Nurmanbet* type

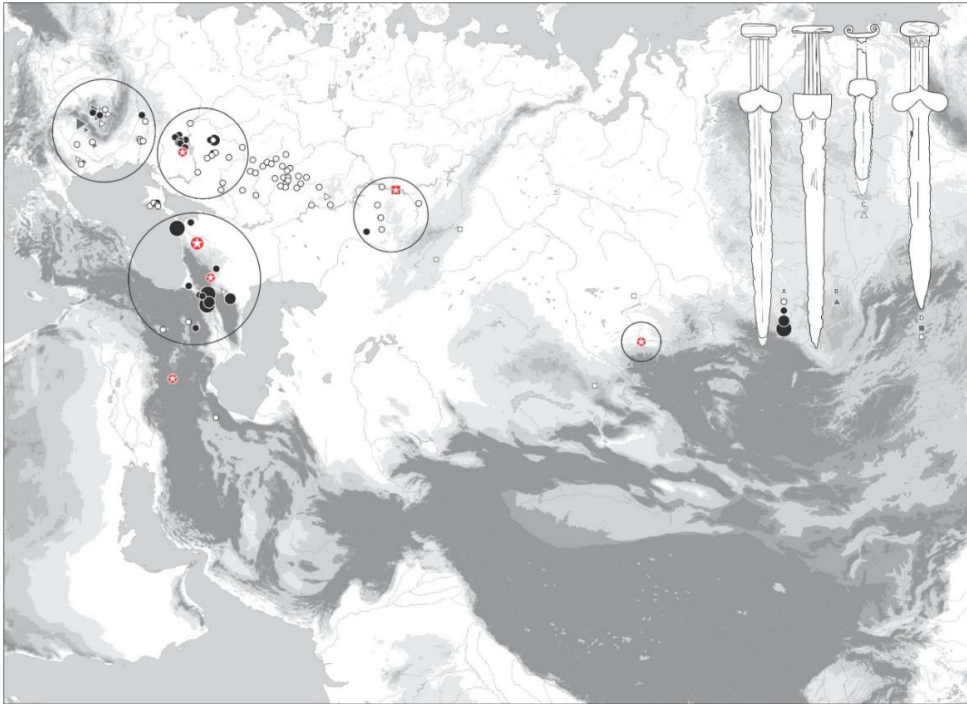


in daggers of the Qin type (Kang 1999, pp. 374–76, Figure 2a–c), for example, in a specimen from a Yucun burial of the early 8th century BC (late Zhou period). Subsequent examples point to a preference for daggers of a hybrid character, combining the traditions of the steppe culture and the Zhongyuan or Central Plains people (Liang 2018, p. 143).

#### 4. Early Scythian Ceremonial *Akinakai*

The earliest Scythian *akinakai* of the European area are bimetallic swords and daggers of the *Orbeasca-Stepnoy* (Vulpe 1987, 84–85, 88) or *Gudermes* (Topal 2021, 79–81) type, and their construction combines a bronze handle and an iron blade. This idea has been proposed because early Scythian bimetallic handle technology can be traced back to pre-Scythian technology, the so-called Cimmerian scheme. B. Shramko (1984, pp. 30–31) explains the persistence of the old technological methods in combination with the new forms by the lack of familiarity with sophisticated forging and forge-welding combined with a well-developed technology of non-ferrous metal casting. By all appearances, the bimetallic technology was adopted by the Scythian armorers from the preceding Kabardino-Pyatigorsk tradition, and the first samples of *Gudermes akinakai* appeared in the Caucasus at the turn of the 8th–7th centuries BC, while most finds are dated to the first half of the 7th century BC. Moreover, the replacement of bimetallic daggers by iron *akinakes* of “steppe-type” origin is confirmed by the horizontal stratigraphy of the Serzhen-Yurt cemetery, where both pre-Scythian and early Scythian objects were found (Kozenkova 1992, p. 39). The *Gudermes* type is characterized by a high degree of standardization. *Akinakai* of this type belong mainly to the short and average-length swords, and this distinguishes them from both the earlier Kabardino-Pyatigorsk (Figure 4) and the Kelermes type (Figure 5), which are considered later. Burials with *Gudermes akinakai* are known only in the Caucasus and Danube regions, and the vast space in between is dotted with stray finds, concentrated mainly on the forest-steppe between the Volga and the Don. At the same time, framed bronze handles combined with an iron blade are occasionally found far to the east of the central area, including in burial assemblages, albeit of a more recent date than in the European area (Topal 2021, p. 88). Nevertheless, the “frame” bimetallic technique was not widely used in the manufacture of *akinakai* handles in “Asian Scythia”. The early Scythian period was, however, a time when there were a great variety of solid bronze swords and daggers east of the Urals.

However, not a single bimetallic *akinakes* decorated with gold is known. The earliest European items are connected with the subsequent variation of Scythian *akinakai*, such as the Kelermes type (Topal 2013, pp. 14–19). A while ago, E. Chernenko (1980, p. 11) proposed this term to describe massive “butterfly”-shaped hilts, having chosen the Kelermes sword as a reference type and calling for the introduction of similar nomenclature for other types of Scythian blade weapons. About 20 Archaic *akinakai* with a loop under the pommel are currently known; 4 were discovered in well-dated burials. Moreover, about 10 more objects with similar morphological characteristics—including the shape of the three-part handle, the massive hilt, and the blade—can also be attributed to this type. Possibly there is a link here with the bimetallic swords and daggers of the Cimmerian period, for which the shape of the framework hilt, cast in bronze, was of fundamental constructive value. According to B. Shramko (1984, p. 31), this technique became ornamental instead of constructive with the disappearance of bimetallicism. Perhaps this explains the “frame” and “three-part” nature of the handles and the later items, which survived until the late 6th century BC.



**Figure 5.** Distribution of the Early Scythian akinakai (A—Kelermes type, B—Ferigile type, C—Frata type, and D—Argayash type; ceremonial items are marked with a star).

The chronology of this type is based primarily on the eponymous monument with a ceremonial sword from Burial Mound 1 near Kelermesskaya (Figure 6, 5, 7, 8), excavated by D. Schultz in 1903. Stylistically, it resembles a ceremonial *akinakes* from the burial mound Lita Mohyla or Melgunov barrow (Figure 6, 10–11), not far from Kropivnitsky (formerly Kirovograd, Elisavetgrad), which was excavated in 1763 (Pridik 1911, pp. 1–2). The dates assigned to the Kelermes and Melgunov assemblages vary from the mid-7th century BC (Alekseev 1992, pp. 52, 96; Alekseev 2003, p. 295; Ivantchik 2001, p. 282) to the end of the 7th or the 6th century BC (Artamonov 1966, pp. 18, 91; Ilyinskaya and Terenozhkin 1983, p. 104; Murzin 1984, pp. 19–20), the second half of the 6th century BC (Rostovtsev 1925, p. 312), the 6th to 5th centuries BC (Rostovtsev 1926, p. 240), or even the first half of the 4th century BC (Pridik 1911, p. 21). However, a consensus seems to emerge around a date “no later than the middle to the third quarter of the 7th century BC” (Ivantchik 2001, p. 282) as the most acceptable. V. Kisel (2003, p. 30) also suggests that the dating of the Kelermes and Melgunov swords should be pushed deep into the 7th century BC, possibly to the second to the “third quarter of the 7th century BC”. Kisel came to this conclusion after finding analogies to the designs “in the shape of a triangle and a curved leaf” on the swords on a well-dated Urartian relief from Adilcevaz of 680–645 BC (van Loon 1990, pl. 20). K. Metdepenninghen (1997, p. 131) also linked the production of these ceremonial *akinakai* to an Urartian craftsman (or craftsmen) of the era of Rusa II, which began between 695 and 685 BC. Another fragmented sword, decorated with gold and a loop under the pommel (Figure 6, 6, 9), was found in the Kelermes barrow (Mantsevich 1969, Figure 2, 1; Galanina 1997, Taf. 12, 4). Two Kelermes swords—one decorated with gold at the hilt and the pommel—come from Burial Mound 16 of the Nartan burial mound (Ivantchik 2001, Figure 26, 12).



**Figure 6.** Early Scythian ceremonial akinakai and their elements: 1, 2—Ziwiye (Stöllner et al. 2004, Kat. 442), 3, 4—Lugovskoe (photo by D. Topal), 5–9—Kelermes (Aleksseev 2012, pp. 80–85), 10, 11—Melgunov barrow (Aleksseev 2012, pp. 80–85; 116–19).

The geographical peculiarities of the distribution of *akinakai* of the Kelermes type are remarkable (Figure 5) in that they are almost never found outside the forest-steppe area of the Scythian culture. However, the easternmost find of Kelermes-type *akinakes* was discovered as far away as the steppe Altai, in Barrow 2 near the village of Novovobinka of Petropavlovsk District in Altai Krai (Ivanov and Mednikova 1982, Figure 1). This sword is distinguished by its outstanding size (its total length is 106 cm) and its pommel decorated with gold inlays (Mogilnikov and Mednikova 1985, p. 179). Other swords and daggers found to the east of the Volga were equipped with sleeves under the pommel, often with triangular slits. These finds can hardly be assigned to the Kelermes type, despite some attempts (Ismagil 2000, p. 137), since the sleeves “neither by design nor by function” can be compared with those of the early Scythians (Tairov 2007, p. 144). A. Tairov (2007, pp. 144–45) distinguished this small group, or *Argayash type*, and dated it from the 7th to the first half of the 6th century BC. This group includes a specimen from the Lugovskoe burial ground (Zbrueva 1941, Figure 43), which may be described as a ceremonial type since its pommel is also decorated with a decorative inlay of gold wire (Figure 6, 3, 4) and the sleeve under the tip is also gilded (Zbrueva 1941, p. 109).

On balance, the distribution of the Kelermes swords points to at least two main directions in the type’s geographical spread and local adoption: running meridionally in the case of burials and latitudinally (both eastward and westward) in the case of stray finds. This pattern may, of course, be taken to corroborate the hypothesis that the Scythian-type *akinakes* originated in the North Caucasus as a variation of the Kabardino-Pyatigorsk type daggers (Leskov 1979, p. 48; Chernenko 1979, p. 91; Ismagilov 1980a, pp. 88, 93; Shramko 1984, pp. 30, 31). However, at this point, we should not disregard the potential significance of Transcaucasia as a crossroads where Scythian *akinakai* came directly from the North Caucasus or were produced using North Caucasian models (Esayan and Pogrebova 1985, p. 52). According to the archaeological record, the significance of Transcaucasia comes into view no later than the middle of the 7th century BC, that is, almost simultaneously with the first appearance of the Kelermes-type ceremonial swords. As for the considerable number of stray finds in the forest-steppe regions (notably the Don area), their concentration gives rise to various discussions concerning the use of these swords, for instance, for cultic purposes at “memorial or sacrificial sites connected with the military cult performed directly on the battlefield or in its vicinity” (Sarapulkina 2005, p. 162; Voroshilov 2011, pp. 166–67), or their connection with disturbed burials (Razuvaev and Kuryanov 2004, p. 192).

## 5. Middle Scythian Shapes and Their Expansion into the Steppe

Finds dating to the Middle Scythian period attest to further experimentation with the shape of the blade and the handle. While the shape of the blade with parallel cutting edges predominated in most Early Scythian *akinakai*, triangular and narrow, elongated blades appeared towards the end of the period. The hilts became even more solid and rounded, whereas the pommels, by contrast, were thin and elongated (Ginters 1928, pp. 11–12; Melyukova 1964, p. 60). A. Vulpe (1990, pp. 38, 42) suggests adding examples of the *Piliny-type* and some *Suseni-Măcișeni-type* daggers (according to his typology) to the swords that can already be assigned to the Middle Scythian type. We propose to group them under a new name—the *Shumeyko type*, based on one of the most famous and richly decorated objects discovered on the left bank of the Dnieper at the end of the 19th century (Topal 2021, p. 133).

In 1899, S. Mazaraki excavated a barrow near the Shumeyko farm in the environs of the village of Vovkivtsi in Romny Uyezd, Poltava Governorate (now the Sumy region of Ukraine). In the central burial, in a large pit with wooden structures, the remains of protective armament, spearheads, axes, bridle sets (consisting of bronze and bone *psalia* with zoomorphic endings), and a large pot with geometrical ornamentation were discovered (DP 1900, pp. 7–8). To the right of the buried person was found a short sword with a gold hilt (Figure 7) decorated with granulation and a gold scabbard (DP 1900, 17, Table 45, 461). V. Ilyinskaya (1968, p. 71) dated this barrow to the late 6th–early 5th centuries BC



on account of a foot of a black-figure *kylix* with an image of a satyr that was mistakenly attributed to the grave goods. Probably as a result of another oversight, a bronze statuette of a bull (Gribkova and Polidovich 2013, p. 259)—similar in design to a panther from the Zolotoy Kurgan (Golden Mound) of the early 5th century BC—was ascribed to the Shumeyko mound as well (Alekseev 2003, p. 200). Furthermore, the tip of the sword sheath from Shumeyko has been compared to similar tips from the late 6th–early 5th centuries BC from Vetersfelde, Zolotoy Kurgan, Hostra Mohyla, and Oleksandrivka (Onayko 1966b, p. 159; Ilyinskaya 1968, pp. 71–72). However, the upper part of the tip from Shumeyko is decorated not with an almond-shaped ornament as on the listed swords but with triangles made of granulation, which finds analogies in the decoration of ceremonial swords from the Kelermes and Melgunov barrows. Opposing images of sitting goats with tucked-up legs and their heads turned at the hilt also point to a connection with the Kelermes tradition (Onayko 1966b, p. 170). Besides, the images of panthers on the scabbard are identical to the images on the gold plaques from Ulsky Mound 1 of 1908, associated with the turn of the 7th–6th centuries BC (Gossel-Raek 1993, p. 65, Kat. 28). Other categories of grave goods also relate the find to the Early Scythian period—for example, double-looped bronze *psalia* close to three-loop items from Kelermes (Grechko 2012, pp. 88–90). The shape of a black ceramic pot with incised ornamentation is similar to a vessel found in the barrow near the Bilsk hillfort of the late 7th–early 6th centuries BC (Bruyako 2005, pp. 51–52). Therefore, we have all grounds to consider the Shumeyko barrow to be either the youngest Early Scythian assemblage or the oldest Middle Scythian one, pointing to a date within the second quarter of the 6th century BC (Grechko 2012, p. 92).

In 2019, a burial with another ceremonial sword of Shumeyko type was excavated, tentatively dated to the 6th century BC (Andruh et al. 2020, p. 56). In the secondary Burial Mound 377 (the primary one had been looted in antiquity) of the Mamay-gora cemetery, in addition to an *akinakes* in a scabbard decorated with gold leaf (Figure 8), bronze and bone arrowheads, an iron axe, pendants made of deer teeth, and a chalk pendant covered with gold were discovered. Besides that, a flat-bottomed amphora of gray clay from Lesbos (type A) of the late 7th or first half of the 6th century BC accompanied the buried person aged 18–20 (Andruh and Toshchev 2022, p. 415). Even though the design of the handle of this sword combines elements of both the Shumeyko (granulated triangles) and Vetersfelde *akinakai* (“lyre-like” ornament on the handle), this object seems closer to the Shumeyko series. The decoration of the handle end with transverse notches and a rhomboid pommel decorated with granulated triangles could further support this impression.

Closely related to the Shumeyko type, typologically and chronologically, is another variation of Scythian *akinakai*, highlighted as a distinct unit by A. Vulpe. In his second morphological group, he identified a *Suseni-Măcișeni* type (or Vetersfelde type; see Topal 2022, p. 175), consisting of daggers with a straight pommel and a massive guard (Vulpe 1990, p. 38). In our view, this type of hilt is defined too broadly and does not reflect the main design features of this group—a wide, massive kidney-shaped (or heart-shaped) hilt, an extended, narrow pommel, and a broad triangular blade.

This dagger came to light in 1882 to the north of Lower Silesia, 10 km from Gubin near the village of Vetersfelde (today Witaszkowo, Poland), as part of the famous assemblage mentioned earlier on in this article, containing richly decorated objects in the Scythian animal style, among them ceremonial weapons (Figure 9), commonly attributed to Black Sea manufacturers (Furtwängler 1883, pp. 4–11). Without going into the issue of the origin of the dagger’s cover from Vetersfelde (variously considered Ionian or Pontic workshops), we can note the unanimity among researchers, with few exceptions, on the dating of the hoard to the late 6th or early 5th century BC, with the sword belonging to the group of the most ancient pieces in the treasure (Topal 2022, p. 175). D. Redfern (2012, 29, p. 44) even suggested that the *akinakes* belonged to the Early Scythian type of bimetallic swords and daggers of the Orbeasca type of the late 8th–early 7th centuries BC, a proposition that has, however, been rejected by the present author (see Topal 2015, pp. 31–35, Figure 1).



**Figure 7.** Middle Scythian ceremonial akinakes from Shumeyko barrow (Polidovich 2019, fig. 1, 1-3; 2).



**Figure 8.** Middle Scythian ceremonial akinakes from Mamay-gora (Andrukh and Toshchev 2022, pp. 70, 74, 76–77).





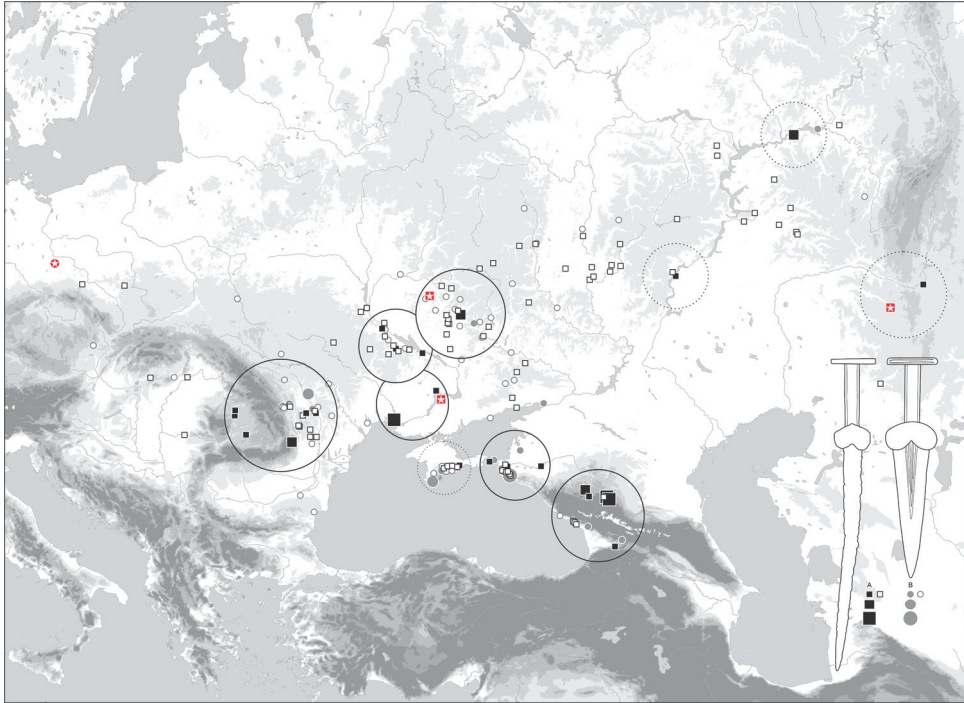
**Figure 9.** Middle Scythian ceremonial akinakes from Vetttersfelde (Furtwängler 1883, Taf. 3, 2, 5; von Bothmer 1973, cat. 3; Nawroth 1997, Abb. 1; Topal 2021, ill. 5).



On the other hand, among the latest items in the hoard is a diamond-shaped pendant (which extends the period of accumulation of the objects in the treasure and the sword itself—a *reliquia*). The nearest analogy of which was discovered in Barrow 400 near Zhurivka (Bobrinsky 1905, p. 11, Figure 14) of the first or second quarter of the 5th century BC (Alekseev 2003, p. 198). There are other analogies to this object, which is sometimes considered a belt adornment (Greifenhagen 1982, p. 8). In Colchis, similar items have been dated broadly to the pre-Hellenistic period beginning in the 6th century BC. In the design of the Vetersfelde sword sheath, especially in the protrusion at the top, one can recognize Early Scythian influence in the item's similarity to the stray find of a bronze scabbard from Firminiş (Matei 1977, Figure 1). However, this typological similarity to Early Scythian designs is probably the result of the continuous evolution of the Middle Scythian-period sheaths of the Shumeyko type rather than the direct influence of imported objects.

With the appearance of a new type of scabbard, the granulated triangles seen on the scabbards from the Shumeyko barrow of the second quarter of the 6th century BC (and also the chapes of Early Scythian ceremonial swords from Melgunov and Kelermes barrows of the mid-7th century BC) are replaced by a drop-shaped ornament executed in gold wire. Such “drops” are presented on a series of ceremonial *akinakai* sheaths: the finds from Hostra Tomakivska Mohyla (DGS 1872, Table 26, 13, 16–18) of the late 6th–early 5th centuries BC, Zolotoy Kurgan (Golden Mound) of 1890 (Steven 1891, Figure 2, 7) of the first quarter of the 5th century BC, and Mound 6 near Oleksandrivka (Kovaleva et al. 1978, Figure 2, 2) of the late 6th century BC. In this Vetersfelde series of sheaths, the common connecting link is the shape of the sheath's tip, which is still triangular, as in the Shumeyko type. However, while the shape of the tip remains relatively constant, the use of granulation in the ornament is replaced by wire appliqué comparable to those seen on the Tomakivka sheath. Another peculiarity of the Vetersfelde sheath is the double spirals resembling those on the bronze scabbards from Kolkhida-Psakhara in Abkhazia (Trapsh 1954, Figure 62, 1–5) and on a fragment from Maka in Dagestan (Kotovich 1959, Table 7, 24).

To judge from the evidence available, the Vetersfelde and Shumeyko types both appeared in the late 7th to early 6th centuries BC. However, in the case of the Vetersfelde type, the primary period of circulation probably falls in the second half of the 6th century BC, which is significantly later than that of the Shumeyko type. The fact that it was still possible to experiment with the shape of the Vetersfelde dagger type in the Archaic period is proven by a bimetallic example from Lubnice (Bukowski 1977, Table 12, 1). The bronze hilt of this *akinakes* combines a mushroom-shaped pommel with a kidney-shaped hilt. At the same time, the broad triangular blade is decorated with longitudinal notches, like on the daggers of the Vetersfelde type. However, the eponymous find of the ceremonial sword also indirectly confirms that, in contrast to the Shumeyko *akinakes*, this type of dagger was common for much longer—after all, the Vetersfelde hoard postdates the Shumeyko burial mound by about half a century. Furthermore, whereas the chronology of the Vetersfelde and Shumeyko types overlaps to some extent, the geographical distribution of the two types shows some marked differences. In the Caucasus, the Shumeyko type is widespread in the central part of the North Caucasus, while the Vetersfelde type is more characteristic of the Kuban region. Thus, *akinakai* of the Shumeyko type mainly occupy the right bank of the Dnieper, while daggers of the Vetersfelde type are found in the forest-steppe on the left bank and in the Donets region (Figure 10).



**Figure 10.** Distribution of the Middle Scythian akinakai (A—*Shumeyko* type, B—*Vetersfelde* type; ceremonial items are marked with a star).

## 6. The End of Middle Scythian Culture

The later evolution of the Middle Scythian *akinakai* is also easy to trace in the example of ceremonial forms. The end of the Middle Scythian culture (late 6th–early 5th centuries BC) characterized a small series of ceremonial swords with gold scabbards. A distinctive feature of the specimens from the Hostra (Tomakivska) Mohyla, the Zolotoy Kurgan, and Oleksandrivka is the scabbard with parallel edges and a rounded tip. The burials of this period, according to A. Alekseev, constitute a separate chronological group. It is noteworthy that in this compact group, he included burials with items of blade weapons from Hostra Mohyla, Oleksandrivka, Vishnivka, and, possibly, Artsyz (Alekseev 2003, p. 196). Among the signs of this group are the secondary character of the burials (which, according to the researcher, indicates the initial development of the territory), gold torques, ceremonial scabbards, the predominance of arrowheads with internal sleeves, and elements of protective armor (Alekseev 2003, p. 197).

In 1862, after excavations by I. Zabelin of the mound Hostra Mohyla near the village of Tomakivka, Dnipropetrovsk Region (former Ekaterinoslav Governorate), local peasants discovered a “treasure” in the mound, consisting of several jewelry items (DGS 1872, pp. 62–63). In addition to 200 bronze arrowheads, gold torques, plaques, and *vorvorka*, the hoard also included the famous sheath of a dagger made of gold (DGS 1872, pl. 26, 13, 16–18). The dagger was heavily rusted. However, judging by the gold cover, it had an oval pommel and a heart-shaped hilt, and the handle shaft was ribbed (Rostovtsev 1918, p. 38). From the sheath of a sword from the Zolotoy Kurgan (Golden Mound), excavated in 1890 by N. Veselovsky near Simferopol (Raskopki 1890, pp. 4–5), only the tip was preserved. The iron parts of the short sword “rusted and fell apart” (Steven 1891, p. 149). Nevertheless, according to V. Murzin (1984, p. 37), the pommel of the *akinakes* “consists of two closely converging volutes, forming, as it were, a ring”. Most likely, the phrase “the hilt

of the sword consisted of thick iron rings" (Raskopki 1890, p. 5) testifies to the decoration of the shaft of the hilt with longitudinal notches, similar to those on the hilt from Hostra Mohyla or Shumeyko barrow. Having examined numerous analogies to the things that made up the grave goods of the Golden Mound (a quiver set, a panther figurine, a *lekythos*, a black-glazed cup), S. Koltuhov (1999, p. 16) considered the dating of "the first quarter of the 5th century BC" to be the most preferable. At the same time, he does not exclude that the scabbard of the sword, "most likely, repeatedly repaired", dates back to the 6th century BC and the sword itself, as a later product, to the late 6th century or first half of the 5th century BC.

The blades of the sword from Kurgan 6 near Aleksandrovka (Oleksandrivka, Dnipropetrovsk Region) are parallel; the hilt is butterfly-shaped, and the pommel is rectangular with rounded edges. An important detail is the ribs on the blade, shown on the gold cover below the hilt (Kovaleva et al. 1978, p. 13, Figure 2, 2). Such ribs would become especially popular in the Classical period: they, for example, decorated the gold cover of swords from the Elizavetovskaya burial ground (Miller 1910, pl. 5), Velyka Bilozerka (Otroshchenko 1984, Figures 1–2), Oksyutyntsi (Bobrinsky 1894, pl. 22, 4), Osnyahy (Gorodtsov 1911, pl. 3, 4), and Kul-Oba (Reinach 1892, Table 27). The scabbard, like the objects from Shumeyko and Vetterfelde, is still composite, but the *akinakes* from Oleksandrivka have an innovation that is already characteristic of the Classical period (Polidovich 2014, p. 159): the protrusion of the scabbard of the Oleksandrivka sword is designed in the form of a wild boar. The sword from Oleksandrivka was found in a cache under secondary Burial 1 in Barrow 6 of Cimmerian time (Kovaleva and Muhopad 1982, p. 94). Based on some features—a quiver set, a single-spring fibula, a *vorvorka*, and bowls—researchers of the burial attributed it to the late 6th century BC (Kovaleva and Muhopad 1982, p. 99).

Thus, at the end of the Middle Scythian culture, many features emerge that define the appearance of the swords and daggers of the Classical period. These features include an oval pommel, transverse notches on the handle, and longitudinal grooves on the blade. However, while swords and daggers became "lighter" in the Classical period by tapering the handle (which was often forged together with the pommel and hilt), in the Middle Scythian, the *akinakai* retained their massiveness. Features such as an oval pommel, a flat hilt, and a "butterfly-shaped" hilt allowed A. Vulpe (1990, p. 43) to distinguish the *Cozia type*. *Akinakai* of the Cozia type are the most representative and widespread group of artifacts in the European part of the range (Figure 11). We also have many well-dated assemblages. The type is mainly concentrated in the east of the Danube region and includes the steppe part of the Black Sea region as well as Crimea, Ciscaucasia, southern Ural, and the Trans-Ural region. This type appeared in the 6th century BC and was known until the turn of the 5th to the 4th century BC. Most burials belong to the first half of the 5th century BC instead of the first quarter of the century. At the same time, most of the early burials of the 6th century BC are associated with the Caucasus. The most easterly finds can be considered to be the extra-long swords from the Southern Tagisken burial ground of the 5th century BC (Tolstov and Itina 1966, Figure 14, 1, 2, 15, 16), decorated with gold plates. A plate fragment in the animal style has been preserved from the sword with a broken antenna pommel from Barrow 59 (Tolstov and Itina 1966, pp. 166–68), but the sword from Mound 53 is better preserved: it has a wooden scabbard covered with gold foil. In the middle part of the scabbard are predators (wolves?), and in the area of the hilt is the head of a mountain sheep, or argali. A similar motif is found on a fragment of a hilt covered with gold appliqué from the Kyryk-Oba-II burial ground, which was found in Grave 1 of Mound 18 (Gutsalov 2010, Figure 5, 3). Another ceremonial dagger also demonstrates a new shape; the hilt is covered with gold leaf, and the *porte-épée* is decorated with gold *vorvorka*. It was found in Burial Mound 4 of the Besoba cemetery (Figure 12, 5–6), with the date of the quiver set in the 5th century BC (Kadyrbaev 1984, p. 88, Figure 1, 47).



**Figure 11.** Distribution of the Middle Scythian akinakai of (Cozia type; ceremonial items are marked with a star).

Nevertheless, the most striking manifestation of the new form of *akinakai* can probably be considered a richly decorated sword from Burial 2, Kurgan 4 of the Filippovka-I burial ground (Yablonsky 2013, p. 86, cat. 296). One side was decorated longitudinally with an elongated plate in the blade's center (Figure 12, 1–4). Cast silver reliefs decorated with gold inlay were installed on the hilt on both sides. The hilt with reliefs carved in iron was covered with gold leaf hammered into the surface. The end of the handle from the side of the pommel ends with a relief, also covered with a gold leaf with cut openwork. The inlay on the blade and hilt of the sword was made using different technologies, so it is possible that not only one master but a team took part in the production of the sword (Shemahanskaya and Yablonsky 2011, p. 404). The blade and the handle, with a hilt and pommel, are decorated with multi-figured compositions throughout the product. Narrative compositions unfold on the edges of the blade from its different sides; the hilt is designed with images of a wild boar and poorly preserved images of deer on the pommel. Both sides of the blade are decorated with complex compositions of walking animals and anthropomorphic scenes. The decorative scheme is a linearly rhythmic composition, complicated by scenes of animal torment as well as anthropomorphic scenes: a horseback rider hunting with a spear in front of a wild boar, the death of a warrior with a sword in his stomach, two warriors sacrificing a deer with swords, a warrior with an axe swinging at a deer (Rukavishnikova 2011, p. 373; Topal et al. 2022).

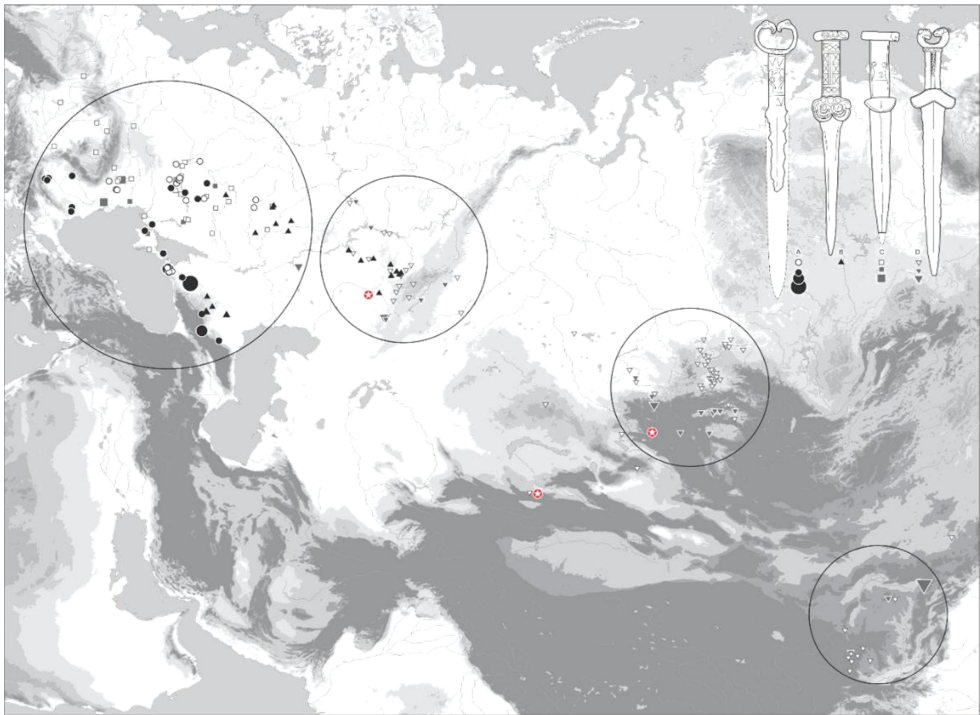




**Figure 12.** Middle Scythian ceremonial akinakai from Filippovka-I (1–4) (Yablonsky 2013, pp. 86–87, cat. 296) and Besoba (5, 6) (Arbore-Popescu et al. 1998, p. 128, cat. 64).

## 7. The Appearance of Griffin Daggers in the Archaeological Record

The emergence of ornithomorphic and zoomorphic pommels fits into the framework of the common Eurasian tradition. In the second half of the 6th century BC, not only on the territory of European Scythia, *akinakai* with a “realistic” ornithomorphic pommel appeared. Daggers with pommels in the form of opposed heads of birds of prey appear throughout the Scythian world (Topal 2020, Figure 4). Several regions stand out, mainly where such daggers were most common: the Volga-Urals, Zhetysu, western Siberia, and northern China (Figure 13). In the steppes of the Southern Urals, several daggers with pommels in the form of opposing griffins were discovered in well-dated burials. Among them is the ceremonial sword from Barrow 1 (Figure 14, 6–10) of Filippovka-I (Kuzeev et al. 2003, p. 16). All *akinakai*, except for the last one, date back to the late 6th–5th centuries BC (Denisov 2010, p. 229), while the Filippovka barrow, according to Western Asian imports and Pontic analogies, belongs to the late 5th to mid-4th century BC (Treister 2012, pp. 268, 284). Despite the apparent connection of the griffin daggers of the Urals with eastern Siberian samples, R. Ismagilov (1980b, p. 221) insisted on their local production. This is indicated by the fact that they are made exclusively of iron, while the Tagar daggers are made of bronze. Daggers from the Volga-Kama were most likely made by local Ananyino artisans, consistent with the spectral analysis data (Kuzminykh 1983, p. 130). According to A. Akishev (1978, p. 35), “pommels in the form of two griffin heads are widespread only in Southern Siberia, in Altai, Zhetysu, and as they move away from these regions, they are replaced by an antenna and claw-like ones”. At the same time, the researcher dates back the Issyk mound, including a griffin sword with gold inlay (Figure 14, 1–4), to the 5th century BC (Akishev 1978, p. 39).



**Figure 13.** Distribution of the Middle Scythian *akinakai* (A—Găiceana type, B—Marychevka type, C—Mircești type, and D—Issyk type; ceremonial items are marked with a star).



**Figure 14.** Middle Scythian ceremonial akinakai from Issyk-I (1–5) (Akishev 1978, 40–42, Table 22–25), Filippovka-I (6–10) (Aruz et al. 2000, cat. 6), and Klyuchi (11) (Frolov 2016, fig. 3).



Both the griffin dagger from the Issyk barrow and the *akinakes* from Mound 1 of the Filippovka-I burial ground accompanied long ceremonial swords (Akishev 1978, ill. 43, pl. 24; Pshenichnyuk 2012, Figure 27, 1) with a simple, slightly curved pommel and hilt, decorated with gold wire (as in Issyk) and figured applications on the pommel and hilt (as in Filippovka). Both long swords were attributed to the “transitional” type, which reflects the shift “from the Sauromatian to the early Sarmatian swords” of the early 4th century BC (Pshenichnyuk 2012, pp. 68, 87). The other two “transitional” swords from Filippovka-I, from Barrows 3 and 14, were also decorated with gold—their hilts were inlaid with gold wire (Pshenichnyuk 2012, Figure 66, Figure 127, 15). The handle of the sword from the burial mound at Buruktal is woven with gold wire, and the pommel is inlaid with gold wires hammered into iron (Smirnov 1964, Figure 48, 4d).

Daggers with a pommel in the form of opposing heads of eared griffins or feline predators are proxies of the connections of the South Ural tribes with the population of Kazakhstan and more eastern regions of Eurasia and the Aral Sea region, Zhetysu and Altai (Tairov 2000, 163, Figure 49, 2). From the territory of the Kazakh Altai, in Barrow 2 of the Berel burial ground, among other things, a fragment of a sword hilt was found, overlaid with gold foil and topped with opposed griffin heads (Sorokin 1969, Figure 21, 1, 3). It is not entirely clear how exactly Barrow 2 should be dated; L. Marsadolov (2015, p. 59) placed it between Tuekta and Pazyryk or within the framework of the “late 6th to first quarter of the 5th century BC”. This dagger is the easternmost find of a ceremonial griffin *akinakes* after Filippovka and Issyk items. In the east of the Scythian world, for example, in the Sauromatian or Pazyryk milieu, the image of the “mythical eagle” appears no earlier than the middle of the 6th century BC; at the same time, the arcuate shape of the hilt was also developed. The overwhelming majority of daggers with opposing heads of griffins or mythical eagles date back to the second half of the 6th to the first half of the 5th centuries BC (Umanskij et al. 2005, p. 21). In particular, griffin daggers of the Pazyryk culture were discovered in the area of Kumurtuk (Kiselev 1951, pl. 30, 11) and S. Kiselev (1951, p. 334) associated with the Minusinsk Hollow. V. Kubarev (1987, pp. 57–58), on the contrary, did not exclude the reverse process: from Western Kazakhstan to Altai, Tuva, and then to the Minusinsk Hollow, since the abundance of finds, in his opinion, indicates the popularity of griffin daggers in the Central Asian region.

The abundance of such products is known in the area of the Tagar culture in the Khakass-Minusinsk Basin and the Middle Yenisei, perhaps since from the 6th–5th centuries BC, in the decor of the pommel of the Tagar daggers, the heraldic heads of griffins crowd out all other images (Bobrov and Moor 2011, p. 150). Their main difference from other griffin daggers lies in the hilts, which are decorated with symmetrical figures of crouching predators (Bogdanov 2006, p. 90). Guards in the form of heads of predatory mammals turned in different directions are found only to the east, in the north of Central China, and hilts in the form of birds of prey or griffins—both in the east and in the west. N. Chlenova (1981, p. 10) believed that, since these daggers were decorated in the Altai animal style and were not found in the Tagar mounds, they most likely came to the Minusinsk Basin from Western Siberia, where such items are known, in addition to Altai, in the Ob basin. At the same time, iron was used for decorative purposes in the production of the earliest bimetallic Tagar daggers (some of which have images of griffins) (Devlet 1968, p. 30). In Asia, bimetallic daggers are almost unknown outside the Khakass-Minusinsk Basin. Among the Tagar antiquities, one can trace the gradual transformation of bronze items into iron ones. According to M. Devlet (1968, p. 31), this points to the local nature of these items.

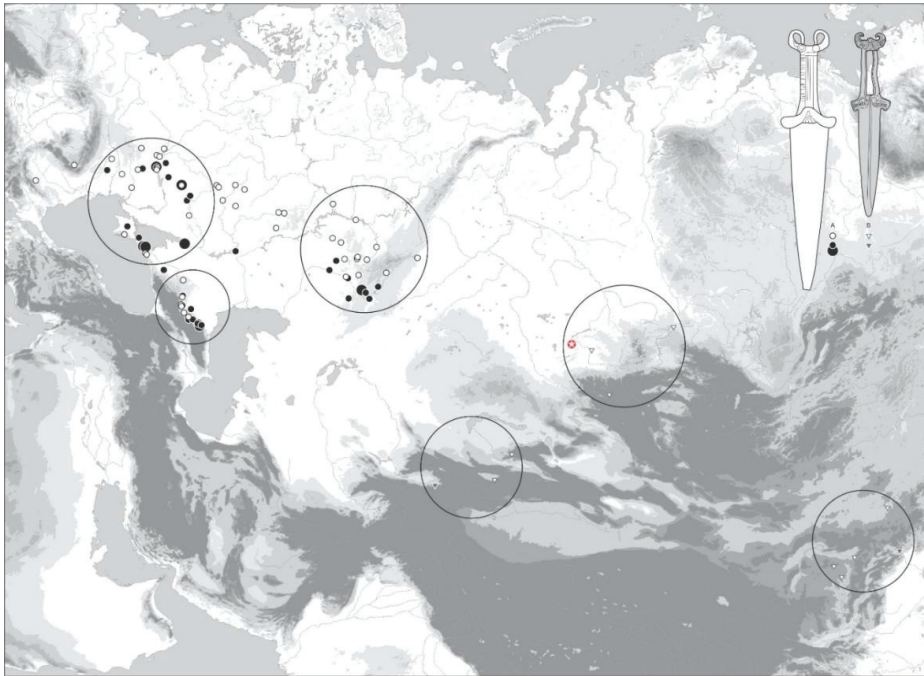
The hilt must be one of the griffin daggers from Khakassia, a stray find from the village of Askyzskoe that was covered with gold (Klemenz 1886, pl. XIV, 7). The hilt of another animal-style dagger from the Minusinsk region (collection of I. Tovostin) was decorated similarly (Zavituhina 1983, cat. 203). Both specimens most likely belong to the turn of the 6th–5th centuries BC. On the surface of the handle of two other daggers in the animal style of the 4th century BC<sup>1</sup>—stray finds near Ukladochnaya and Shadrino—fragments of



gold foil are noticeable (Frolov et al. 2017, Figure 1, 3, 4). A dagger from northwest China combined a gilded hilt and shaped silver appliqué on the blade (Desroches 2000, cat. 109).

Based on the chronological features of the category of items under consideration, griffin daggers appeared in the vast expanses of the Scythian world no earlier than the middle of the 6th century BC and have been known for over a century. At the same time, the latest items, dated to the 5th and even 4th centuries BC, turn out to be ceremonial forms, which are usually characterized by some delay. Ceremonial items are associated with three regions: the Volga-Urals, Zhetysu, and South Siberia. Therefore, it is difficult to determine the source of such an innovation as a griffin pommel. Despite numerous attempts, China can hardly be considered the source of this type's origin. The extreme western periphery, in the form of the Volga-Urals, can be considered a place for the further evolution of griffin daggers and their subsequent penetration into the Black Sea and Danube regions. Zhetysu, or Seven Rivers, where the griffin daggers are rare, is also not very suitable. Most likely, the role of the original territory, where the canons of the image and the morphology of the griffin daggers were formed, most of all suits the Central Asian area, including Altai, Tuva, and the Khakass-Minusinsk Basin. This idea can be proved by the abundance and diversity of types of griffin daggers (both iron and bimetallic), among which some varieties are characteristic exclusively of the Sayan-Altai, like items with hilts in the form of figures of crouching predators. In addition, there is reason to consider such a design of the hilts as earlier compared with the decorated muzzles of predators or the heads of birds or griffins. The latter iron specimens predominate over bronze and bimetallic ones (Devlet 1966, p. 8).

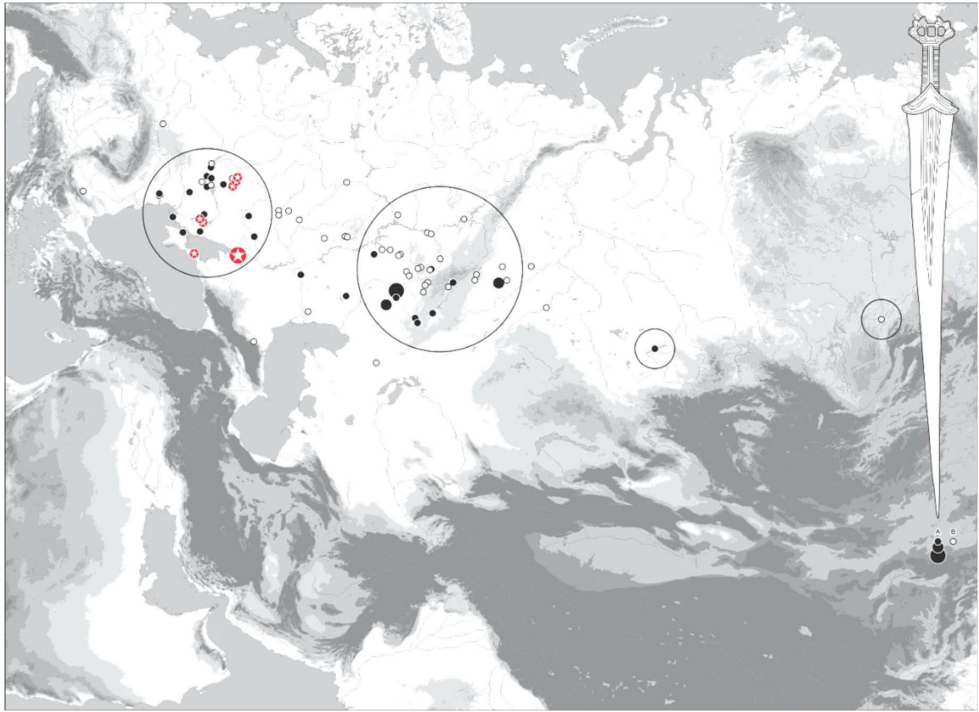
The image of a bird of prey accompanied Scythian art in its appearance, including in the design of weapons of the archaic period (scabbard chapes). However, from the second quarter of the 6th century BC, Greek influence (volute motif) was superimposed on Archaic iconography, which led to the emergence of a new popular Scythian-Greek motif (Kantorovich 2015, p. 31). At the same time, the Scythian animal style evolved from clear, natural images to their ornamental schematization. A. Melyukova (1964, pp. 55, 101) considered antenna pommels, interpreted in the animal style, more characteristic of Scythia than simple ones. Most of them were designed as the claws of a bird of prey, and only three specimens were in the form of bird or griffin heads. In antenna pommels, at first, they saw only a stylized image of the heads of griffins, birds of prey, or even calves (Bobrinsky 1894, p. 164; Miller 1910, p. 115; Rostovtsev 1925, p. 419). B. Grakov (1947a, pp. 70, 71) and N. Merpert (1948, p. 78) believed that the antennae were interpreted as the claws of a bird of prey (their primary metaphor was “the blow of a sword is similar to the blow of an eagle's claw”). The images of eyes at the base of the pommel are associated with the second motif of “vigilance and accuracy”. Burials with *akinakai* of this type—*Grishchentsy type* (Topal 2020, pp. 634–35)—are concentrated mainly in two main regions: in the forest-steppe part of the Middle Dnieper, gravitating towards the left bank, and in the North Caucasus. Judging by their chronology, the Grishchentsy type does not go beyond the 5th century BC while tending to the middle to the third quarter of the century. Another trend is also noted—steppe burials, as a rule, are later than forest-steppe ones (except in the Caucasus). Stray finds are also characteristic of the forest-steppe, and, forming a traditional concentration in the interfluvium of the Desna and Volga, they follow eastward to the Kama region and the Volga-Ural region (Figure 15). Far to the east of the main area, in Altai, near the village of Klyuchi, a single sword with eyes under the pommel (Figure 14, 11), decorated with gold, was found; moreover, it belongs to the extra-long swords and is over 110 cm (Frolov 2016, 57, 58, Figure 1, 1, 2). The western direction is less representative than the eastern one. The westernmost finds are in northern Bulgaria and southern Transylvania, like the extra-long sword from Dobolii de Jos-*Aldoboly*. Although some stray finds naturally fall in the steppe area, this trend was already fully developed in the Classical period.



**Figure 15.** Distribution of the Middle Scythian akinakai (A—Grishchentsy type and, B—Beixinbao type; ceremonial items are marked with a star).

### 8. Solokha and the End of the Antennae Evolution

The openwork pommel in the form of stylized bird heads or claws of a bird of prey with an eye at the base (Merpert 1948, p. 78) of the Classical period is a stylistic development of earlier types of pommels decorated in a realistic manner (Melyukova 1964, p. 56). At the same time, R. Ismagilov (1978, pp. 232–33) notes the exclusively utilitarian nature of the crossbar between the volutes (for its subsequent lining with gold foil) and considers this a late sign of the pommel, which, in his opinion, was formed by the late 5th century BC. According to the researcher, this innovation appeared in Greek workshops for manufacturing ceremonial “royal” items, and then, after a while, it was accepted by the Scythians (Ismagilov 1978, p. 232). In addition to the characteristic pommel, this type is distinguished by grooves along the edges of the hilt—an imitation of wire or rope winding to prevent the sword hilt from slipping in the hand (Ginters 1928, p. 39)—and the relatively frequent decoration of the hilt with images of animals or geometric ornaments. Besides, such pommels are typical not only for swords—for example, the lower part of the iron handle of the mirror from the northeastern chamber of the Chortomlyk mound is also designed and interpreted in the form of “stylized claws of a bird of prey” (Alekseev et al. 1991, pp. 197–98, cat. 118). However, this type of *akinakai* (with a highly stylized pommel in the form of bird or griffin heads, volutes with breaks, and a crossbar) is now known as the *Solokha type* (Topal et al. 2014, pp. 33–57). I. Shramko (1992, p. 222) suggested that the Bilsk hillfort was the center of their production (due to the significant concentration of the swords in the Vorskla and Sula basins) (Figure 16).



**Figure 16.** Distribution of the Classical Scythian akinakai (A—Solokha type, burials and B—stray finds; ceremonial items are marked with a star).

The eponymous sword from the Solokha barrow (Figure 17, 1–2) (A. Mantsevich 1987, pp. 69, 121) dates back to the late 5th century BC. However, the side burial where it was found dates back to the turn of the 5th–4th centuries BC, according to the “black-glazed *kylix* from Olynthus” and amphorae. The dating of the side burial of the Solokha barrow, constructed after the erection of the barrow over the main burial, varied from the “first half to the middle of the 4th century BC” (Brashinsky 1965, pp. 97–98) to the “first quarter of the 4th century BC” (Alekseev 1991b, p. 52; 2003, p. 228). However, A. Alekseev (2003, pp. 228, 231) noted that most of the items from the burial, including the famous sword in a sheath with a gold cover, are much older. They accumulated over the long lives of their owners. Regardless, S. Monakhov (1999, pp. 240–43) dates the *kylix* from the side burial to the early 4th century BC and the amphora assemblage to the 380s BC.

The burial with a ceremonial sword from Mound 2 near the village of Oksyutyntsi (Bobrinsky 1894, pl. 22, 4) was dated back no later than the middle of the 5th century BC based on a black-glazed *kylix* (Onayko 1966a, p. 61). These *kylikes* were common in the second quarter of the 5th century BC (Sparkes and Talcott 1970, 268, no. 469–72). Another sword with a schematic antenna pommel covered with gold was discovered in Burial 2 of Mound 3 of the Pereshchepine burial ground (Shramko 1994, p. 124, Figure 7, 1; 8). S. Makhortyh (2011, p. 14) attributed this assemblage to the late group of burials at the site of “the last quarter—the late 5th or the first half of the 4th century BC”. The arrowheads from the quiver set from this burial are reliably dated to the late 5th or the first third of the 4th century BC (Makhortyh 2012, p. 153). Based on the features of the arrowheads’ set, a sword in a gold cover of the Solokha type from Mound 4 near Osnyahy (Gorodtsov 1911, pl. 3, 4) was also attributed to the 4th century BC (Shramko 1976, p. 197) or the late 5th to the first third of the 4th century BC (Makhortyh 2012, p. 153). Based on the similarity of the scabbard of the ceremonial sword from the cache of Mound 30 near Velyka Bilozerka



(Figure 17, 3, 4) to a scabbard from Kul-Oba Barrow, V. Otroshchenko (1984, p. 126) dates this item to the last third of the 4th century BC.



**Figure 17.** Classical Scythian ceremonial akinakai of Solokha type from Solokha barrow (1, 2) (Piotrowski et al. 1986, Kat. 155), Velyka Bilozerka (3, 4) (Rolle et al. 1991, cat. 89), Vysochino (5) (Lukyashko 2022, fig. 2), and Kul-Oba (6) (Alekshev 2012, pp. 178–82).



In addition to the famous sword scabbard from Kul-Oba barrow (Figure 17, 6), fragments of a hilt were found in the stone crypt (Reinach 1892, Table 27). Even though the sword's pommel has not been preserved, according to other features—a wide butterfly-shaped hilt, imitation winding on the handle shaft, and notches on the blade—it can be assumed that the sword belonged to the Solokha type. The core of the assemblage of the Kul-Oba mound, according to A. Alekseev (2003, p. 229), refers to the second half of the 4th century BC. The burial from the crypt is synchronized with the Chortomlyk barrow, in contrast to the burial under the crypt, which is chronologically close to the secondary burial of the Solokha barrow (Alekseev 2003, p. 262). The Thasian amphora from the Kul-Oba mound was initially dated back to the late third to fourth quarter of the 4th century BC (Brashinsky 1965, p. 104). A. Alekseev (2003, p. 262) offers the 330s BC as a reference date, noting a downward trend in the chronology of some finds in the first half of the 4th century BC. At the same time, S. Monakhov (2003, p. 70, pl. 46, 1) dates one of the late biconical amphorae with the *Areton* (Ἀρέτων) stamp to the 330s. This barrow is one of the latest assemblages with a sword of the Solokha type (Alekseev et al. 1991, p. 125).

A series of swords of the Solokha type comes from the Lower Don, and three of them were decorated with gold, including a richly decorated scabbard. In 1901, near Elizavetovskaya (Elizavetinskaya), Azov District of the Rostov region, I. Ushakov excavated a mound, which later received his name. In Ushakov's Kurgan 16 of the Elizavetovskaya burial ground, in addition to the sword and the hilt and scabbard covered with gold appliqué, Greek imported vessels were found, in particular an *aryballic lekythos* of the late 5th–early 4th centuries BC and late Chian amphorae of the 4th century BC. Despite the considerable differences in the dating proposed by the researchers—from the 6th to the 5th century BC, or the 5th century BC (Kieseritzky 1902, pp. 44–45; Minns 1913, p. 270; Borovka 1928, p. 97; Sokolsky 1954, p. 138), and even the 7th century BC (Tallgren 1917, p. 77)—the most probable date could be the first half of the 4th century BC (Rostovtsev 1925, pp. 531, 532; Shilov 1966, p. 174). I. Brashinsky (1980, p. 124) dated this assemblage to the early 4th century BC based on fragments of black-glazed pottery. However, E. Vlasova (1997, p. 37) disagreed with this dating and dated the primary burial from the Ushakov mound to the last quarter of the 5th century BC. She also stated that the cover of the scabbard was made earlier, as it was installed twice on the scabbard.

In Burial Mound 10 of 1909, near Elizavetovskaya, a sword with a hilt covered with gold foil was discovered. The sword's pommel was decorated with “the well-known stylization of griffin heads” (Miller 1910, p. 115, pl. 5), and the scabbard was wide, had parallel edges, and was decorated with scenes of tormenting animals. N. Sokolsky (1954, p. 141) dates it by analogy with the swords from Solokha and Kul-Oba to the 4th century BC. However, stamped Heracleian amphorae from this mound belong to type I-4, according to S. Monakhov (2003, p. 129), and date back to the late 5th–early 4th centuries BC, although the researcher initially dated them to the 390s BC (Monakhov 1999, p. 171). The scabbard, similar in shape, with parallel edges and a long blade, is associated with a sword from Mound 1 of 1910 of the Elizavetovskaya burial ground (Pharmakowsky 1911, p. 197, Abb. 5). According to Yu. Polidovich (2014, p. 155), the shape of this item opens a new series of Scythian scabbards, although their three-part construction (the mouth, middle part, and tip) is an archaic sign, well known in the previous era. In 2019, in the territory of the Azov region, near the village of Vysochino, in Burial 4 of Mound 1 (Figure 17, 5), a sword of the Solokha type with a gold cover on the hilt was found (Lukyashko 2022, Figure 1, 1; 2; 3). The burial is dated based on amphorae and a painted *lekythos* to the early 4th century BC (Lukyashko 2022, p. 121).

It is symptomatic that assemblages containing swords with a claw-like pommel of the Solokha type are dated to the 4th century BC, or they contain ceremonial forms decorated with gold or are dated by analogy with these “rich” burials. For ceremonial items, the mechanism of chronological “delay” is especially characteristic, since valuable weapons could be stored for a long time and passed down from generation to generation. This “delay” means the burials could have been made when the type was already out of use. A

vivid example of such a phenomenon is the hilt of an Achaemenid sword from the 5th century BC (Alekseev et al. 1991, pp. 92–102, 130–31, Figure 67, cat. 192) from the Chortomlyk barrow of the late third quarter of the 4th century BC (Alekseev 2003, pp. 268–69). Nevertheless, the Solokha type apparently appeared at the turn of the 6th–5th centuries BC and existed until the late 4th century BC. Chronologically, assemblages with *akinakai* of the Solokha type can be divided into three groups, which date back to (a) the second or third quarter of the 5th century BC; (b) the late 5th to the first third of the 4th centuries BC; and (c) the second half of the 4th century BC. Early burials are concentrated in left-bank forest-steppe Ukraine, and a single assemblage is known in the Kuban region. In addition, at this time, the image of an *akinakes* of the Solokha type appears on a stone sculpture: on stelae from the Krasnodar Museum (Pregradnaya?) (Miller 1925, p. 109, Figure 7) and Ternivka, Mykolaiv region (Elagina 1959, Figures 3–6).

The widest distribution of swords of this type was in the last decade of the 5th century to the first third of the 4th century BC; the vast majority of dated assemblages are associated with this span. This period is also the time for the most ceremonial items, with the hilt and often the scabbard covered with gold, although they are found only on the Dnieper's left bank and in Don's lower reaches. *Akinakai* of the Solokha type penetrate the right bank of the Dnieper; to the south, into the steppe part; in the west, they reach the Lower Dniester; and in the east, they fall into the Volga-Ural interfluvium. Numerous stray finds in the Volga-Don forest-steppe are associated with this period. At the final stage of its development, in the second half of the 4th century BC, *akinakai* of the Solokha type appeared in the Crimea and in the burials of the Southern Urals and Trans-Urals. Furthermore, precisely during this period, mirrors appeared, the handles of which were decorated in the Solokha style.

The distribution of finds of swords and daggers of the Solokha type looks quite eloquent (Figure 16). The complete absence of the Solokha *akinakai* in Transylvania, the Great Hungarian Plain, and Crimea and their almost complete absence in the Caucasus are indicative. Burials with swords and daggers of the Solokha type gravitate towards three main regions—the interfluvium of the Dniester, the Siverskyi Donets, and the Urals. The concentration of swords in the Vorsklya-Sula region brought I. Shramko (1992, p. 222) the idea of localizing the center of their production in the Bilsk hillfort, where the blacksmiths were fluent in processing ferrous metals and gold. The Sauromatian assemblages with swords of the Solokha type cover mainly the Southern Urals. There is a considerable mass of less documented stray finds between the Don and the Urals. Already in the later Classical period, when in the middle of the 4th century BC, the centers of production of bladed weapons were shifting to the south, the antenna pommel practically disappeared from the set of decorative techniques of the Scythian armorers. So, the Solokha type is apparently formed on the left-bank forest-steppe of the Dnieper—for the early period of its evolution (the first half of the 5th century BC), only forest-steppe burials are characteristic. Moreover, most “ceremonial” forms come from the left banks of the Dnieper (Topal 2020, 639).

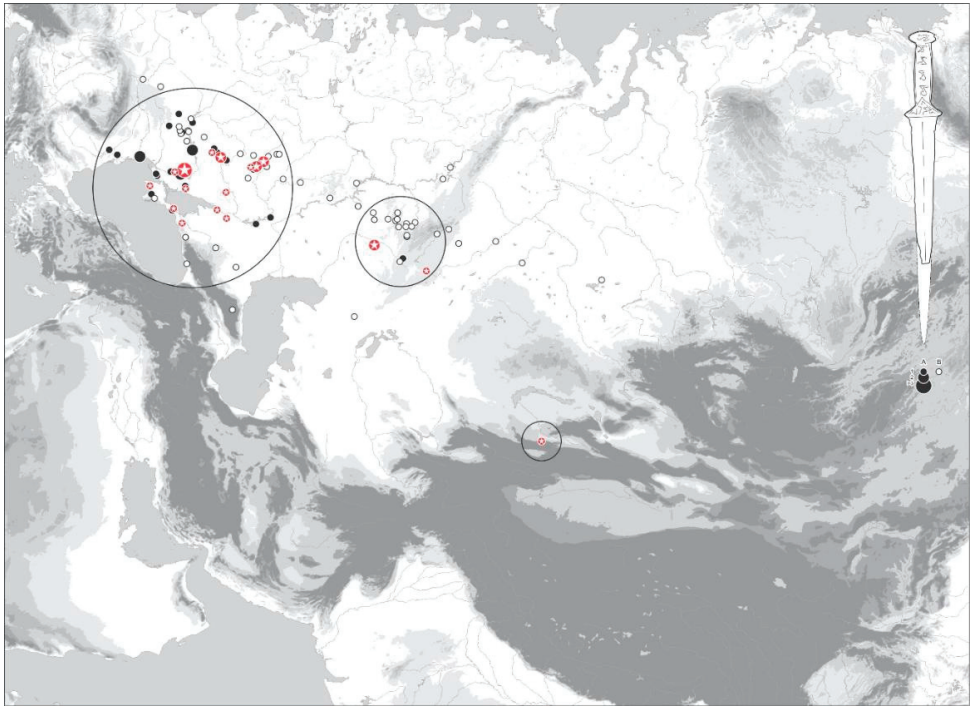
### 9. Chortomlyk and the “Golden Madness” of the Scythian Culture

As far back as M. Rostovtsev (1914, pp. 89–90), in his search for analogies with a sword from Chastye Kurgany, he paid attention to the “unusual typicality” of handles such as Chortomlyk, Kul-Oba, Kekuvatsky, etc. and concluded their simultaneousness. W. Ginters (1928, pp. 33–36) developed this idea further and distinguished a group of “swords with flattened oval tips”. B. Grakov (1947b, p. 112) called such a shape of the handle the *Chertomlyk-Kul-Oba type*; A. Melyukova (1964, pp. 51–52) assigned this group but separated the finds from the Kekuvatsky Mound (Figure 18, 8) and Karagodeuashkh (Melyukova 1964, p. 53). Later, several swords from Classical Scythia with an oval pommel, a sub-oval handle, a “false” triangular hilt, and a triangular blade were grouped under the *Chertomlyk type* term (Topal 2014, p. 130). According to A. Alekseev (1991a, p. 278), this type developed under the influence of Greek weapons, as an oval hilt is typical of Greek *xiphoi* (Melyukova 1964, p. 53), and some of the swords assigned to this type are single-edged. Most of them are distinguished by the decoration of the hilt, pommel, and handle in animal style; some

swords were covered with gold on a forged relief. Since the swords of the “Chertomlyk series” (Figure 19) combine elements of Greek-Scythian art and some of them were found on the Bosphorus, it can be traditionally assumed that they originated from the workshops there (Onayko 1970, p. 31). However, according to the observations by V. Gulyaev (2009a, pp. 163–64), the decorations on the handles were applied by forging and not by punching, and the handles were covered with gold leaf shortly before the funeral.



**Figure 18.** Classical Scythian ceremonial akinakai of Chertomlyk type from Chortomlyk barrow (1, 3–5) (Aleksiev 2012, pp. 211–14), Berdyansk barrow (2) (Murzin et al. 2022, p. 100), Chayan (6) (Picón et al. 2007, cat. 59), Kolbino (7) (Gulyaev 2009b, fig. 4), Kekyvat'sky barrow (8) (Tolstikov and Nefedkin 2010, p. 615, fig. 12), and Zhitkov-II (9) (Kodai Oriento Hakubutsukan 1991, p. 65, cat. 40).



**Figure 19.** Distribution of the Classical Scythian akinakai (A—Chertomlyk type, burials and B—stray finds; ceremonial items are marked with a star).

In the Chortomlyk (in Ukrainian) or Chertomlyk (in Russian) barrow, in the central grave, five double-bladed ceremonial swords were discovered (Figure 18, 1, 3–5), and four are known at present.<sup>2</sup> Three were found in chamber 5 (feature K), stuck into the wall (DGS 1872, p. 112, Table 40, 9, 12, 14). Next to the known Achaemenid sword (Figure 18, 1, 4) was found another one, of which only the hilt was preserved (DGS 1872, Table 37, 3). Initially, I. Brashinsky (1965, pp. 100–1) dated the Chortomlyk barrow by the Sinope stamps to the late 4th or 3rd centuries BC. M. Artamonov (1966, p. 52), analyzing the images on the silver vase and platter from Chortomlyk, placed the burial mound between the first quarter and the middle of the 4th century BC. N. Onayko (1970, p. 99) dated the black-glazed Greek vessels to the middle or third quarter of the 4th century BC; the Chersonesian amphora stamp was dated to the first half of the 3rd century BC; and the Sinope one to the late 4th or early 3rd century BC. A. Alekseev proposed several dates for the assemblage. The “broad” date supported by the Achaemenid sword and amphora stamps from the mound covers the 5th through the turn of the 4th–3rd centuries BC, and the “narrow” one is the 330–300 s BC, according to the gold plaques, arrowheads, and bronze tops (Alekseev et al. 1991, pp. 130–31). Although, according to A. Alekseev (2003, p. 268), the “core” of the Chortomlyk assemblage (including the ceremonial warrior set of the “Trojan series”) is dated to 350–320 s BC, the later items belong to the last third of the 4th century BC. S. Polin and S. Monakhov disagreed with this conclusion fundamentally based upon analogies that pointed to the middle to the third quarter of the 4th century BC (Mozolevsky and Polin 2005, p. 370) or the late 340s to the first half of the 330s BC (Monakhov 1999, pp. 368, 578).

In addition to the specific design of the handle of the Chertomlyk type, a series of gold-plated scabbards from the “Chertomlyk series” stands out. The cover from Mound 8 (“Five Brothers”) of the Elizavetovskaya burial ground adjoins the sheaths from Chortomlyk, as well as the scabbard of the Metropolitan Museum of Art found, presumably, in Crimea,



near Chayan (Richter 1932, pp. 109–12, Figure 3). According to M. Treister (1999, p. 79), these prestigious sheaths and *gorytoi* of the “Trojan series” (including those from Vergina tomb) were made in Bosphoran workshops in the 360–340 s BC. A. Shcheglov and Katz (1991, p. 103) have suggested that the items of the Trojan series were made in about the 350s BC and deposited in the aristocratic burials starting in the 340s BC; the researchers considered Chortomlyk the latest one among them. A. Alekseev (2003, p. 245) believes that stylistic peculiarities of details and images on the items of the series cannot be dated more precisely than the middle of the early last quarter of the 4th century BC. However, this appeal to the plots of the Trojan cycle could have been stimulated by Alexander the Great’s campaign. That is why the lower date of these things is limited to 334 BC. Nevertheless, some details of images on the scabbards of Chertomlyk type (the most important one is a long spear in the hand of a horseman) can be dated after 331 BC (Nefedkin 1998, p. 76). However, the only preserved sword scabbard from Chortomlyk belonged to a unique sword that combines Early Scythian, Achaemenid, and Greek-Scythian features (Treister 2010, pp. 227–29).

On the sword’s scabbard from Burial Mound 8 of the Five Brothers group, the scenes are similar to those on the gold cover of the sword from Chortomlyk. The pommel’s oval shape and the guard’s triangular-heart shape are similar to those on swords from the Chortomlyk barrow (Shilov 1961, pp. 158–59). The images of animals on the hilt are identical to the reliefs on the sword’s hilt from feature K of chamber 5 of the central tomb (DGS 1872, Table 37). I. Brashinsky (1984, p. 139) attributed this assemblage to the turn of the third and the last quarter of the 4th century BC, while S. Monakhov (1999, p. 362) dated the amphora assemblage from Burial Mound 8 of the Five Brothers group from the second half of the 350 s to the middle of the 330 s BC. The Kekuvatsky burial mound (Reinach 1892, Table 27, 9), with a sword hilt similar to those of Chortomlyk, was dated to the middle of the 4th century BC based on finds of a painted *pelike* (Yakovenko 1974, p. 65; Vinogradov 2005, p. 271).

In the Kuban region, in the Karagodeuashkh barrow, a sword was discovered similar to the swords from Chortomlyk and Kul-Oba, of which an iron hilt covered with gold leaf was preserved (MalMBERG 1894, p. 128, Table 5, 3). The handle was slightly thickened in the middle, and the upper part was almost ellipsoidal. The authors of the first publication dated it to between the 4th and 3rd centuries BC; M. Artamonov (1966, pp. 74–75) regarded it as parallel to the Alexandropol barrow and dated it to the late 4th century BC. The analysis of the assemblage elements (including Greek pottery) points to the chronological proximity of the Karagodeuashkh barrow to the Chortomlyk and Kul-Oba (Vakhtina 2009, p. 39). Early Chersonesian amphorae found in the Karagodeuashkh mound were dated to the third quarter of the 4th century BC (Mozolevsky and Polin 2005, p. 365). Despite possible approximation to the 360 s, the most probable date of the barrow is the third quarter of the 4th century BC or from the 340 s to the first half of the 320 s (Monakhov 1999, pp. 412, 578).

In the aristocratic Burial 1 of Burial Mound 11, near Stary Merchyk, a sword with an oval tip was found, the hilt of which was covered with gold leaf. Figures of griffins sitting opposite each other were minted at the guard, and a lying deer with a predator was placed on the oval handle (Bandurovskij and Buynov 2000, Figure 20, 1). This assemblage contained the objects of the second half of the 4th century BC, including a rare black-glazed bowl, a silver goblet, and fragments of a silver bowl (Bandurovskij and Buynov 2000, Figure 61, 67). As a result, the authors of the excavations dated the burial to the period between the erection of Solokha and Chortomlyk with Kul-Oba or the period of “340 s–325 BC” (Bandurovskij and Buynov 1999, 23–24).

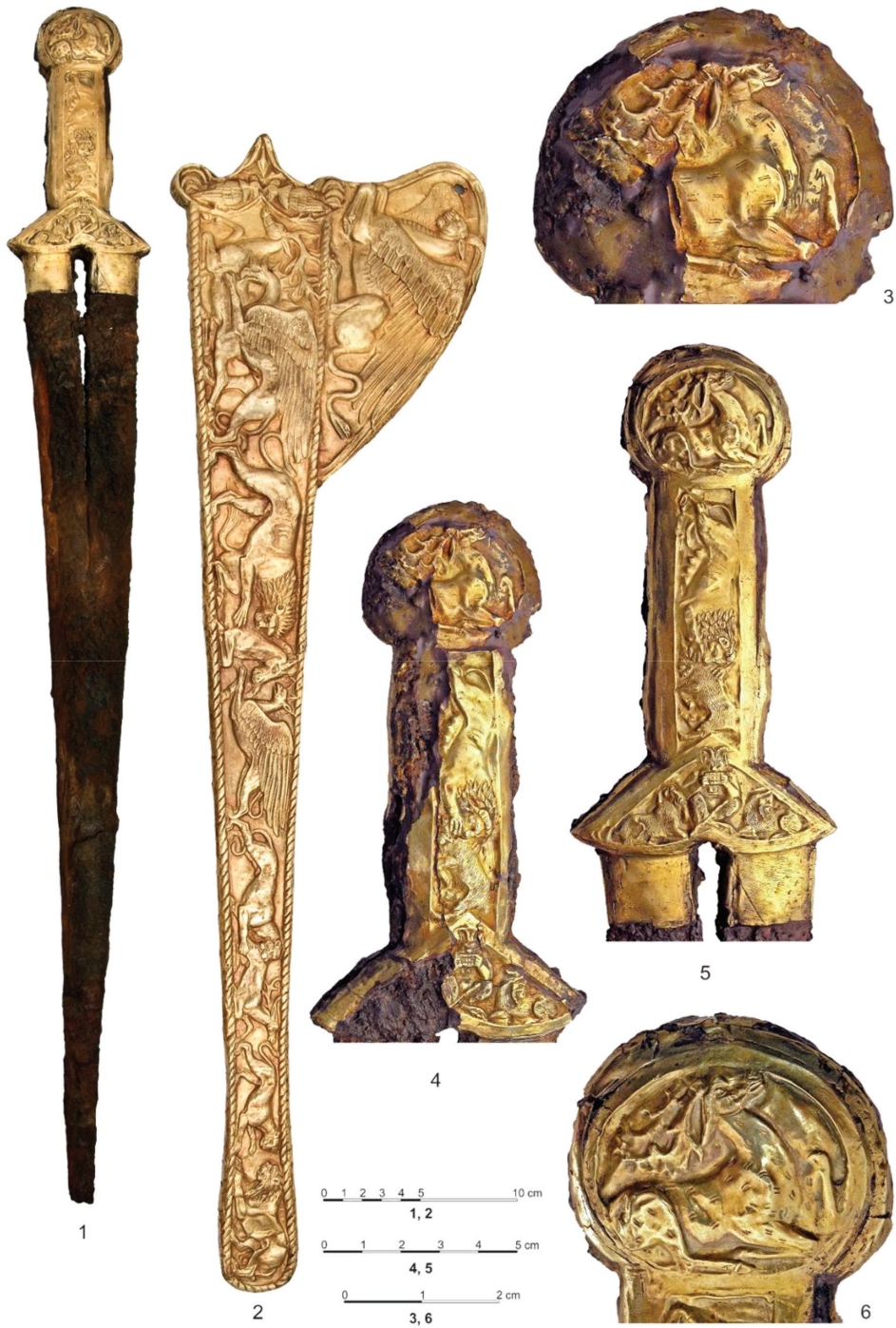
One of the first to be discovered in the Middle Don, in the Chastye Kurgany group near Voronezh, in Barrow 3, a sword was found that is surprisingly similar in decoration and morphology to the Chortomlyk ones (Rostovtsev 1914, p. 11, Table 2, 5). M. Rostovtsev (1914, p. 12) dated the Voronezh sword, as well as all the Chertomlyk series, to the second half of the 4th century and the early 3rd century BC, noting the particular golden age of this type in the first half of the 3rd century BC. In Barrow 11 of the same group,

sheaths were discovered bound with a silver plate stamped with stylized floral ornaments (Puzikova 2001, p. 14, Figure 6, 8, 8a). S. Zamyatnin (1946, p. 48) attributed the first barrows of the Chastye Kurgany group (including Mound 3) to the last period of the burial ground functioning in the second half of the 4th century BC.

The sword from Barrow 9 from the village of Durovka, based on its oval pommel and subtriangular hilt (Puzikova 1969, Figure 6, 3, 4, 5), could also be attributed to the Chertomlyk type. The iron hilt of this sword is encircled by figural plates of precious metals (silver and gold) (Puzikova 1969, 93, Figure 6, 1, 2). In a similar way, but with the help of bone plates, the handle of a mirror from Burial Mound 2 of Barrow 13 near Pokrov was decorated (Terenozhkin et al. 1973, pp. 161–66), attributed to the second half of the 4th century BC (Alekseev 2006, p. 58). The proper Chertomlyk-style decorations on the mirror handle, for example, the ornamentation on the Kul-Oba mirror (Reinach 1892, Table 31), consisted of a rounded pommel with an image of a predator. The handle shaft was decorated with an image of a deer with rampant antlers and a predatory animal running after it. Aristocratic burials eloquently testify to the possible coexistence of the Chertomlyk and Solokha decoration models. So, probably, Kul-Oba, one of the youngest barrows with a sword of the Solokha type, contained a mirror with a hilt of the Chertomlyk style, while the Chertomlyk barrow contained a mirror with a hilt of the Solokha type. Therefore, the synchronization time of these two types of hilt design appears to be the beginning of the last third of the 4th century BC or 330s BC.

The assemblage from Kolbino is considered earlier and is dated to the middle or third quarter of the 4th century BC (Savchenko 2006, p. 329). A gold-hilted sword from Burial 1 of Mound 7 near the village of Kolbino (Gulyaev 2008, Figure 1, 4) was similarly dated by researchers according to the Chertomlyk sword to the middle of the third quarter of the 4th century BC (Gulyaev and Savchenko 2000, p. 93). In Barrow 36 of this burial ground, another sword of the Chertomlyk type was also discovered (Gulyaev 2008, Figure 1, 5) with an openwork blade (Figure 18, 7). It is believed that these openwork blades and, possibly, handles were caused by a desire to lighten the upper part of the sword and thus to bring its center of gravity closer to the point of impact (Savchenko 2006, p. 325). Moreover, as the slits occupy the upper part of the blade, it could indicate a connection with an older pattern, typical of Solokha-type *akinakai*: the grooves forming an elongated triangle.

The sword from the central burial mound of the Tovsta Mohyla mound (Figure 20) also has slits on the blade (Mozolevsky 1979, pp. 69–73, Figures 52–56). In addition, this sword is distinguished by an unusually rounded tip. Like many swords from aristocratic burials, the handle is covered with gold foil. The sheath of this example is also supplied with gold leaf in a manner typical of the Chertomlyk series (Treister 1999, p. 75). B. Mozolevsky (1979, p. 229) dated all the mound burials within the limits of the second or early third quarter of the 4th century BC. The chronological similarity of the three-handled amphorae (dated by A. Alekseev to the last quarter of the 4th century BC) from Tovsta Mohyla and Kurdzhips has been questioned by S. Polin, without considering it as a serious reason to revise B. Mozolevsky's chronological conclusions (Mozolevsky and Polin 2005, pp. 363–64). A. Alekseev (2003, p. 243), broadly agreeing with the lower chronological limit, moves the upper one based on analogies of the phiale and amphora in the Kurdzhips barrow and the pectoral from Velyka Blyznitsya. In his opinion, Tovsta Mohyla belongs to the group of "royal barrows" of the second to third quarters of the 4th century BC (Chmyreva Mohyla, Tsimbalka, Haimanova Mohyla), in the range of 350–340s to 320s BC. Summing up the chronological observations, we can conclude that the time of the most incredible spread of swords of the Chertomlyk type was the third quarter of the 4th century BC, and most of the stray finds are also connected chronologically.



**Figure 20.** Classical Scythian ceremonial akinakes from Tovsta Mohyla barrow (Polidovich 2015, fig. 1).

On the left bank of the Lower Don, in the diagonal Burial 2 of Burial Mound 3 of the Zhitkov-II burial ground near the village of Vesoly, Rostov region, an *akinakes* of the Chertomlyk type was discovered (Figure 18, 9). There were also cross grazes on the sides of its hilt, wrapped in gold foil (Parusimov 2013, p. 225, Figure 3, 22). This burial yields a painted jug with similar forms to the Olbian ceremonial tableware of the second half of the 4th or 3rd century BC (Klepikov 2002, p. 61). However, the rectangular gold plates with an image of a reclining deer decorating the wooden bowls (Parusimov 2013, Figure 3, 17, 19) find direct analogies in the assemblage of the Zavadska Mohyla (Mozolevsky 1980, pp. 105, 109, Figure 44, 6, 9; 47). Furthermore, in the grave of the Zavadska Mohyla, we find Chian “new style” amphorae that date to the third quarter of the 5th century BC, probably to the 430s BC (Alekseev 2003, p. 259). This date is not contradicted by the *Nympheus-Zavadska Mohyla* horse harnesses (Kantorovich 2012, pp. 36–37) of the second half of the 5th century BC, although V. Klepikov insists on the dating of gold covers from the Volga-Don interfluvies to the 4th century BC and even the early 3rd century BC (Klepikov 2002, p. 62).

In addition to the oval handle and pommel, an important feature associated with a group of swords of the Chertomlyk type is a slit hilt. For example, such slits on the hilt are present on a sword from the Berdyansk burial mound (Murzin and Fialko 1998, p. 107, Figure 4); similar is the general design of the sword, like an oval pommel and extended hilt (Figure 18, 2). This “royal” barrow belongs to the early assemblages of the third group, including the Solokha barrow, according to A. Alekseev (2003, p. 207). The Berdyansk burial mound is very close in time and its grave goods to the Solokha barrow and is dated by various researchers within the limits of 380–365 BC and 375–365 BC (Kovalyov et al. 1992, p. 40) or 380–375 BC (Fialko 1997, p. 57). S. Monakhov (1999, p. 287) believes there are serious grounds for narrowing the date to the first half of the 360s BC. Nevertheless, it is preferable to date the barrow to the late first or early second quarter of the 4th century BC (Mozolevsky and Polin 2005, p. 362). On the gold-foil-covered hilt of the sword from Burial 1 of Burial Mound 3, near the village of Stary Merchyk, one can see four slotted rectangles (Bandurovskij and Buynov 2000, p. 77, Figure 8, 7–8). This burial is attributed to the third quarter of the 4th century BC, and the presence of a clad sword is attributed to the participation of the Scythians of the Siversky Donets in the war with Bosphorus (Grechko and Karnauh 2011, p. 249). A. Alekseev (2003, p. 247) suggested that a considerable part of gold-decorated weapons could be used as diplomatic gifts for the Scythian nobility. A similar sword was discovered in the ruined burial mound near Perevalsk in the Luhansk region (Filatov and Chermenko 1972, p. 123, Figure 1). A sword from this aristocratic burial was wrapped in gold foil, which shows hollows, probably caused by the slits. Besides the hilt, the blade of the sword was also slit, and its pommel was oval-shaped, almost round, with an animal motif.<sup>3</sup>

The “cultural types” of the Scythian *akinakai* can be diagnosed by means of various complementary indicators, one of which is the reflection in fine art and monumental sculpture. One such image of an *akinakes* of the Chertomlyk type can be regarded as a relief on a silver bowl from the cache of the Haimanova Mohyla barrow (Bidzilya and Polin 2012, pp. 105–16, 421–24, Figure 593, 594). The ornamental frieze of the bowl presents six figures, one of which (a bearded warrior) has a long ceremonial sword with a triangular blade decorated with a geometric pattern (Bidzilya 1971, p. 54). The design of the pommel is interesting: it is oval, and the edges of the hilt are decorated with horizontal incisions (most probably, it is an imitation of a sheathed sword). The author of the excavations dated this assemblage to the early second half of the 4th century BC (Bidzilya 1971, p. 55). A. Alekseev (2003, p. 277) later dated Haimanova Mohyla to the middle or third quarter of the 4th century BC, connecting this mound to the time of Ateas’ activities. According to S. Monakhov, the amphora set from the northern burial dates the mound to the middle of the 330 s BC, which allowed S. Polin to narrow the dating to the 350–340 s BC (Mozolevsky and Polin 2005, p. 365). In any case, it is clear that the sword depicted on the cup from Haimanova Mohyla dates to the time of the greatest spread of the Chertomlyk type.



## 10. Shulhivka and the Spread of Single-Blade Swords in the Classical Period

Closely connected with the Chertomlyk type is a group of ceremonial single-bladed weapons observed by W. Ginters (1928, pp. 36–37), A. Melyukova (1964, p. 59), and A. Alekseev (2006, p. 43). There are nine examples of long single-bladed swords with a handle consisting of an oval pommel, a trapezoidal hilt often covered with gold leaf, and relief ornamentation. The ornamental design of the hilt brings this group extremely close to the ceremonial swords of the Chertomlyk type. In particular, there are broad analogies to the zoomorphic motifs of feline predators and ungulates. One of the earliest finds of swords of this type comes from barrows excavated by N. Veselovsky in 1889–1891, near the village of Shulhivka or Shulgovka (Alekseev 2006, pp. 46–47, Figure 1, 1). Unfortunately, this eponymous item of the *Shulgovka* type has been lost. The only sources for Veselovsky's excavations are his field documentation, a list of finds, and a manuscript catalogue prepared in the 1890s by G. Kizeritsky. A detailed analysis of these documents allowed A. Alekseev (2006, pp. 43–47) to make a detailed description of swords, correct a series of historiographical inaccuracies, and determine the chronology of the barrow construction. In his opinion, the gold plaques reproducing the obverse and reverse of the Bosporan stater allow us to attribute the whole assemblage not earlier than the 330s BC (Alekseev 2006, p. 46).

The chronology of the Chortomlyk barrow was discussed above in detail. It is indicative that one of the swords of Shulgovka type was discovered in the Chortomlyk barrow, apparently in the southwestern chamber among the military set (Alekseev et al. 1991, cat. 72, 73). The overall length and form of this sword can be reconstructed only approximately, as only the hilt, covered with gold, and the gold tip of the scabbard are preserved. However, from the blade fragment preserved in the tip of the sheath, we can still judge its section, particularly the longitudinal notch in the central part, which forms one pointed edge. A direct analogy of this cross-section shape is in an iron *makhaira* from the barrow near the village of Abramovka in the Middle Don region (Medvedev and Efimov 2001, Figure 5, 1). This item allowed A. Alekseev (2006, p. 47) to suppose that the sword's blade from the Chortomlyk barrow (the same as Shulhivka and Abramovka) extended in the middle part, like the blades typical of Greek *makhairai*. It should be noted that A. Alekseev (2006, p. 47), despite S. Polin's objections, supports his previous position, proposing as the *terminus ante quem* for the sword the date of the central burial, that is, 329–328 BC.

In Burial 1 of Burial Mound 9 in the Try Mohyly area, near the village of Pisky, Bsh-tankana District, Mykolaiv region, a single-bladed sword with a gold cover in animal style (Grebennikov 1987, p. 153, Figure 4, 10) and a silver box-headed chape, not mentioned in the first publication (Mozolevsky and Polin 2005, p. 352), were found. The burial was dated by Chersonesian and Heracleian amphorae to the last quarter of the 4th century BC, probably the 310s BC (Monakhov 1999, p. 430), though A. Alekseev (2006, p. 48) believes it was the 310s BC at the earliest. In his later work, S. Monakhov (2003, p. 94) dated this burial to the 330–310s BC.

In Burial 4 of Barrow 10 near the village of Mala Lepetykha, partly excavated by N. Veselovsky in 1916 and then investigated in 1990 by G. Evdokimov, a single-bladed sword was discovered. The sword handle was covered with a gold leaf with relief depictions of animals: a deer lying on its knees and a feline predator preparing to leap. On the guard, which is distinguished by a slightly raised, rounded ledge, there is also an image of a feline. On the pommel is an image of an ungulate, probably a roe deer (Danilko and Kupriy 2004, p. 83, Figure 3, 2). Next to the sword was found an elongated electrum scabbard chape (Evdokimov et al. 2012, p. 85, Figure 8, 1). Besides a single-bladed sword, Burial 4 contained an amphora, a bridle and a quiver set, a bronze cauldron, gold torques and bracelets, etc. (Evdokimov et al. 2012, pp. 77–89). Based on amphorae close to Peparethos or the I-B Chertomlyk variant of the 340–320s BC (Monakhov 2003, p. 99), the dating of Burial 4 was defined within the framework of the middle to the third quarter of the 4th century BC (Evdokimov et al. 2012, pp. 89, 92).

In Burial 2 of the aristocratic mound of Soboleva Mohyla, a single-bladed sword with a hilt was found covered with gold (Mozolevsky and Polin 2005, pp. 181–82, Figure 99,

50; 104, 2; Table 19). The handle was decorated with embossed images of animals: on the hilt, there was a lying fallow deer; on the handle, there were a deer and a predator; on the guard, there was probably an image of a predator, too. Also preserved were the silver box-shaped scabbard's chape, as well as several fragments of wooden sheaths with Greek-type ornamentation, according to S. Polin (Mozolevsky and Polin 2005, p. 182, Figure 104, 1). The ornamentation structure of the scabbard is similar to that on the sword in the Haimanova Mohyla bowl—it is oriented along its length and consists of spiral scrolls. Mending amphorae of the *Melitopol type* of funeral feast allowed the authors to date the burial mound to the third quarter of the 4th century BC. This date is not contradicted by data on other types of amphorae from an unknown center, similar to those found in Barrow 8 of the Cherednikova Mohyla group in the early 340s BC (Monakhov 1999, p. 346), as well as Peparethos (Solokha I) and Sinope (Mozolevsky and Polin 2005, p. 358). Moreover, according to M. Treister (2005, p. 519), silverware from the Soboleva Mohyla is also characteristic of the assemblages from the middle to third quarter of the 4th century BC.

There are also finds of single-bladed swords of this type in Crimea. In the eastern part of the peninsula, in Burial 2 of Burial Mound 5 of the Bohachivka group, a fragment of the hilt of a single-bladed iron sword sheathed in gold was discovered (Koltuhov 2012, p. 45, Figure 16, 5). Despite looting, some grave goods were preserved that bring this assemblage together with Soboleva Mohyla: in particular, a silver *kylix* of the type characteristic of the Northern Black Sea area of the third quarter of the 4th century BC (Treister 2005, p. 513). In the collection of the State Hermitage, there is a single-bladed sword published by M. Rostovtsev (1914, p. 89, Table 5, 1) as a “purchase in Kerch”. Unfortunately, apart from the morphology of this item, nothing can point to the dating of this find. However, except for a sword from Bohachivka, the closest analogy to it is a sword from Burial Mound 487 near the village of Kapitanivka from the forest-steppe of the right bank of the Dnieper (Alekseev 2006, p. 48). Two barrows in the Dnieper forest-steppe present single-edged swords—Mound 487 at Kapitanivka and the barrow near Ryzhanivka. Barrow 487, excavated by A. Bobrinsky (1910, p. 70, Figure 8, 8a) in 1908 along the road from Kapitanivka to Zlatopil, contained a single-bladed sword handle, and its scabbard was equipped with a massive electrum chape. Besides the sword, the primary burial contained a rich artifact, which included javelins, a quiver set, an amphora, a bronze bowl, and a gold torque. The burial of a horse with a bridle set accompanied the main tomb. The amphora was defined as a Heracleian one (possibly of type IIa, according to S. Monakhov), analogies of which can be found in the Alexandropol barrow of the last quarter of the 4th century BC. The elements of the bridle from the horse burial are close to the horse harnesses from Burial 2 of the Khomina Mohyla barrow and the Rizhanovka barrow of the late 4th century BC, which allows the assemblage from Kapitanivka to be dated within the last quarter of the 4th century BC (Alekseev 2006, p. 50).

In the central (male) burial of the Great Ryzhanivka barrow, among the wealthiest set, was found a single-bladed sword in a gold sheath with a chape (Chochorowski et al. 1997, phot. 5). N. Onayko (1970, p. 58) dated the secondary (female) burial, studied by G. Ossowski (1988, p. 6) in 1887, to the second half of the 4th century BC, narrowing this framework according to the chronology of Panticapaeian staters to 340–315 BC. S. Monakhov (1999, pp. 413–15), based on analogies to the black-glazed pottery, dates the burial to the third quarter of the 4th century BC, which, in his opinion, is also confirmed by the chronological position of the amphora (of the so-called “Ryzhanovka type”). As the result of additional investigations of the barrow in 1995–1998, apart from the remarkable collection of the artifacts, a series of radiocarbon dating was also obtained. Based on the latter, the authors of the excavations proposed a date for the main burial site of  $270 \pm 12$  BC (Chochorowski et al. 1998, p. 109), and the assemblage was divided into four chronological groups (5th–4th, 4th, 4th–3rd, and 3rd centuries BC). Most of the items are dated to the second half of the 4th century BC, and only a few are found in the 3rd century BC (Skoryj 1998, p. 132). The combination of amphorae in the central burial, according to A. Alekseev (2003, p. 272), concerning S. Monakhov's (1999, pp. 497–509) observations, leaves

the 270s BC as the maximum upper limit, which is hardly admissible, according to S. Polin (Mozolevsky and Polin 2005, pp. 377–78). Besides, as a result of the recalculation from the data of radiocarbon dating tables made by A. Alekseev (2001, pp. 71–72), it appeared that the probability that all wooden elements of the barrow's central burial were manufactured in the late 4th and early 3rd centuries BC (350–285 BC) was rather high (Zaytseva et al. 2005, p. 212).

The excavation team seemed to agree with that, later offering the date of 360–270 s BC (Kovaliukh et al. 2003). As a result, based on the results of radiocarbon dating and analysis of the artifacts, A. Alekseev (2003, pp. 272–73; 2006, p. 50) proposed the date ca. 300 s BC, or more broadly, 315–285 BC, noting that the Great Ryzhanivka barrow is a later “royal tomb” of Scythia. However, S. Polin is categorically against it, considering the most acceptable dating of Ryzhanivka as the third quarter of the 4th century BC (Mozolevsky and Polin 2005, p. 379). Nevertheless, the authors of the discovery, who have recently published a monograph on the results of excavations, insist on initial chronological observations. Indeed, the grave goods' elements find analogies in the monuments of the late 5th century BC, but the “core” of the assemblage seems to date to the second half of the 4th century BC, while many items of the “core” (including gold-plated sword covers) show traces of long-term use. At the same time, some finds date exclusively to the 3rd century BC—applications in the form of Medusa Gorgon of the first quarter of the century, a *lacrimarium* of the first half of the 3rd century BC, and a fragment of a Samian amphora from the 280–270s BC (Skoryj and Chochorowski 2018, p. 135). As a result, combining the <sup>14</sup>C data and their observations regarding the details of funerary rites and “archaeological” chronology, the authors of the excavations settled on a date of “280–260s BC” (Skoryj and Chochorowski 2018, p. 143).

It should be noted that other types of single-blade *akinakai* are also known for Classical Scythia in the Lower Don and Lower Danube, for example, the Chaush type (Topal 2021, p. 341, Figure 151). During the Classical Scythian period, single-bladed weapons were also represented by Greek and Thracian types. For example, a series of so-called combat knives were discovered in the Carpathian-Dniester region, and their sources are associated with the Greek and Thracian workshops (Bruyako 1989, p. 68). The few finds of *makhairai* in the Black Sea region are connected with the Greek communities of the coastal area. The appearance of the *makhaira* in the Black Sea region was dated to the third quarter of the late 6th century BC (Nazarov and Solovev 2000, Figure 3; Vinogradov 1999, p. 154). During the Archaic period, the single-blade weapons of the Northern Black Sea region were found exclusively on Berezan island (Borysthenes), in addition to the fighting knives of the Thracian-Illyrian milieu (Bruyako 2015, p. 216).

As for the ceremonial single-blade weapon of Shulgovka type, A. Alekseev distinguishes two varieties in its decoration. The hilt of the first one is decorated with a consecutive row of three or five animal images (Kapitanivka, Shulhivka, Kerch, and Bohachivka), and the second has images of a predator and an ungulate (Ryzhanivka, Soboleva Mohyla, Chortomlyk, and Mala Lepetykha). Besides, such diversity is also present in the “initial” (Chertomlyk?) type, according to A. Alekseev (2006, p. 51). In particular, most sword hilts of the Chertomlyk type are decorated according to the second variation (five swords from Chortomlyk, two swords from Kolbino, items from Stary Merchyk, Five Brothers, and Kekuvatsky barrows). However, only the sword hilt from Burial Mound 1 from Stary Merchyk and a sword from Chortomlyk depict a predator without the ungulates. Several images of animal processions as per the first type, according to A. Alekseev, decorated sword handles from Chastye Kurgany. It is difficult to determine whether these differences in decoration are chronological features—the assemblages with single-bladed swords are more or less simultaneous. They do not exceed the second half of the 4th century BC. However, many burials with double-bladed swords of the Chertomlyk type, decorated similarly to the second variety of single-bladed swords of the Shulgovka type, date to the middle or third quarter of the 4th century BC. In contrast, the first variety is dated to the last quarter of the late 4th century BC.

Besides that, it is evident that in the 4th century BC, the centers of blade weapon production were shifting to the south. So, the Solokha type was formed, still in the forest-steppe left bank of the Dnieper. The distribution of the Chertomlyk type and associated Shulgovka type ran in the opposite direction from the Solokha type, probably from south to north, from the right bank of the Middle Dnieper (Figure 16). Significantly, the forest-steppe burials with single-edged swords of the Shulgovka type appeared much later than the steppe ones and were located exclusively on the right bank of the Dnieper River (Figure 21). Continuing the comparison with the Solokha type, we can note a significant narrowing of the area of Chertomlyk swords and daggers, along with the eastern border of the burials with Chertomlyk-type *akinakai* passes along the Don. Furthermore, the second-most crucial concentration of burials with bladed weapons is not in the Lower Don but in the Middle Don region. The trajectory of this final lineage of development of Scythian *akinakai* undoubtedly reflects certain tendencies in the Scythian culture of the end of the 4th century BC. These trends, in particular, resulted in the disappearance of *akinakes* as a part of cultural tradition, notwithstanding a general statement (Melyukova 1964, p. 46) that by the 4th–3rd centuries BC, the number of Scythian burials with bladed weapons was considerably increasing.



**Figure 21.** Distribution of the Classical Scythian *akinakai* and Greek machairai (A—*Shulhioka* type, B—*Chaush* type; C—Greek machairai; ceremonial items are marked with a star).

## 11. Conclusions

The vast majority of sword and dagger finds from the Scythian world are thus associated with aristocratic burials, including some “stray finds,” probably from disturbed or looted burial mounds from the Scythian period. The other exceptions to this cultural pattern are also quite revealing: the famous Melgunov hoard is part of a funerary monument (possibly a cenotaph), and a sword from the Velyka Bilozerka barrow is deposited in a grave cache. The burial practice of converting the weapon into a ceremonial one (usually



covered with a thin layer of gold) was the closest thing to conspicuous consumption among the Iranian-speaking nomads of the Eurasian steppe. It is easy to see that the ceremonial weapons of the Iranians found in isolation in graves, for example, from Ziwiye, Oxus, and Vetersfelde, lie outside the nomadic world and probably mark its boundaries for different periods. The distribution vector of the ceremonial forms of *akinakai* (probably together with the non-ceremonial objects) was constantly changing in different periods. Thus, the Kelermes type entered the Black Sea region from the southeast in the Early Scythian period (Figure 5). In the Middle Scythian period, it moved from north to south, from the Ukrainian forest-steppe to the steppe region around the Black Sea (Figure 10); at the end of the Middle Scythian culture, a modified griffin dagger type arrived in the Black Sea region from Asia (Figure 13, 15). At the beginning of the Classical period, the Solokha type moves from north to south (Figure 16), repeating the Middle Scythian route. At the end of the Classical period, on the other hand, the vector is redirected from west to east (Figure 19, 21).

The material of the ceremonial pieces also shows a divergence between the European and Asian regions. In Europe, swords and scabbards from the early Scythian period to the end of the Classical period are (with the rarest of exceptions) covered only with gold leaf and relief images. The range of decoration techniques in the Asian part is much more extensive and includes gilding, wire decoration, gold inlay, and figural applications. Silver and electrum appear in sword decoration at the end of the Middle Scythian period and the beginning of the Classical period or in the middle and end of the 5th century BC. They are actively used in both Europe and Asia. However, the finds of extra-long swords underline the difference between so-called European and Asian Scythia, and the differences concern chronology, context, and object status. Thus, extra-long swords almost completely disappeared west of the Volga at the beginning of the Classical period, while they continued to accompany grave goods in the east. This phenomenon is probably related to the fact that they became known much earlier in the European area. However, this does not exclude the cultic function of extra-long swords in these communities, who, according to Herodotus (Hdt. 4.62.2), considered the “antique iron sword” (ἀκινάκης σιδήρεος ἀρχαῖος) the incarnation of the god of war. In Europe, the finds of extra-long swords are mainly stray finds, while in Asia, they are associated with burials; moreover, the Asian extra-long swords (4 out of 6) are often decorated with precious metals. In the European region, on the other hand, where ceremonial swords were abundant during the “golden madness” in the Classical period, no connection can be established between the excessive length of the swords and their prestigious status.

The tradition of ceremonial swords in the context of burials runs through the history of the Iranian nomads. It emerged at the end of the pre-Scythian period in the northern Pontic region as a breakaway from the Caucasus, where most pre-Scythian swords and daggers were concentrated. The background for its emergence is the declining practice of placing swords and daggers in hoards, which dates back to the Late Bronze Age. Then, the tradition was actively manifested in the Scythian period and later revived in the Sarmatian period of the late 3rd and early 2nd centuries BC (Mordvintseva 2016, p. 176). In Scythian times, the ceremonial sword tradition is accompanied by chronological breaks between the main links of the periodization chain (early 7th, early 6th, and late 5th centuries BC). Although most Scythian swords and daggers fall into the Middle Scythian period (in full accordance with Gauss’s law), most ceremonial forms belong to the last phase of Classical Scythian culture. This period is a veritable “golden autumn” of Scythia, with its vast royal burial mounds and abundance of gold perfectly illustrating R. Bradley’s (1990, pp. 101–2, 136) observation that conspicuous consumption coincides with periods of political and social instability. After the peak of the proliferation of ceremonial *akinakai* in the third quarter of the 4th century BC, we observe a generation later the complete disappearance of Classical Scythian culture, along with its characteristic weapons, horse harnesses, and animal style.

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## Appendix A

The list of locations of the ceremonial swords of the early nomads of Eurasia (the numbers correspond to the points of the map in Figure 1) is as follows:

1. Witaszkowo-*Vettersfelde*, hoard
2. Belogradets-*Ptichata Mogila* barrow
3. Great Ryzhanivka barrow
4. Kvitky barrow
5. Kapitanivka-Zlatopil, Barrow 487
6. Kopani-*Melgunov barrow (Lita Mohyla)*, hoard, cenotaph?
7. Pisky-*Try Mohyly*, Barrow 9, Burial 1
8. Pokrov-*Tovsta Mohyla* barrow
9. Hirniiske-*Soboleva Mohyla* barrow, Burial 2
10. Chortomlyk-*Chertomlyk* barrow
11. Tomakivka-*Hostra Mohyla* barrow
12. Balky-*Vysoka Mohyla* barrow
13. Shulhivka, barrow
14. Novovasylivka-*Berdyansk* barrow
15. Velyka Bilozerka, Barrow 30
16. Velyka Znamyanka-*Solokha barrow*
17. Mala Lepetykha, Barrow 10, Burial 4
18. Velyka Znamyanka-*Mamay-gora*, Barrow 377, burial 1
19. Bohachivka-*Bogachyovka*, Barrow 5, Burial 3
20. Zaporizke-*Chayan*, barrow?
21. Simferopil-*Zolotoy kurgan*, Barrow of 1890
22. Kerch-*Kul-Oba* barrow
23. Kerch-*Kekuvatsky* barrow
24. Kerch, stray find
25. Krymsk-*Karagodeuashkh* barrow
26. Kelermesskaya-*Kelermes*, Barrow 1
27. Nartan, Barrow 16
28. Veselyi-*Zhitkov-II*, Barrow 3, Burial 2
29. Elizavetinskaya-*Elizavetovskaya*, Barrow 8 (Five Brothers); 10 of 1909; 1 of 1910; 16 (Ushakov barrow)
30. Vysochino, Barrow 1, Burial 4
31. Oleksandrivka-*Aleksandrovska*, Barrow 6, Burial 1
32. Miloradove, stray find
33. Bilsk-*Pereshchepine*, Barrow 3, Burial 2
34. Osnyahy, Barrow 4
35. Vovkivtsi-*Shumeyko*, barrow
36. Pustoviytivka-*Oksyutyntsi*, Barrow 2
37. Stary Merchyk, Barrow 3; 11
38. Durovka, barrow 9
39. Kolbino, barrow 7; 36
40. Voronezh-*Chastye Kurgany*, barrow 3; 11
41. Perevalsk-*Horniyatsky*, barrow
42. Lugovskoe, burial 57
43. Algabas-*Kyryk-Oba-II*, barrow 18, burial 1
44. Filippovka-I, barrow 1; 3; 14

45. Saryzhar-*Besoba*, barrow 4
46. Anikhovka-*Buruktal*, barrow of 1954
47. Southern Tagisken, barrow 53; 59
48. Takht-i Kuwad (Sangin), *Oxus (Amu Darya) hoard*
49. Esik-*Issyk* barrow
50. Tarbagatay-*Eleke-Sazy*, barrow 4
51. Berel, barrow 2
52. Aktash-*Borotal-I*, barrow 82
53. Novoobinka, barrow 2
54. Shadrino, stray find
55. Ukladochnaya, stray find
56. Klyuchi, stray find
57. Arzhaan-*Arzhan-2*, barrow
58. Askyzskoe-*Askiz*, stray find
59. Minusinsk, stray find
60. Ordos, stray find
61. Saqqez-*Ziwiye*, hoard

## Notes

- <sup>1</sup> Dagger of the same time from Barrow 82 of the Borotal-I burial mound (Kubarev and Shulga 2007, Figure 63, 10) can hardly be considered ceremonial. However, its wooden scabbard was decorated with three hemispherical gold plaques (Kubarev 1981, p. 38).
- <sup>2</sup> Even swords originate from the Chortomlyk barrow, one of which is of Achaemenid appearance and the other is single-bladed of Shulgovka type. Another sword, never published by I. Zabelin, was found in feature F of chamber 5 (Alekseev et al. 1991, p. 103, cat. 185).
- <sup>3</sup> The openwork hilt of the sword from the village of Miloradove (Rudinsky 1928, p. 50, Table 7, 11) is also equipped with slits. They are also present in the upper part of the handle, which has a griffin figure inscribed into the round pommel. According to I. Shramko (1991, p. 70), this sword belongs to the category of ceremonial swords because the irregularities on the hilt were not smoothed out, as it was assumed that they would be covered with a gold plate.

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## Article

# Violent Raiding, Systematic Slaving, and Sweeping Depopulation? Re-Evaluating the Scythian Impact on Central Europe through the Lens of the Witaszkowo/Vettersfelde Hoard

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**Abstract:** In 1882, the lavishly decorated golden regalia of a steppe nomad warrior prince, which was crafted in the late sixth century BCE in a “bilingual” Scythian–Milesian workshop on the Black Sea coast, was found on the edge of a Lusatian swamp 120 km southeast of Berlin. Its discovery and the ongoing findings of steppe nomad armaments—arrows, battle axes, and swords—in central Europe have led to a lively debate about the nature of Scythian–Indigenous interaction in the Early Iron Age, ranging from benign visions of long-term acculturation to violent scenarios of short-term raiding. In this article, I argue that an analysis of the iconography of the Witaszkowo hoard and new information from excavations at its find spot make it likely that it was sent as a diplomatic gift by Scythian elites to an indigenous leader and deposited by the local community as a votive hoard. An affirmation of the compact chronological range of Scythian artefacts found in the west, growing evidence for the destruction of indigenous strongholds by horse-borne archers, and concurrent evidence for the drastic depopulation of vast landscapes in the second half of the sixth century BCE allow us to envisage the gifting of this hoard as an episode of a fierce and destructive altercation. It is posited that this onslaught was a facet of the western thrust of the Lydian and Persian Empires, and that its extirpative impact was the result of systematic, commercially driven slaving triggered by the concurrent monetisation of the economies of the Black Sea coast. The effects of these raids on Eastern Central Europe’s later prehistoric communities are made manifest by analogies to the disastrous ramifications of the transatlantic slave trade on societies of 16th-to-18th-century West Africa.

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“A stray ray of light from a sunny land, whose quivering end falls in the vast barren void of a dark cave—a fiery comet which emerges from a far-off sphere onto the dark sky with glistening tail—thus the gold find from Vettersfelde stands apart from the gloomy fog of its vast prehistoric environs.”

(Furtwängler 1883, p. 1)

## 1. Vettersfelde/Witaszkowo, 1882

### 1.1. *A Dazzling Fish in a Soggy Field, a Visionary Scholar, and a Tenacious Narrative*

The Scythian<sup>1</sup> gold hoard found in 1882 near Lower Lusatian Vettersfelde, now Witaszkowo, Lubusz province (Poland), is arguably the most spectacular and exotic find of the central European Early Iron Age (Greifenhagen 1982; Nebelsick 2014, 2022; Topal 2022). It was found on 5 October 1882, by the farmer Adolf Lauschke while he was draining his soggy field. Through the intervention of Prince Heinrich zu Schoenaich-Carolath, all of the larger objects were secured by the Berlin Museum and published one year later in a visionary essay by the leading archaeologist of the day, Adolf Furtwängler (Furtwängler 1883). In his publication, Furtwängler cautiously proposed a connection between the deposition of this treasure just over 100 kilometres from Germany’s capital and Scythian forces fleeing



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westwards from Darius' Pontic offensive in 513/512 BCE. He thought that the treasure came from their deceased leader's princely grave. His vision set the agenda for the historicising narratives of the subsequent century seeking to explain the Vettersfelde treasure. Reacting to the hoard's discovery, his disciple, Paul Reinecke, began systematically compiling Scythian finds in Central Europe. He and his followers developed the vision of a devastating Scythian raid in the shadow of the Persian wars, which reached westwards into Lusatia. These narratives, in which the purported chieftain's grave at Witaszkowo/Vettersfelde inevitably looms large, dovetailed with "völkisch"-charged visions of Europe's distant history as a sequence of conflicts between antagonistic racially distinct peoples vying for European predominance. In a clear break from this interpretative pattern, scholars since the 1990s have seen the appearance of Scythica in Eastern Central Europe as an aspect of long-term interactions with nomads of the Eurasian steppe, reaching back into the Late Bronze Age. These long-term contacts led, they proposed, to different degrees of acculturation and integration of steppe artefacts and lifeways in the west. Favouring more martial interpretation, other scholars adopted a long chronology, seeing the deposition of the Witaszkowo hoard in the late sixth century as the final act of a conflict that had been initiated more than a century previously (for references, see Nebelsick 2014, pp. 68–69). This article considers the results of new iconographic and technical investigations of the golden artefacts and information from new excavations at the site of the Witaszkowo hoard. It also reflects innovative research that has been published in the last few decades, proposing a tighter temporal focus on Scythian incursions into the west and adding to the evidence of these raid's destructive impact and the resulting cultural and physical collapse of indigenous communities. Moreover, it also seeks to contextualise Scythian expansion to the west in the political upheavals affecting the Pontic region in the sixth century BCE and relate the disastrous consequences of this onslaught to the emergence of commercially driven slaving.

### 1.2. The Composition/Reconstruction of the Hoard

Thanks to Furtwängler's scrupulous account and the meticulous research by Berlin-based and local prehistorians, who were able to describe pendants and jewellery—most of which had been dispersed and melted down soon after the hoard's discovery—it is possible to offer a coherent interpretative account of the composition of the hoard (Figure 1).



**Figure 1.** Vettersfelde/Witaszkowo hoard: reconstruction of the hoard (modified and expanded after Furtwängler 1883).



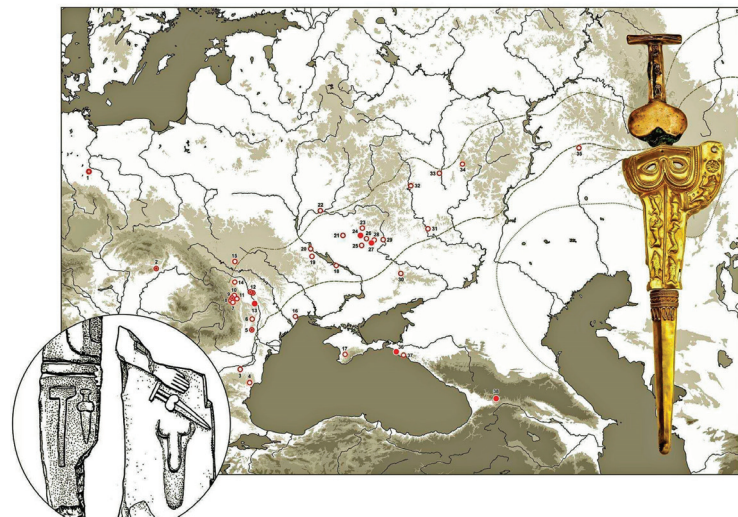
### 1.3. The Warrior's Beauty, Golden Gorytos and Akinakes (cf. Figures 2 and 3)

This hoard's spectacular weapon set was once strapped onto its elite wearer's belt (Rolle et al. 1991, p. 427). It is highly likely, that the 41 cm long, richly decorated golden fish-shaped mount and cloverleaf phalera (Figures 2–5) adorned a Scythian bow and quiver case/gorytos (Redfern 2000, p. 416f.; Babenko 2023, pp. 248–51). Goryti with golden mounts embossed with animal art are a characteristic feature of ostentatious north Pontic sixth–fifth-century BCE grave assemblages (Figure 2(2,3), Alekseev 2014), and contemporary, anthropomorphic stelae show quivers decorated with large, vertically mounted animal motifs (Figure 2(4), Ol'hovskij and Evdokimov 1994).

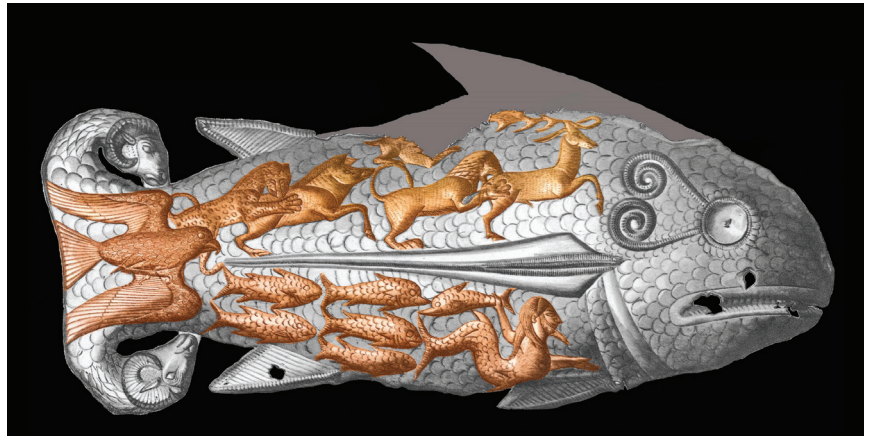


**Figure 2.** The reconstruction of the Witaszkowo gorytos compared to other figured gorytos mounts. (1)—Gorytos mounts from Witaszkowo/Vettersfelde (after Furtwängler 1883); (2)—quiver mount from Illicheve, Kurhan I, Grave 6, Lenine Raion, Crimea, Ukraine, ca 525–475 BCE (after Reeder 1999); (3)—golden gorytos mount, Zolotoj Kurhan near Simferopol, Crimea, Ukraine, late 6th century BCE (Artamonov and Formann 1970); (4)—anthropomorphic stela from the Man'ičskaja Stanica, Yaroslavl Oblast, Russia, showing a figured gorytos, possibly 7th—early 6th century BCE (after Ol'hovskij and Evdokimov 1994).

A sheet-gold strap mount that was ploughed up in 1914 (Figure 1) has a cloverleaf finial that mirrors the form of the phalera and can be related to cruciform Scythian mounts for fastening goryti to warriors' belts (Ratzel 1978; Hellmuth 2007b; Kemenczei 1986, 2009, pl. 118,5). Thus, the Witaszkowo gorytos can be reconstructed with the phalera on the top flap and the great fish mounted vertically on the gorytos body, with a gold-plated strap fastening it to the warrior's belt. It is also possible that the foxtail chain and its pendants may have dangled from it.



**Figure 3.** Witaszkowo akinakes and related short swords: (1)—Witaszkowo akinakes and whetstone. (after Furtwängler 1883); (2)—gold-plated akinakes from Chutor Shumejko, near Vovkivtsi, Sumy Oblast, Ukraine (after Ginters 1928); (3)—gold-plated akinakes from Oleksandrivka, Kurhan 6/1, Dnipro Oblast, Ukraine (after Murzin and Skory 1994); (4)—gold-plated akinake from Tomakiv'ka, Dnipro Oblast, Ukraine (after Ginters 1928); Below—map of type Vetersfelde daggers (after Topal 2016).



**Figure 4.** Witaszkowo hoard, fish with highlighted inscribed animals (after Furtwängler 1883).



**Figure 5.** Witaszkowo hoard: clover leaf phalera (gorytos flap mount) with animal chase and combat scenes. (modified after Furtwängler 1883).

Denis Topal assigns the Witaszkowo sword (Figure 3(1)) to his “Vettersfelde” variant of daggers with T-shaped pommels and heart-shaped guards (Topal 2018, 2019, 2022). They were widely used in the north Pontic steppes during the early sixth century BCE, with a distribution focus in the Northeastern Carpathian piedmont. Interestingly, the Witaszkowo sword’s narrow chape and its filigree décor place it on the transition between the older and younger “ceremonial swords” (Figure 3; see Ginters 1928; Shelekhan 2020, p. 82, fig. 3,8), which is best dated to the second quarter-to-mid-sixth century. Remarkably, the Ionic figuration embossed on this sword’s sheath is at least a generation younger. This suggests that, like the fifth-century BCE Persian golden hilt overlay grafted onto a fourth-century BCE blade and inserted into a sheath decorated with a sophisticated Hellenistic battle scene from the Chertomlyk Kurhan (Treister 2010, pp. 227–29; Meyer 2013, pp. 224–28), the goldsmith who decorated the Witaszkowo sword had hybridized and updated an heirloom. Perhaps this reflected the specific biography of the weapon and the fate of its owners. In this context, it is worth noting that curating and gifting heirlooms was a strategy for legitimising authority used by nobles of the Persian court (Henkelman 2018, pp. 811–12).



The gold-socketed pendant whetstone (Figure 2(1)) also belongs to the conspicuous attire of an elite steppe warrior (Ježek 2020).

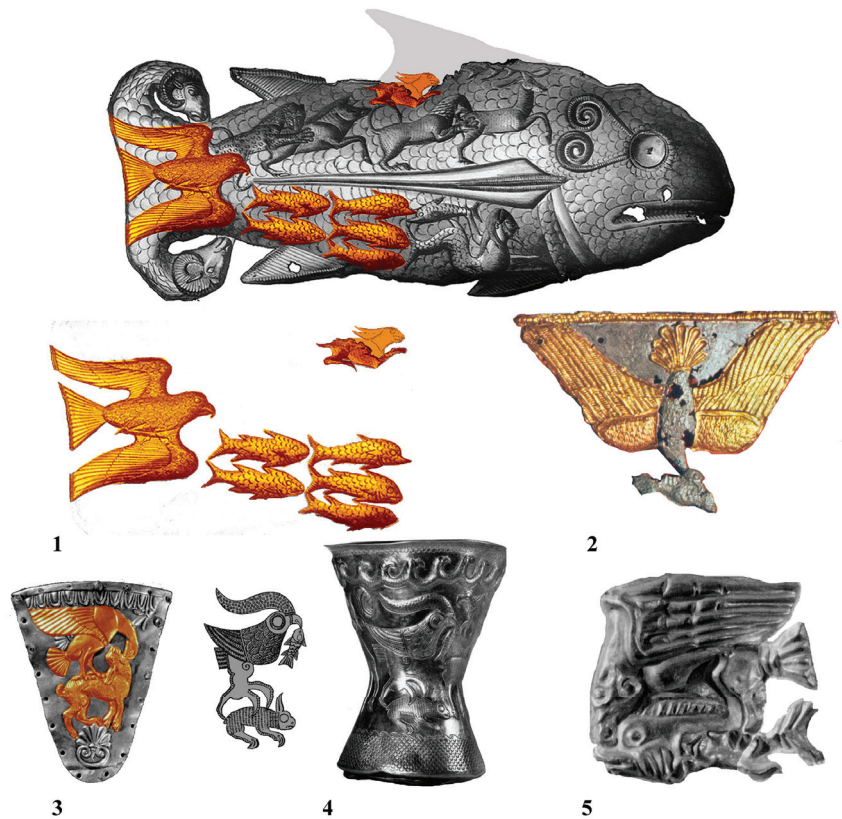
#### 1.4. *The Iconography of Hierarchy and Order*

The figurative program of the golden gorytos (Figure 2(2), Figures 4 and 5) and akinakes mounts (Figure 3(1)) illustrates and legitimises the high status of their bearer. The hunting and animal combat scenes on the upper register of the gorytos and akinakes-mounts celebrate martial force and natural hierarchies (Meuli 1954; Eliade 1972, pp. 158–60), which play a vital role in the heraldry of power in the Near East (Strawn 2005; Watanabe 2002; Otto 2013) and Archaic Greece (Hölscher 1972; von Hofsten 2007; Winkler-Horaček 2015), as well as Persia (Kuz'mina 1987; Root 2002; Sathe 2012), Central Asia (Silvi Antonini 2003), and Eastern Europe (Kull 2000, p. 433f.; Nebelsick 2014, p. 52, fig. 2.23; Topal 2022). Predators that served as universal metaphors of power also specifically mirrored the lifeways and ideals of rulers and warriors of the steppes. Interestingly, it is not only the animal predators that are hunting on the fish-shaped mount (Figure 4). Nereus/Triton, who usually holds a wreath or even an octopus in his extended hand (Cevizoğlu 2010, pl. 49; Yphantidēs 1990, p. 178, no. 119), is shown smiting, using a dolphin as a club, and with his empty hand pointing forwards, a pose adopted by hunters on late sixth-century BCE Milesian Fikellura pottery (Wascheck 2008, p. 64, fig. 20).

The syntax of the animal combat on the cloverleaf phalera also illustrates the “natural order” of predator–prey relations (Figure 5) by showing an intricately graded hierarchy of confrontation and chase between selected carnivores and herbivores. Lion and aurochs, both apex animals and symbols of royalty, attack each other as antagonistic equals. The image of lion–bull combat has a long history in the Middle East, where it not only justified royal authority (Morgan 2017) but also had cosmological ramifications combining and unifying nature’s apex forces (Hartner and Ettinghausen 1964; Root 2002, pp. 201–3). In a descending scale of confrontation on phalera and sword sheath, a lion chases a swift stag; the lesser panther faces a combative wild boar, a rustic wolf confronts a ram, and, finally, a small fox races after a hare. The opposed stag–lion/bull–lion coupling on the two upper disks of the phalera was probably also an empowering element. Their disposition can be compared to the lion felling a boar and a second lion mauling a stag in the spandrels flanking the triumphal epiphany of the godly archer Apollo on the eastern gable of the late sixth-century BCE Apollonion at Delphi (Knell 1990, pp. 46–48), a fitting imagery for an elite Bowman.

On the gorytos, the outstretched talons of the eagle, swooping above the fish’s tail, are poised to grasp both the hare, racing below the upper fin and the fish and dolphin, plunging through the lower register (Figure 6). Fish, and sometimes dolphins, are the eagle’s prey in the sixth- and fifth-century BCE Scythian figurative art (Michel 1995, p. 55; Polidovych and Malyuk 2016, pp. 212–14; Kantorovich 2018). The fantastic dolphin variant, which features on the coinage of Greek Pontic colonies, may reflect a lost founding mythology involving monstrous ospreys grasping these marine mammals (Panait-Bîrzescu 2020; Vlassova 2001, p. 85, fig. 21). The hare is a more conventional victim of Eurasian raptors (Babenko 2017). Hare-hunting Scythian eagles (Artamonov and Formann 1970, pl. 118) reflect both Greek (Simon and Hirmer 1976, p. 64f.) and Anatolian images (Young 1981, p. 34, fig. 13; Prayon 1987, pl. 25–26) with roots reaching back into the Late Bronze Age (Canby 2002). Yet it is only in compositions on metalwork from the lower Danube that these masters of the three elements hunt both fish and hare simultaneously (Figure 6; Schneider and Zazoff 1994, pp. 200–2; Zazoff 1996, p. 169f.; Kull 2000, p. 434). This is just one of the many parallels between the iconography and syntax employed by fifth-century BCE lower Danubian silversmiths and the workshop that produced the Witaszkowo treasures (Kull 2000, p. 433f.).





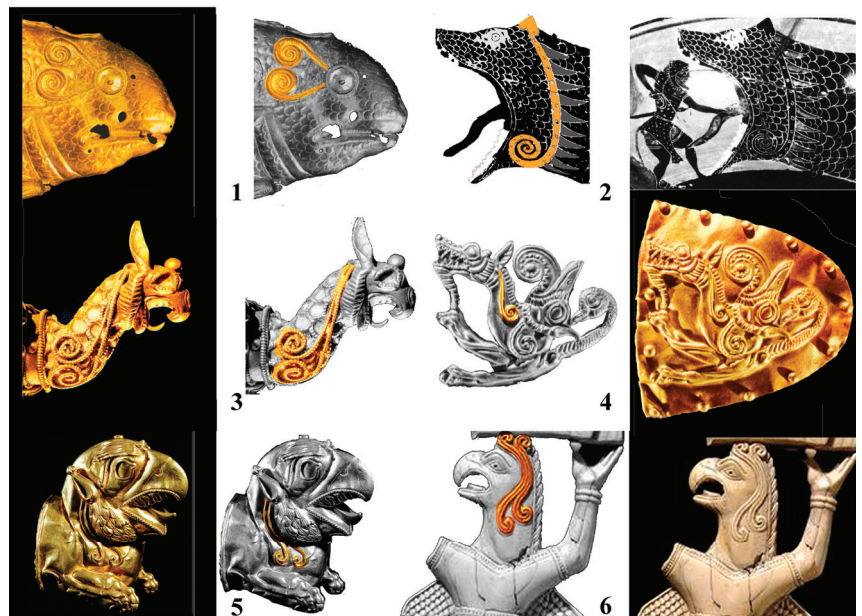
**Figure 6.** (1)—Vettersfelde find fish with the eagle and his prey highlighted (after Furtwängler 1883) (2)—eagle grasps a fish; segment of a gilded gorytos mount from Stanica Varennikovskaja, Krasnodar region, Russia Seven Brothers Kurhan 2, mid-fifth century BCE (after Artamonov and Formann 1970). (3)—golden mount from a wooden vessel or drinking horn with highlighted scene of an eagle savaging a hare. Stanica Varennikovskaja, Krasnodar region, Russia, Seven Brothers Kurhan 4, early fifth century BCE (after Artamonov and Formann 1970). (4)—horned eagle grasps a hare and pecks a fish. Beaker Agghiol, jud. Tulcea, mid-fourth century (after Venedikov and Gerassimov 1973). (5)—eagle grasps a dolphin. Detail of a drinking horn mount from Elizavetinskaja Stanica Kurhan 9, Rayon Krasnodar region, turn of the fifth-to-fourth century BCE (after Artamonov and Formann 1970).

The iconography of the fish's decor reflects cosmological order (Michel 1995, pp. 78–81). Water is evoked by the gigantic fish mount itself and, of course, the merman (Nereus or Triton) and his entourage in its lower register (see Ahlberg-Cornell 1984). Animal combat and the hare's flight on the fish's upper register occur on land. Heaven is home to the omnipotent eagle who threatens both the land-based hare and the submerged fish (Figure 6). Earth and water are also suggested by the fish lying beneath the hunting lions on the akinakes' sheath. The animal combat scene on the stylistically closely related golden gorytos/quiver overlay from Illicheve Kurhan 1 in Crimea, Ukraine (Reeder 1999, pp. 160–62, no. 50), which shows an eagle alighting on a stag being felled by a chthonic serpent, may be telling a similar story (Figure 2(2)). A Hellenistic version of this motif combination is shown on the golden scabbard from the early fourth-century BCE ostentatious grave of Kul-Oba (Artamonov and Formann 1970, p. 172, pl. 208–9), which has confronted eagle heads at its mouth, animal combat on its sheath, and a hippocamp on its flap. It is tempting to compare this iconography with the Persians' demand for earth and water as a demonstration of fealty during their Western campaigns (Kuhrt 1988, p. 88f.).

### 1.5. Power, Immortality and Legitimacy, the Hoard's Heraklean Imagery

Persistent allusions to Herakles complement this celebration of predatorial violence and hierarchy. The eyes that decorate the top of the akinakes' sheath (Figure 3(1)) are a case in point. Their slightly arched lids and deep-swung lower contours recall contemporary feline imagery. Their sagging shape indicates that a scalp is being shown, evoking associations with Herakles' ubiquitous cloak, the impenetrable fell of the Nemean Lion. Interestingly, the golden chape of an early fourth-century BCE akinakes from the Solocha Kurhan also shows a flattened lion's snout with sagging eyes (Topal 2021b, p. 52, fig. 4(3)). While Herakles universally uses the lion's scalp as a hood in Attic vase painting (Cohen 1998), a late sixth-century BCE Chiot vase shows the scalp resting on Herakles' abdomen, just above his sword, suggesting that the lion's scalp crowning the Witaszkowo akinakes sheath may be echoing Ionian imagery (Lemos 1991, p. 276f., p. 741, fig. 59).

The merman on the great gorytos mount, be he Nereus or Triton, can be seen as a further reference to Greece's favourite hero. Herakles wrestling Nereus, and later, Triton, is the most popular of his feats shown on Attic pottery of the second half of the sixth century BCE (Ahlberg-Cornell 1984). The great fish itself can be seen as a reference to a further Heraklean triumph. The best parallel for both its iconography and its style is found on a late sixth-century BCE Attic black-figure cup from Taranto's Archaic cemetery, showing Herakles saving princess Hesione from the huge ketos, the Greek mythological whale, on the beach of Troy (Figure 7(2); Boardman 1987, esp. 80 no. 49; Papadopoulou and Ruscillo 2002). Like our great fish, the Tarantine monster has a large mouth with serrated teeth, an all-over scaled body, bent-back tail fins, and a great gryphon curl dangling behind its eye. "Gryphon curls" are monster attributes with a long Near Eastern pedigree (Figure 7(5,6); Akurgal 1992) and entered the Graeco-Scythian repertoire in the late seventh century BCE (Aleksiev 2012, p. 102f., pp. 108–11).



**Figure 7.** Gryphon Curls: (1)—Witaszkowo hoard, gorytos mount, Ketos with highlighted gryphon curls (after Furtwängler 1883); (2)—the Trojan Ketos with rudimentary gryphon curl subdued by Herakles; Attic black-figure kylix signed by Lydos; Taranto, Via Federico Di Palma, Grave 3, 550–540 BCE (Taranto 52155, after Boardman 1987, fig. 179); (3)—gryphon protome on the gold diadem from

Kelermes, Republic of Adigea, Russia, Kurhan Schulz 3, with highlighted curls, early 6th century (Artamonov and Formann 1970, pl. 26); (4)—Simurgh with gryphon curl, golden mount probably from a wooden vessel, Varennikovskaya Stanitsa, Krasnodar region, Russia, Seven Brothers Kurhan 4, first half of the 5th century BCE (after Artamonov and Formann 1970, pl. 121); (5)—gryphon protome with highlighted curl from the “Treasure of Ziwiyé”, Persian Kurdistan, possibly a princely tomb, late-eighth—early-seventh century BCE (after Godard 1950, fig. 1); (6)—eagle-headed demon with highlighted curls. Ivory furniture (throne?) fitting, Toprakkale, Turkish-Kurdistan, late eighth century BCE (after Collon 1995, fig. 132).

Thus, the bearer of the Witaszkowo panoply embodied three strands of Heraklean triumph over certain death: strangling the unwoundable Nemean Lion, disemboweling the invincible Trojan Ketos, and wrestling down the immortal merman Triton/Nereus—allowing him to bind his fate to that of the immortal bowman (Brommer 1972, pp. 39–41; Cohen 1994). Moreover, a panoply with Heraklean imagery would also have evoked narratives that reinforced the identity and legitimacy of its bearer in the eyes of its Scythian beholders, as Herakles famously sired their mythical eponym ancestor Skythes during his Pontic wanderings (Raevskiy 1977; Hinge 2008; Lincoln 2014). Entangling Scythian and Greek strands of Herakles’ myths and imagery would also have reinforced the propriety of the Scythian/Ionian symbiosis, which was the basis of the success of Miletus’ Pontic apokiai (Braund 2021).

## 2. Jewellery and Pendants between Attributes of Power, Amulets, and Tassels

### 2.1. Neck- and Arm-Ring (cf. Figures 1 and 8–11)

While the Witaszkowo hoard’s ostentatious weapons and their iconography can easily be understood as attributes and allegories amplifying the fame of an elite steppian warrior, it is more difficult to understand the role of the jewellery in these martial regalia. Golden neck rings (Figures 1 and 8) are, however, a salient feature of Scythian ostentatious male costume and denote their bearer’s high status (Klochko 1997; Ol’hovskij and Evdokimov 1994, p. 68f.; Čugunov et al. 2010, pp. 311–12). Arm rings (Figures 1, 9 and 10) also regularly complement the costumes of the steppe elite (Bukowski 1977, p. 156f.). However, snake-head arm rings, like the one that survived at Witaszkowo, are usually found in female contexts and only rarely accompany elite male burials; for instance, Stična, Slovenia, grave 48/33 (Gabrovec et al. 2006, pl. 25,2).

Crucial evidence for interpreting the presence of the golden neck- and fire-damaged arm ring (perhaps there were originally two) in the Witaszkowo hoard comes from the ostentatious warrior late fifth-century BCE grave Filippovka Kurhan 4, Grave 4 in the Southern Urals. The young man in this grave, who was furnished with an akinakes, wore an Achaemenid golden torque and two golden arm rings with animal finials. Along with a silver amphora, they are likely to have been a diplomatic present from a member of the Persian court gifted during the late fifth century BCE (Yablonsky 2010, pp. 138–40).

### 2.2. Earring, Pendants, and a Foxtail Chain

Interestingly, a new find illustrates that the earring and the two miniature, socketed stone pendants from the Witaszkowo pendant repertoire (Figures 1, 11 and 12) likely belong to a warrior’s outfit. Grave goods recovered in 2019 from the early-to-mid-sixth century BCE secondary burial of a young male in Kurhan 377/1 at the large polycultural cemetery at Mamai-Hora (Andruh and Toshev 2000; Hellmuth 2006c) near Zaporizhzhia in Ukraine (Andruh and Toshev 2022a, 2022b), which lay on the edge of a wholly plundered, large, central grave, 377/2, include an akinakes-type Vetterfelde with a gilded Persian filigree-decorated hilt and chape, a battle axe, a whetstone, horse gear, and an arrow set (gorytos) that hung from his belt (Figure 13). Remarkably, the costume also included a golden earring with a lozenge-shaped body, which, while it is highly similar to the Witaszkowo example, stylistically predates it, and a miniature stone-axe pendant with a golden socket, both found near the head of the deceased. This abbreviated jewellery set prefigures the

Witaszkowo jewellery assemblage exactly. Further evidence for related golden jewellery from ostentatious graves includes a golden earring with a conical pendant from Grave 23 at the seventh-century BCE Nižnjego Povolž'ja site on the lower Volga (Hellmuth 2010, p. 560f., pl. 149) and a gold-socketed miniature stone axe with early sixth-century BCE filigree, which was integrated into a late fifth-century BCE necklace from a female burial in Yablunivka kurhan 2 near Kharkiv, Ukraine (Onajko 1966, p. 64, no. 227, pl. 23,1). These complex pendants, worn near the head, are best understood as amulets. From a Western perspective, bejewelled warriors seem exotic (Hellmuth Kramberger 2017b). Yet it is worth noting that pendant earrings were worn by seventh–sixth-century BCE warriors in Central Asia (Demidenko and Firsov 2007, p. 173f.), while fifth-century BCE images of Persian rulers, nobles, and imperial guards show that, like the Mesopotamian nobility (Hrouda 1965, esp. pl. 8) before them, they wore both open arm-rings, some with animal head finials, and earrings (Rehm 1992, pp. 13–47, 139–54).

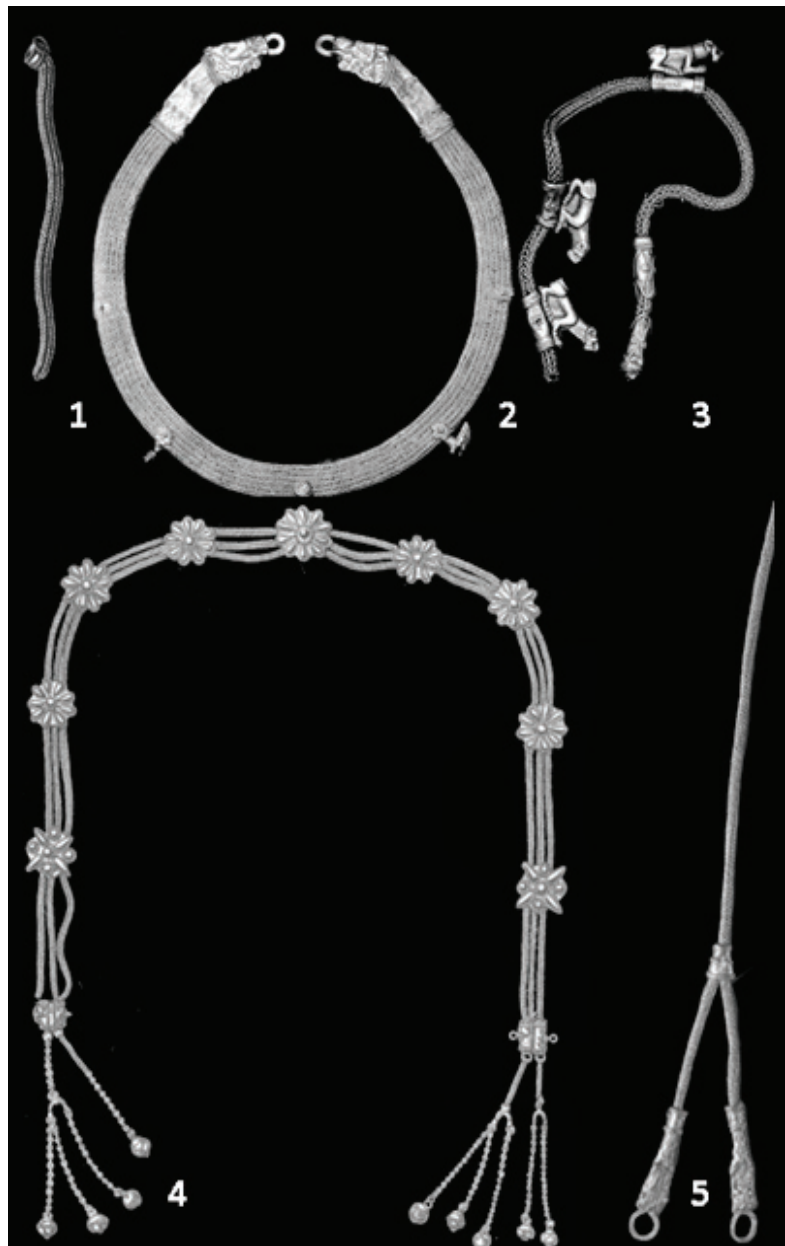
Lauschke had dismembered the thick foxtail chain, with its spacers, thin, tassel-like chain segments, and rhombic pendants immediately after its discovery. Most of the smaller elements were gifted or sold, making its reconstruction tentative and interpretation difficult (Figure 1(20)). While loop-in-loop chains (Reist Stark and Reist Smith 1999) are a characteristic feature of late Scythian women's jewelry in North Pontic Scythia and Macedonia (Figure 10(5) and Figure 8, Artamonov and Formann 1970, pl. 133; Vokotopoulou 1985), there is tantalizing evidence for foxtail chains, with multi-component ornaments in male-denoted contexts (Figure 8). The golden fox tail chain from Hungarian Zöldhalompusztá, for instance, was found together with a golden gorytos mount. It was not only decorated with spacers but also accompanied by a small, hollow, trapezoidal golden pendant, which may have served as a socket for a stone or bead (Kemenczei 1999, p. 169, fig. 3). The complex, three-strand, tasseled, golden foxtail chain from an ostentatious secondary grave in the late seventh-century BCE Litoy/Mel'gunovsky Kurhan (near Kirovograd Ukraine) (Tunkina 2007; Alekseev 2012, p. 114f.) was found together with a gold-sheathed akinakes, golden eagle-shaped gorytos plaques, a set of arrows, and, remarkably, furniture mounts, probably from an Assyrian throne (Boltryk and Fialko 2019). Finally, the braided golden strap from the hidden cache in the Bratoliubivskyi Kurhan (near Kherson, Ukraine) should be mentioned. It is decorated with plastically modeled horse head finials decorated with Middle Scythian teardrop filigree. It was once also adorned by a wreath of pendants worn or torn off before its deposition. Its manufacturing may date to the late sixth century BCE, but it was deposited about a century later with a conical gorytos mount, a phiale, and two rhyta (Reeder 1999, pp. 272–81, no. 135). In this context, it is worth noting that complex, seemingly golden chain-and-tassel assemblages dangle from the quivers of fifth-century BCE images of Persian elite warriors (Figure 9) on the polychrome brick reliefs from Susa (Dieulafoy 1890, p. 281, fig. 154, p. 155, pl. 5–7), the bas reliefs from Persepolis (Roaf 1983, p. 11, fig. 4), and, occasionally, on fifth-century BCE Persian seals (Dandamaev 1976, pl. 15).

These analogies make it clear that what Adolf Lauschke ploughed up from his soggy field was no random assemblage of golden mounts and ornaments, but the coherent and almost complete golden regalia made for a member of the North Pontic Scythian nobility.

### 2.3. *Who Made the Treasure and Where?*

What is immediately apparent is that the Witaszkowo golden regalia, most if not all of which was made as a unified set in a single workshop (Redfern 2000), was not the work of a top-end Ionian master jeweller who was catering to Pontic elites during the late sixth/early fifth century BCE (Deppert-Lippitz 1996). Defects, like the unfinished border of the fish mount's lower front fin, the roughly sketched beasts on the phalera, the sloppy hook that serves as the back leg and three-fingered paw of the fish mount's panther, and, above all, the fact that only two of the four legs of all the animals are shown, point to the work of a less gifted craftsman from the provinces. So, too, do the iconographic slips, like forgetting the notch in the merman's tail (see Icard-Gianolio 1997), but above all, equipping the Witaszkowo dolphins with fish scales, a gaffe unparalleled in contemporary Greek art.





**Figure 8.** Foxtail chains (1)—Witaszkowo hoard: a segment of the foxtail chain with cylindrical final (after Furtwängler 1883); (2)—braided Strap with pendants broken off in Antiquity, Bratoliubiv's'kyi Kurhan, Kherson, Ukraine, late sixth–fifth century BCE (after Reeder 1999); (3)—foxtail chain segment and spacers from the princely tomb(?) at Zöldhalompuszta, Hungary (after Kemenczei 2009); (4)—three-fold foxtail chain with flower- and tube-shaped spacers, Litoi Kurhan said to be near Kucerivka, Kirovohrad Oblast, Ukraine (after Onajko 1966); (5)—Segment of a bifurcated foxtail chain, Sindos, Macedonia, Greece, female Grave 67, ca 510 BCE (after Vokotopoulou 1985).

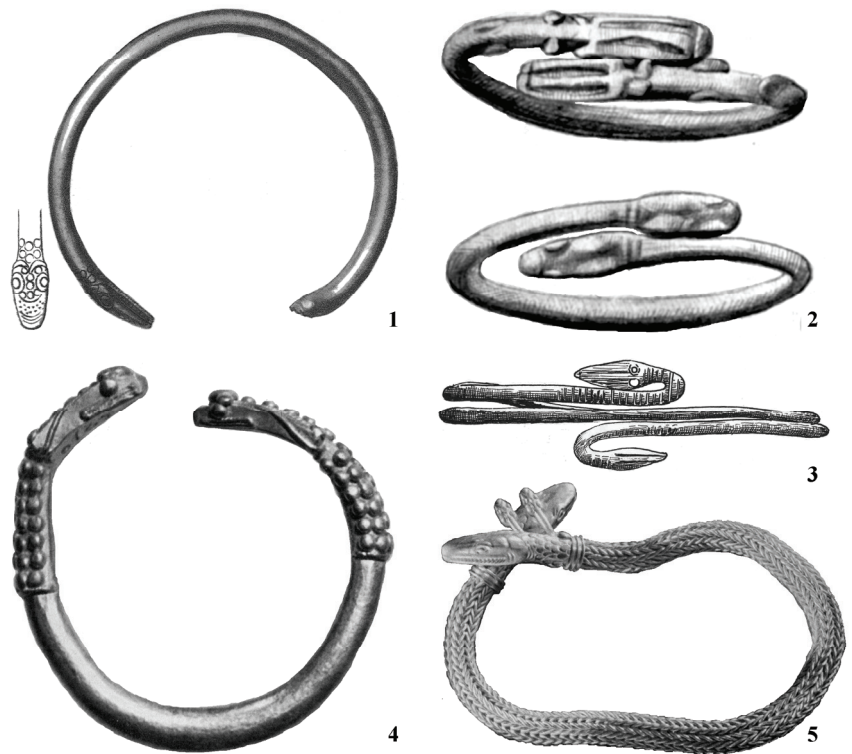


**Figure 9.** Images of Persian warriors with tasseled quivers. (1)—relief from Persepolis, early 5th century (after Roaf 1983); (2)—polychrome-modelled brick frieze from Susa ca 510 BCE (Berlin Vorderasiatisches Museum); (3)—cylician stater, Tarsos, late 5th century, God Nergal as a kneeling archer (after Müseler 2021, 9.6.5a); (4)—cylinder seal from the Oxus treasure (Takht-i Kuwad?) early 5th century (after Merrillee 2005).

Despite these shortcomings, this provincial artisan successfully applied a coherent Ionian-inspired animal frieze to the golden skin of wholly un-Greek weaponry (Vidale 2007, p. 259). Moreover, his ability to integrate stylistic details and elements from the worlds of the polis and both the Pontic and the Carpathian steppes shows him to have been artistically—and, obviously, linguistically—bilingual.

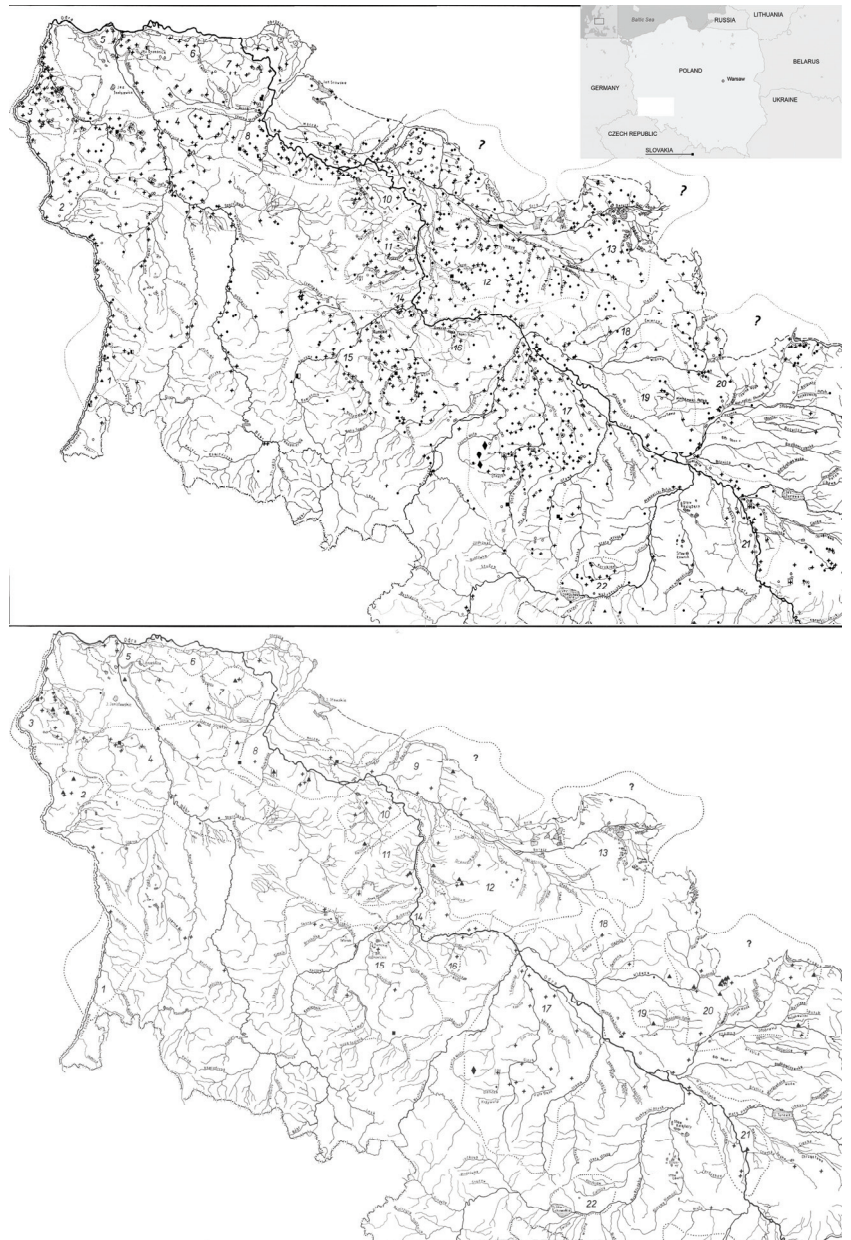
This iconographic bilingualism begins in the figurative décor with the idea of using an animal's body; in this case, that of a fish/ketos as the backdrop for a figurative narrative. This is a variation of the “zoomorphic juncture” (Hanks 2010, pp. 180–82; Becker 2015), i.e., using the body of one animal as a canvas for images of others, an idea that has roots in the Eurasian steppe, reaching back to the Late Bronze Age (Metzner-Nebelsick 2004). This concept would have been anathema to most Greeks.

While most of Witaszkowo's embossed animals have features that follow Ionian conventions, like the notch in the wild boar's mane (Cook and Dupont 1998, pl. 10,1, pl. 17,1.2), some also reflect Scythian imagery. The fish's fallow deer is a case in point. Its neck is compacted, its antler rack stacks at an almost horizontal angle, and the front tine bends back sharply. These features neither conform to physical realities nor to Eastern Greek stylistic conventions (Walter-Karydi 1973, p. 144, no. 930). They are, however, a mandatory aspect of the stags shown in the animal art of the steppes in the first half of the first millennium BCE, and they clearly had an emblematic character. In the late seventh and sixth century BCE, stags with stout necks and oversized, horizontal antlers linked iconographic landscapes as far-flung as Hungary and Southern Siberia (Jacobson 1983). The iconographic and aesthetic fusion of Ionian and steppe elements reflects the complex hybridization that characterises the figurative iconography of elite symposia and martial assemblages in the north Pontic steppes (Nebelsick 2012).



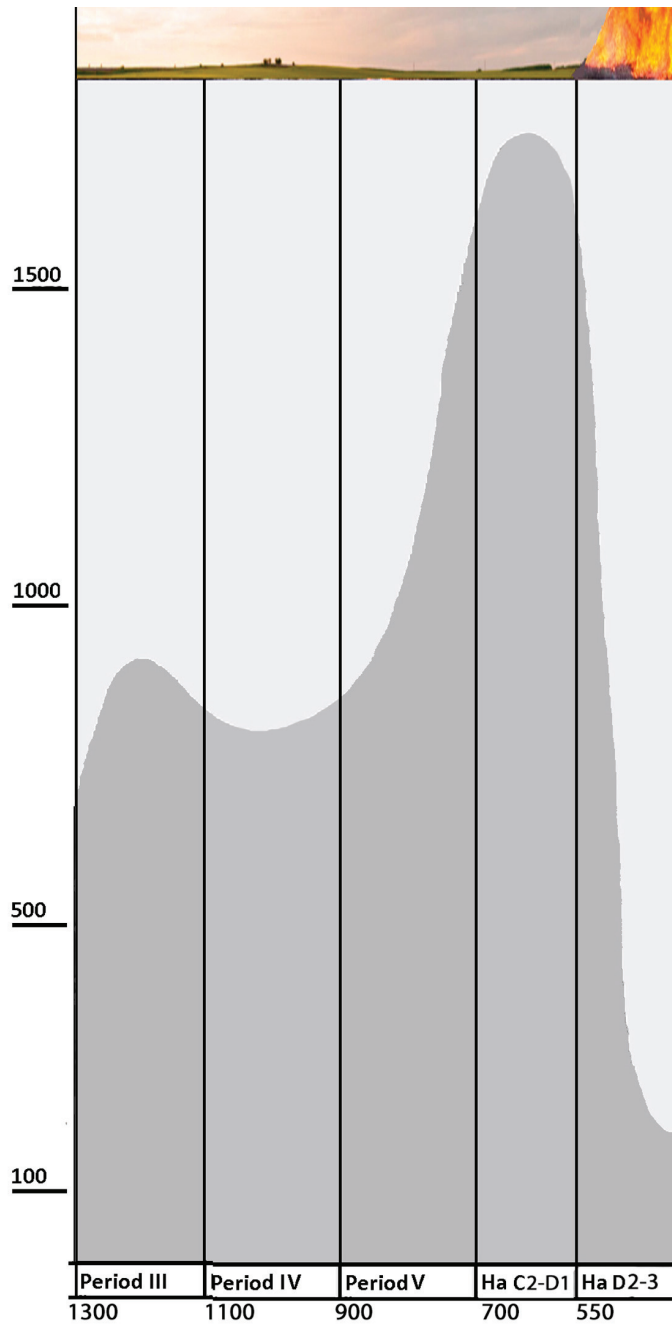
**Figure 10.** Arm rings with snake head finals: (1)—Witaszkowo hoard snake-headed arm ring (after Furtwängler 1883); (2)—snake arm rings from female graves 31 and 57 from Szentes Vekerzug, com. Csongrad, Hungary, late 6th century (after Párducz 1954); (3)—snake arm ring from Ditzingen-Schöckingen, Kr. Ludwigsburg, Germany, late 6th century (after Zürn 1987); (4)—snake arm ring from Duvanli, obl. Plovdiv, Bulgaria, Kukova Mogila, late 6th—early 5th century BCE (after Filov 1934); (5)—golden foxtail arm ring with snake-head finals from Varennikovskaya Stanitsa, Krasnodar region, Russia, Seven Brothers Kurhan 4, early 5th century BCE (after Artamonov and Formann 1970).

Considering their location on the far Western periphery of the Scythian world, it is interesting to note that there are specifically Western elements in the style and composition of Witaszkowo's golden mounts. The "Vettersfelde" type of akinakes has a clear distribution focus in the Northeastern Carpathian piedmont (Topal 2021a, p. 608, fig. 50). The filigree on its hilt can be related to the decor of the diadem from a sixth-century BCE Scythian princely tomb near Hungarian Ártánd (Párducz 1965). The beaded rim of its heart-shaped hilt plate is a feature foreign to the akinakai of the Eurasian steppes but a feature of the sheaths of Danubian short swords (Vulpe 1990, pl. 3, 12, 16, 79). The diagonally hatched band that borders the fish mount's fins only occurs sporadically in North Pontic animal art (Artamonov and Formann 1970, pl. 58, 61) but is a defining feature of Carpathian and lower Danubian metalwork in the sixth and fifth centuries BCE (Kull 1998, p. 212f.). Another Danubian/Balkan feature of Witaszkowo's figurative composition is the floating hare racing below the great fish mount's torn off-fin, flaunting obligatory baselines (Kull 1998, p. 435, fig. 4).



**Figure 11. (top and bottom)** The collapse of settlement in Lower Silesia in the late Hallstatt period. **(top)** Distribution of Hallstatt C–D1 sites in Lower Silesia and the Stary Kraj. **(bottom)** Distribution of Hallstatt D2–3 sites in Lower Silesia and the Stary Kraj (after Mierzwiński 1994, 1995).

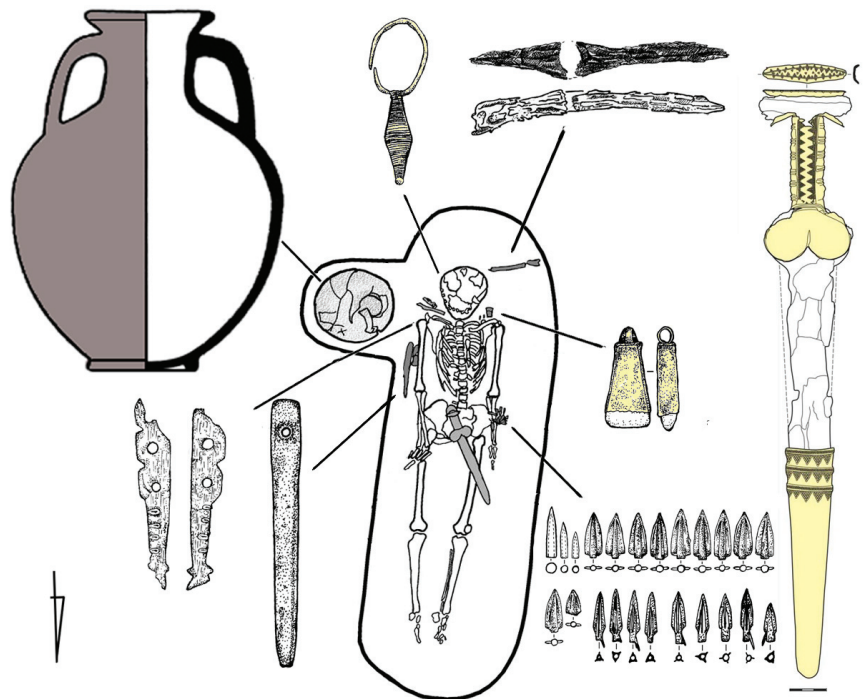




**Figure 12.** The collapse of settlement in Lower Silesia in the late Hallstatt period (modified after Mierzwiński 1994).

The surviving pieces of the jewellery set also attest to ties with the Western periphery of the nomadic koiné. While metal bracelets with snake-head finials (Figure 10, occur sporadically in women’s graves of the Pontic steppe, they are an endemic feature of

women's graves in the Balkans (Stipčević 1981, p. 759 map 1, pl. 15–16) and Greece (Philipp 1981, pp. 222–26), where they probably evoked the Dionysian thiasos (Grabow 1998). They were also found in women's graves of the Scythian Vekezug/Alföld group in the Carpathian Basin (cf. Figure 8(2): Kemenczei 2009, p. 84f., pl. 71,5, 73,10, 142,11). As an exception, snake-headed arm-rings decorate the arms of an elite male with Scythian connections buried in Stična, Grave 48/33 in the Southeast Alps (Gabrovec et al. 2006, pl. 25,2). The westernmost snake-headed armlets come from a Late Hallstatt Period woman's grave near Ditzingen–Schöckingen in Swabia (Zürn 1987, p. 95, pl. 136). Cylindrical spacers with serrated or indented finials (Figure 1 (20)) decorate the foxtail chain from what was probably a Scythian princely tomb in Hungarian Zöldhalompuszta (Figure 8(3), after Kemenczei 2009, p. 125, no. 70, pl. 32).



**Figure 13.** Plan and summary inventory of Mamai-Gora, Kurhan 337, Grave 2, Ukraine, (after Andrukh and Toshev 2022a).

This wealth of Carpathian parallels makes it very likely that the goldsmith who fashioned the Witaszkowo treasure, while imitating the ostentatious regalia of the North Pontic Scythian elite, also provided their style with a “western” flavour. It is also likely that the patron who ordered this finery either came from the western periphery of the Scythian world or intended to gift it to somebody from the west.

Because of the obviously hybrid Scythian/Carpathian/Ionian character of the Witaszkowo regalia's figuration, scholars have long placed their workshop in the ambience of the Archaic Milesian Northwest Pontic apoikiai, which were the foci of complex interactions between Greek and indigenous populations (Boardman 1999, p. 261f.; Bouzek 2008; Tsetschladze 2010). Denis Topal has recently favoured Kyzikos on the Propontus as the workshop site because of the close stylistic relationships between Witaszkowo's imagery and early Kyzikene coinage (Topal 2022, p. 11, fig. 7). However, as mentioned previously, major stylistic idiosyncrasies that characterise Witaszkowo's figuration make its attribution to the workshops of Kyzikos' sophisticated minters and goldsmiths highly unlikely (Avram 2004,

pp. 982–84). Interestingly, however, highly valued electrum Kyzikenes were the leading currency of the Pontus in the late sixth and early fifth centuries. It is, therefore, obvious that they must have been very familiar to the artisan making the Witaszkowo treasure. Indeed, it is more than likely that this ubiquitous electrum coinage will have provided the raw material to manufacture Witaszkowo regalia, and that the artisans may have had them as reference images immediately at hand.

Histria/Istros has been suggested (Alexandrescu 1997) as the location of the Witaszkowo workshop. However, there is as yet no excavated evidence for archaic metalworking in the town, and both the Iron Gate canyon and Carpathian Mountain belt separate Histria quite clearly from Eastern Central Europe. Evidence for metal and jewellery working in the Milesian conglomerate foundation Berezan and Olbia on the Buh/Dnipro (Bug/Dniepr) estuary is much clearer (summarised by Knight 2022, pp. 285–89). The population of both Berezan (Domanskiy and Marchenko 2004; Treister 1998, pp. 179–81; Solovyov and Treister 2004) and Olbia (Kaposhina 1956; Treister 2007, p. 570, fig. 3; Fornasier et al. 2018, p. 45, fig. 35; Ol’hovskij 2016) included metalworkers, and, particularly, jewellers, producing both Greek decorative metalwork and steppe animal-style ornaments in the sixth century BCE. And it was during the sixth century that mirrors, which amalgamate both Greek and Scythian iconographies, were being produced on an industrial scale in Olbia (Kuznetsova 2021), and that Anatolian-inspired wheel-thrown grey ware, which characterised the pottery assemblage of the Milesian coastal foundations, was being imitated by Scythian and Eastern Carpathian potters (Czifra et al. 2020). Moreover, smaller settlements in the thriving Olbian Chora (Kryzhitskiy 2007) have also produced evidence for high-quality metallurgy during the late sixth century BCE (Kryžickij et al. 1989; Solovyov and Treister 2004). Evidence for metalworking artisans also comes from Nikonion, which lies across the Dniester–Liman estuary from ancient Tyras (Sekerskaya 2001). The merchants and artisans of both Tyras and Olbia/Berezan (Tsetskhladze and Treister 1995) would have had easy access to the ore-rich eastern flanks of the Carpathian range and the Volhynian–Pidillian uplands (Gedl 1988, p. 157; Klochko 1994, pp. 139–40; Kvasnytsia 2006). And it is worth mentioning that the metal-rich regions of Transylvania and the Carpatho–Ukraine had been settled and likely exploited by the Ciumbrud and Kushtanovica groups, communities with clear cultural affinities to the steppe cultures of the Ukraine/Moldova by the late seventh century (Rustoiu and Egri 2020, pp. 450–53). The intentional, systematic nature of these early Scythian incursions into the Carpathian piedmont has been underscored by the recent find of a Scythian enclave focused on the environs of the remarkable Chotynek hillfort near Jarosław, Southeast Poland, whose inventory includes an Eastern Greek wine amphora from the late seventh/early sixth century (Czopek 2019, 2020; Trybała-Zawiślak 2020; Grechko 2023).

The vast, 4020 ha stronghold of Bilsk, near Poltava, Ukraine, which has been identified with Herodotus’ Greco–Scythian town Gelonus (Godley 1920; Shramko 1987, 2006), has yielded plentiful evidence for sophisticated metalworking, including animal art plaques (Shramko 2016, p. 589, fig. 9–10; Skoryi and Zimovetz 2019), as well as over 10,000 sherds of imported Greek amphoras and fine wares, ranging from the seventh to the sixth and early fifth century BCE (Skoryi and Zimovetz 2019, pl. 48; Gavriljuk 2007, p. 634f.). Besides indigenous pottery, Bilsk’s pottery assemblage also included Eastern Carpathian Zabotin/Basarabi wares (Shramko 1987, pp. 73–74, fig. 48–49) and Lusatian-type aviform rattles (Shramko 1987, p. 94, fig. 64, 7–9). Evidence for the bilingualism of the population of these large strongholds, which is alluded to by Herodotus, is shown by sporadic sherds with Greek inscriptions found both in Bilsk and the vast Nemyriv stronghold on the Dniester near Vinnytsia, Ukraine (Polinskaya 2023; Braund 2008, p. 360, fig. 1; Smirnova et al. 2018). Nemyriv is another vast proto-urban stronghold with evidence of intensive contact with both the Ionian colonists of the Black Sea, beginning in the mid-seventh century, and “Hallstatt” populations of the Northeastern Carpathian piedmont (Daragan 2020; Smirnova et al. 2018, esp. fig. 166). A Scythian situla decorated with a Carpathian-style “Basarabi” spiral frieze from Western Ukrainian Podilia is a spectacular example of the

stylistic hybridity mastered by indigenous craftsmen on the western fringe of the Scythian settlement (Węgrzynowicz 2001). Yet it should be kept in mind that even highly specialised artisans could be itinerant, as is shown by 6th to 5th century figured punches found at the sites of ostentatious burials, sanctuaries, and small settlements (Kull and Stîngă 1997; Leskov 1990; Treister 2001, pp. 74–76), indicating that metalworkers could set up shop wherever they were needed. Moreover, indigenous jewellers serving the elites of the Pontic steppe were continuously appropriating and adapting Mediterranean technological and iconographic innovations, reaching a high degree of sophistication (Lifantli 2023).

Thus, it is as likely that the Witaszkowo regalia, which were expressly made for the needs of a Western Scythian client, were fashioned either in a Greek workshop attuned to Scythian imagery on the Pontic coast or a Scythian workshop appropriating Ionian style and iconography in or around the proto-urban sites of the interior.

#### 2.4. Dating the Hoard

Dating the hoard is, of course, vital for understanding its position in the development of Graeco-Scythian art, its historical context in the period of Persian expansion, the cultural context of its deposition in the Far West, and its meaning within the landscape and site where it was finally deposited.

Since Furtwängler's definitive publication of the hoard, his stylistic dating to the end of the sixth and/or beginning of the fifth century BCE has found general acceptance. Interestingly, however, Furtwängler was guided not only by stylistic criteria but also by the fact that he imagined that Witaszkowo was the grave of a Scythian leader who had retreated from Darius' onslaught on Thrace and Scythia in 512 BCE. Furtwängler's dating has been both corroborated and challenged by more recent finds. As argued above, it is likely that the Witaszkowo akinakes and their filigree-decorated chape were manufactured in the early sixth century. However, features of the embossed decoration on the Witaszkowo sheath, as well as the fish and cloverleaf gorytos mounts, suggest that the figurative décor of the Witaszkowo regalia can be securely dated to the second half of the sixth century BCE. These include the aforementioned affinities with the figuration of later sixth-century BCE South Ionian/Milesian Fikellura pottery (Kerschner and Schlotzhauer 2005), which was imported in significant quantities by in the Milesian foundations on the Northern and Western Black Sea coast and may also have been imitated there by indigenous potters (Alexandrescu 1997; Vachtina 2007; Bouzek 2008). A late sixth-century BCE date is also suggested by the close correspondence between the style of the Witaszkowo animals, as well as the fish-wielding Nereus/Triton figure on the frieze of the Athena temple at Assos, built in the third quarter of the sixth century BCE (Finster-Hotz 1984, p. 131, pl. IV–V; Maggidis 2009, p. 86f.). Moreover, Denis Topal (2020, 2022) has recently echoed Furtwängler (Furtwängler 1883, pp. 24–29) in stressing the close stylistic parallels between the Witaszkowo figuration and archaic, late sixth-century BCE Kyzikene coinage. Obviously, the Witaszkowo akinakes had a one-to-two-generation-long illustrious biography before being upgraded with Ionian iconography and gifted shortly thereafter to a recipient in the west.

Finally, the evidence from our excavations on the site of its discovery in Kosów should be considered (Kobyliński 2014). The latest pottery from the site is best seen in the context of later Hallstatt D Białowice/Billendorf ceramic sequences, which clearly predates the Górzycia III wares we found at the neighbouring Starosiedle stronghold. The southern expansion of the Górzycia group from the Oderbruch Basin to Lusatia took place during its third (Ha D3) fifth-century development phase. These immigrants filled the vacuum caused by the late sixth-century BCE Scythian incursion (Lewczuk 2004).

All this makes it likely that not only the manufacturing of the hoard, but also the deposition of the hoard, which was in mint condition, must have occurred between ca 540 and 510 BCE.



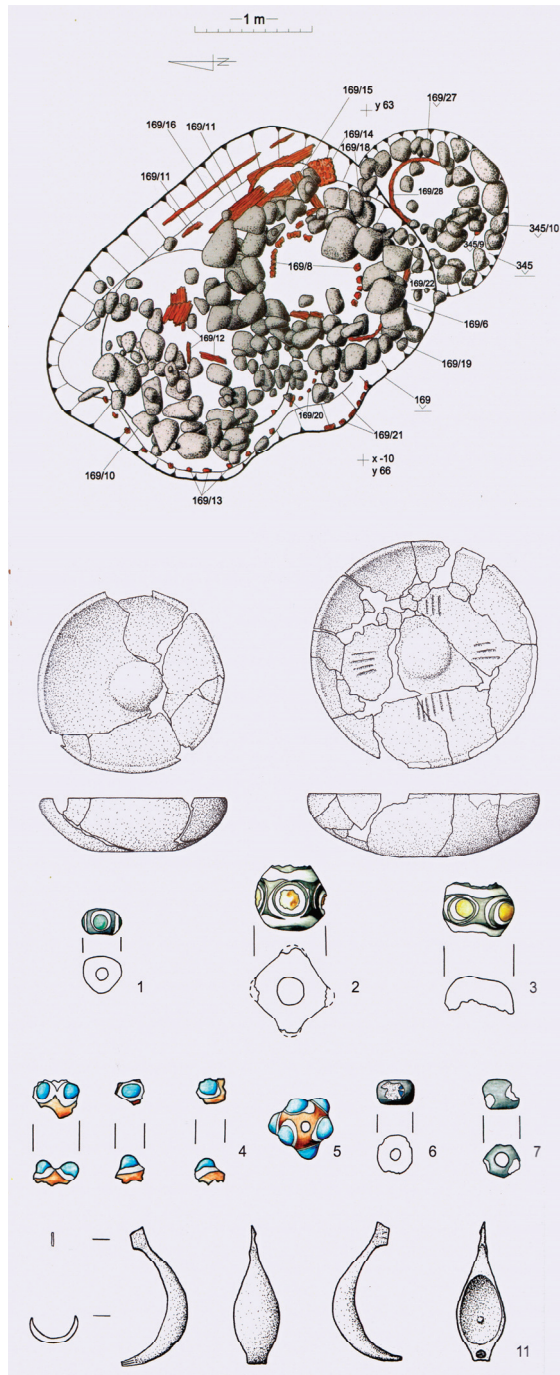
### 3. The Site of the Hoard

It is a remarkable fact that while so much has been published about the content of the Witaszkowo hoard, very little has been written about its exact find spot and position in the landscape. In the immediate aftermath of the discovery, the site was well-known and needed no signposting. However, the destruction of Guben's historic centre, including the museum's archives, and the expulsion of the German population east of the Neisse at the close of the Second World War (Ošekowski 1994) led to a complete break in local knowledge about the hoard and post-war attempts to localise its site remained fruitless. Luckily, detailed written descriptions, which have proved invaluable for reconstructing the site's position, were published shortly after its discovery (summarised by Nebelsick 2014). In 2000, I realised that the contemporary descriptions combined with historical maps would lead us to the hoard's findspot, and this proved to be the case in 2001 when the fertile basin southeast of Guben known as the Stary Kraj (Das Alte Land, or the old country) became the focus of the Saxon–Polish Stronghold Project. The results of our excavations have been fully published (Kobyliński 2014) and need only to be summarised here.

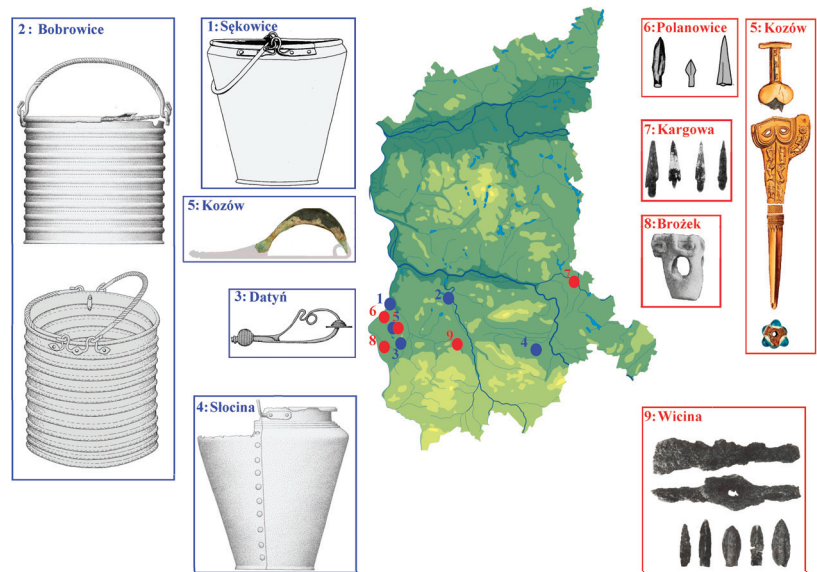
In 2002, a trial excavation revealed a series of Iron Age pits with evidence of intensive burning on an upper slope of the site and, more pertinently, intensive activity on its lower, western edge, where it interfaced with water-logged sediments. In 2004, work concentrated on this part of the site, which had formerly been the shore of a shallow pond and showed signs of intensive Iron Age activity, including pottery depositions, a large stone pavement, and wood- and stone-lined pits in water-logged sediment. One of these was Feature 169, a multiphase wood-and-stone-lined spring whose contents included 223 fragmented and whole omphalos bowls, a pendant fashioned from a sixth-century BCE East-Alpine fibula, and seven North Pontic glass beads (Figure 14; Kobyliński 2014, pp. 119–27, 391–410, pl. 9,2). Moreover, the pottery assemblage from the site could be dated to the early/late Iron Age transition, roughly the late sixth century BCE (Ha D2). It is highly likely that the Witaszkowo hoard was deposited in or near this feature.

The fruitful Stary Kraj basin, in which the site of Witaszkowo is embedded, was densely settled in the Late Bronze Age to early Iron Age (Figure 15: Mierzwiński 1995). It is the core landscape in the Oder–Neisse triangle, through which travelers and traders moving from Silesia and Bohemia to the north had to pass. Moreover, the Stary Kraj and neighbouring Lower Lusatia are the most southwestern territories in which hoarding, particularly in wet contexts, was practised north of the Central European mountain belt in the Early Iron Age. (Buck 1979, p. 35, pp. 75f., fig. 63; Blajer 2001, pp. 65–70, 293–97). Lying on the edge of a settlement in a waterlogged context, the location of our gold find is typical for this hoarding tradition.

Interestingly, Witaszkowo is not the only site in the region to have produced finds with North Pontic affinities. In the ninth century BCE, three pre-Scythian daggers were deposited on the flanks of the Landeskrone hillfort near Görlitz, 100 km south of Witaszkowo (Puttkammer 2007, p. 113, no. 63). Moreover, an early Scythian antler ram-head rein-knob (Bandrivs'kij 1998) is said to have been found in a late seventh/early sixth-century BCE chambered tomb in 1941 during hasty rescue excavations in Brożek/Scheuno, 30 km to the southwest (Bukowski 1977, p. 36f., No. 4).

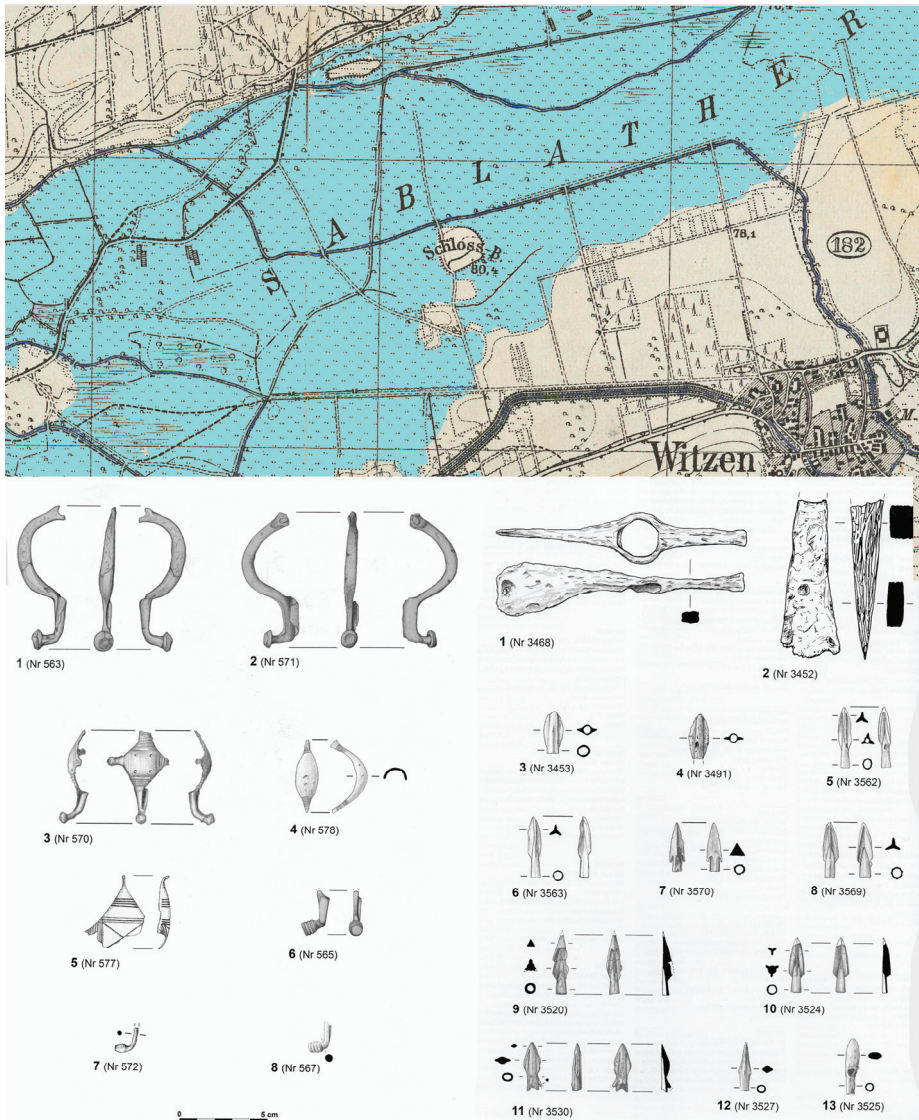


**Figure 14.** Kozów, woj. lubuskie (Poland), Feature 169, plan, and a selection of the finds (modified after Kobyliński 2014). 1–7: Pontic glass beads, 11: Pendent made from a much-eroded East Alpine fibula.



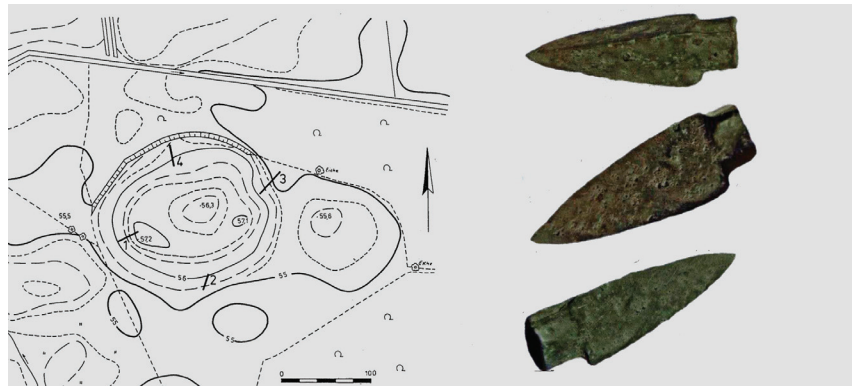
**Figure 15.** The Stary Kraj, environs of Gubin, Southwest Poland. blue southern imports: red Scythian finds. (after Nebelsick 2014).

In the sixth century BCE, traces of the presence of steppe archers in this peripheral region intensified. Trilobate arrowheads have been recovered from the Niemcza Łużycka stronghold near Polanowice, just 6 km to the west of Witaszkowo (Bukowski 1977, p. 102f., no. 57; Domański and Lewczuk 1998), which was destroyed and abandoned before the beginning of the fifth century BCE. More impressive evidence for a besieged stronghold was found at Wicina's Góra Zamkowa (Schloßberg), a defended island in a swampy basin some 20 km southwest of Witaszkowo (Figure 16). Its box rampart, which was first erected in 754 BCE, underwent repeated repairs, the last in 571 BCE before it was finally destroyed by fire in the late sixth century BCE and never re-erected (Krapiec and Szychowska-Krapiec 2013). Battle axes, horse gear, and over 140 Scythian arrowheads, as well as hastily buried bodies of women and children, are related to the site's destruction (Figure 16, Bukowski 1977, pp. 127–34; Kossack 1987; Jaszewska and Kałagate 2011). Anja Hellmuth (Hellmuth 2006b, 2010) has shown that the quiver assemblages of the attackers, while having a clear Carpathian component, also included arrows from the north Pontic steppes. Interestingly, an iron blade of what is likely to be a Scythian *akinakes* was recovered from a cremation grave in the stronghold's cemetery (Bukowski 1977, p. 134), indicating that there may have been times of more peaceful interaction between the stronghold's elite and steppe horsemen before the final onslaught (Bukowski 1977, p. 136, no. 76c, p. 190, fig. 8). The north-westernmost evidence of raiding by mounted warriors consists of arrowheads from the interior of the Late Bronze and Early Iron Age stronghold of Zützen, 90 km west of Witaszkowo (Figure 17, Koepke 1996; Biermann and Georgi 2018), which was also burnt and abandoned in the late sixth century.



**Figure 16.** Top: Location of the Wicina, “Góra Zamkowa”/Witzen, “Schloßberg” stronghold in the Zabłocie bog, woj. lubuskie Poland. The cemetery is on the bog island just southeast of the Stronghold (modified after Ordnance Survey map/Messtischblatt Gassen 4256 (2405) 1911: [http://igrek.amzp.pl/TK25\\_4256](http://igrek.amzp.pl/TK25_4256), accessed on 7 January 2024). Bottom: Selection of finds from the Wicina “Góra Zamkowa” stronghold, woj. lubuskie Poland (after Jaszewska and Kałagate 2011).





**Figure 17.** Zützen, Lkr. Dahme-Spreewald, Brandenburg. Plan of the swamp stronghold and Scythian arrowheads found in its interior by metal detectorists (after Koepke 1996; Biermann and Georgi 2018).

#### 4. Slaving, Raiding, Diplomatic Gifts the Hoard'S Historical Context

Obviously, the Scythian presence in Lusatia and, above all, the deposition there of the most spectacular Graeco–Scythian golden regalia of the Archaic period, need an explanation within the context of the complex history of contact and conflict between stratified central European farming communities and steppe horsemen.

As one might expect with a complex and historically crucial topic such as this, there has been a protracted and hotly argued debate regarding both the nature of this interaction and its chronological framework, which cannot be repeated here (see Parzinger 1993). Instead, the narratives proposed by Jan Chochorowski (2014) and Denys Grechko (2020a, 2021) will be loosely followed.

Early Iron Age contact between inhabitants of the north Pontic steppes and their western neighbours comprised two radically different phases. The initial phase, which lasted from the mid-seventh to mid-sixth century BCE, was characterised by complex patterns of infiltration and cultural formation that saw communities living on the western fringes of the Eastern European steppe and adjacent upland regions adopting and adapting “Scythian” lifestyles, warfare, aesthetics, and foodways while retaining some, mainly female, indigenous costume accessories (Kozubová 2019a, 2019b). This suggests that complex patterns of exogamy accompanied the consolidation of “Scythian” lifeways in the Carpathian steppes as they did with the emergence of the “Thraco–Cimmerian” in the Late Bronze Age (Metzner-Nebelsick 2022).

Interestingly, preliminarily published genetic analyses show no discernable Eastern steppe component in the aDNA of Carpathian “Scythians” (Järve et al. 2019, p. 2432, fig. 3), in contrast to the inhabitants of the Ukrainian steppes. Their role as genetic “outliers” of Scythian skeletons sampled from the Pontic and eastern steppes underscores a high degree of indigenous appropriation that accompanied their cultural expansion to the west. This formation of Scythianizing communities in the Eastern Carpathian Basin in the second half of the seventh century BCE corresponds to the phase Ha D1 in the west, a period during which Eastern Central European societies on the Eastern Alpine Piedmont, Moravia, Silesia, Lusatia, and Great Poland flourished (Baron 2017a), reaching unprecedented levels of hierarchisation and centralization (Figure 18) One crucial factor in understanding the historical ramifications of this initial consolidation of Scythian and allied cultural groups with steppe lifeways in the Eastern Carpathian Basin and the Northern Carpathian Piedmont is that it occurs concurrently with the establishment of Milesian foundations on the northwestern Pontic coast, in particular, Berezan/Boresthenes, where there is evidence for a large-scale working of Carpathian copper (Domanskij and Marcenko 2003, p. 35). At the same time, the flow of Carpathian copper to the north and west appears to have been disrupted (Nowak and Gan 2023). It is compelling to link Scythian

expansion into the metal-rich regions with the establishment of emporia by Milesians on the Northwestern Black Sea coast and to see Miletus’ wide-ranging Pontic ventures enmeshed in the Lydian territorial expansion in Western Anatolia (Knight 2019; Portalsky 2021).

		SW-Poland Lusatia	NW Carpathian Basin/Moravia	Eastern Carpathian Basin, W. Ukr Ukraine	Pontic Steppes	Historic Events
500	D3					
	D2				Middle Scythian Period	513 Persian conquest of Thrace expedition against Scythia
		Kargova Witaszłowo				
		Heune- burg Iva	Wicina Zützen Polanowice Strzegom	Dédestapol- csány Provodov- Horákov Smolenice		ca 547 Fall of Sardis Miletus vassal of Persia
550					Shumeyko Mamai Gora	since ca 550 Kyzikene electron coins Pontic standard
				Zöldhalom- puszta		
				Ártánd		
600	Ha D1				Early Scythian (Kelermes Period)	ca 600 Milesian-Lydian alliance
						ca 620 foundation of Olbia
				Formation of the Aiföld/ Vekerzug group in the Carpathian steppes and the Steppian cultures in the Carpathian foothills		ca 630 foundation of Istros
				Start of "Scythian settle- ment in Transylvania - Ciumbrud group.		ca 650 foundation of Berezan/Boresthenes
650						

Raiding - Slaving

Foundation of Carpathian Scythia

Figure 18. Chronological table. Red indicates evidence for violent raiding.

In the last 30 years, many scholars have broken with the idea of a single Scythian incursion into the west linked to Persia’s European campaign as proposed by Furtwängler and his epigones, instead favouring a two-phase process spanning the late seventh to the beginning of the fifth century BCE (for instance, Parzinger 1993; Teržan 1998; Hellmuth Kramberger 2017a; Chochorowski 2014). However, recent reassessments of the relevant evidence (Grechko 2020b, 2021) suggest that western raiding was, in fact, a short-lived phenomenon lasting little more than a generation. With the advent of the Middle Scythian period in the mid-sixth century BCE (Grechko 2012; Topal 2019, p. 144), dynamic, in many cases, martial incursions were now made by Eastern European mounted archers into the thickly settled agricultural landscapes of Transdanubia, Lower Austria, Moravia, Bohemia, Silesia, and Lusatia, whose population’s material culture and pronounced funerary ostentation were allied to the Western Central European Hallstatt Culture. This dynamic steppe warrior impact in the west corresponds, on the one hand, to the establishment of a new aristocracy in the western Pontic steppes employing Eastern Scythian iconographies and, on the other, to concurrent destruction horizons in proto-urban strongholds, suggesting all-encompassing turmoil and instability (Grechko 2016). When seen within the context of Persian expansion by the last decade of the sixth century BCE, it seems likely that Macedonia, Thrace, and the western Pontic littoral, together with the Eastern Carpathian basin, formed an interlinked allied territory with a belligerent boundary menacing the west. Moreover, up to the Ionian revolt, Milesians, Persians, and Scythians were acting “hand in

glove” to secure the rich metal, and, as will be argued below, human resources of Eastern Central Europe (Georges 2000, pp. 11–15).

Besides the most Western strongholds with evidence of Scythian destructions mentioned above (i.e., Wicina, Polanowice, Zützen), lowland swamp forts in Western Poland with Scythian arrow findings include Kargowa in greater Poland (Bukowski 1977, p. 64f.), as well as Kameniec (Gackowski et al. 2018) and Kruszowica in Kujavia (Chochorowski 2014, p. 32). Upland hillforts include the “breite Berg” near Strzegom, whose burnt rampart was riddled with trilobate arrowheads (Bukowski 1977, pp. 112–15), and the vast defended Słęża mountain top (Bukowski 1977, pp. 116–68), both in Central Silesia. Moreover, Scythian arrowheads have also been recovered from remote upper Silesian pinnacles and rock shelter refuges, illustrating the all-encompassing ferocity of the conflict (Chochorowski 2014, fig. 19,8).

In the Carpathian Basin, the best-studied example of a fortification destroyed by Scythian raiding is a stronghold on a spur of the lesser Carpathian Mountains called Smolenice–Molpír in Western Slovakia (Stegmann-Rajtár 2005; Hellmuth 2006a, 2006b; Müller 2012). It was once thought to have been destroyed before the turn of the sixth century BCE (Parzinger and Stegmann-Rajtár 1988) and to have been the first Eastern Hallstatt stronghold to fall to a Scythian raid. However, new dendrochronological dates make it clear that the destruction took place after 585 BCE. Moreover, the pottery assemblages found under the collapsed rampart (Dušek and Dušek 1984) include late Hallstatt shapes (Dular 1982), making it likely that the site was destroyed in the second half of the sixth century BCE (Grechko 2020a; Barta et al. 2017). Evidence for this impressive 12 hectare large hillfort’s destruction includes ca 400 trilobate arrows shot into easily accessible parts of the ramparts and gates and remains of human skeletons in burnt dwellings in its interior. Remarkably, this arrow assemblage includes points native to both the Carpathian and Pontic steppes as well as an Anatolian/Persian example (Hellmuth 2006b; Hellmuth Kramberger 2018; Herzhoff 2022). Finds of scales chopped off lamellar armor worn by the Scythian elite (Čambal 2007) are a testimony to both the ferocity of the battle and the participation of pinnacle warriors in the heterogenous group of steppian archers sacking this protourban community.

Three hundred kilometers to the east of Smolenice Gabor Szabó’s surveys and excavations of the impressive 123-hectare large promontory fort Dédestapolcsány–Verebce-bérc which lies on the flanks of the Bükk Mountains in northern Hungary revealed a hail of 249 trilobate arrows aimed at a bastion of its outer rampart. Hundreds of others were recovered from burnt buildings, some containing human skeletons, in the site’s interior (Szabó and Bakos 2014, pp. 337–40; Szabó et al. 2014; Hellmuth Kramberger 2021; Szabó et al. 2023).

To the northwest of Smolenice, the Moravian strongholds of Provodov–Ludkovice/Rysov (Novák 2017) Křenovice Hradisko and Horákovský hrad are also likely to have been destroyed by steppian archers in the late sixth century BCE (Bartík et al. 2017, pp. 45–48, 50; Topal and Golec 2017). Czech Scholars see these violent events as an aspect of the forcible incorporation of Moravian and possibly neighboring Bohemian lowlands “into a larger political formation of the Vekezug culture” during the second half of the 6th century (Golec et al. 2016; Bartík et al. 2017). All these events fit the timeframe of the destruction of the aforementioned Lusatian strongholds perfectly.

The cultural context and effect of these destructive incursions varied from landscape to landscape. In Western Slovakia, the second half of the sixth century BCE saw a drastic reduction in the number of settlement sites and the end of funerary ostentation, followed by a shift in cultural orientation towards the Eastern Carpathian Basin (Romsauer 1996; Stegmann-Rajtár 2017). At the same time, as in Silesia, remote mountaintop sites in the region were being used as refuges (Barta et al. 2023). In Transdanubia and Northeastern Austria, the impact of Scythian raiding was more drastic (Jerem 1981; Teržan 1998, pp. 518–26; Soós 2020). Skythian arrowheads have been recovered from large defended proto-urban centers like Celldömölk-Sághegy and Velem—Szentvid but also smaller rural

settlements such as Ménfőcsanak, Széles-földek, all of which were destroyed and abandoned in the late 6th century (Szabó and Bakos 2014, pp. 341–43). A drastic reduction in the population between the bend of the Danube and the East Alpine piedmont was followed by a regionally differentiated patchy resettlement in the late sixth/fifth century BCE (Patek 1993; Soós 2021; Soós et al. 2023). In the Kalenderberg region in Northeastern Austria, the population collapse seems to have been particularly drastic and recovery extremely meager, with the eponymous ritual Kalenderberg pottery that once characterized the region disappearing entirely (Nebelsick 1996, 1997; Tarpini 2019; Teržan 1998). This created the preconditions for the immigration of Western European Celts into the area in the early-to-mid-fifth century BCE (Jerem 1996; Nebelsick 1997; Ramsel 2018). It is worth mentioning the importance of high-status women in the funerary ostentation of the Kalenderberg region and the general lack of weapon graves in the region (Teržan 1986). Like the “Lusatian” communities in Southwestern Poland this society was clearly not participating in the prevailing custom of martial ostentation, which is typical for many Hallstatt Period elites (Frey 1983), and this lack of a warrior ethos may have made the both groups particularly vulnerable to lethal raiding.

In Moravia (Bartik et al. 2017; Topal and Golec 2017; Kozubová and Golec 2020) and Bohemia (Chytráček et al. 2010; Trefný 2017), there is strong evidence for mid-to-late sixth-century BCE raiding. While the reduction in the local population, abandonment of strongholds, and a blurring of cultural identities are palpable in the material record, there is substantially more evidence for continuity in the Late Hallstatt period than in the aforementioned Kalenderberg region. Recently, Denys Grechko (2021) has revived Tadeusz Sulimirski’s (1961) vision of a Scythian raid to the far west, leading, among other things, to the destruction of the Heuneburg in the late sixth century BCE. However, only three trilobate arrowheads have survived from this well-excavated site despite the fact that Scythian arrowheads are widely distributed in the west (Mercer 1970; Bofinger 2006; Hauser 2019). Their presence, along with Eastern European axes at other Western sites, such as the Hallstatt salt-miner’s cemetery, suggests their presence had a more sophisticated background than martial interaction.

As noted above, the impact of Scythian raiding was particularly dramatic in Lower Silesia, parts of Great Poland, and Eastern Lusatia (Chochorowski 2014; Baron and Mizga 2013; Baron 2017b), where all investigated Early Iron Age strongholds were either abandoned or burned (Niesiołowska-Wędzka 1974; Buck 1979), often with evidence of steppe warrior agency. Thanks to the existence of published systematic surveys of closely dated Early Iron Age sites, it is possible to document the all-but-complete collapse of the Lusatian population in the Middle Oder Basin before the turn of the fifth century (Figures 11 and 12; Mierzwiński 1994; Mierzwiński 1995), and their subsequent replacement with immigrant populations with Northern European affinities (Dzięgielewski 2016; Grechko 2023, pp. 426–27, fig. 9).

It is instructive to compare this situation with that of the Upper Vistula Basin, which was inhabited by communities with strong cultural ties to the north Pontic steppes and experienced no disruption in the sixth century BCE (Przybyła 2009; Gawlik 2010; Czopek 2019; Trybała-Zawiślak 2019). This applies even more clearly to the Vekerzug/Alföld group of the Great Hungarian Plain (Kozubová 2019b). A somewhat different situation can be observed in the upland areas of Moravia as well as Carinthia on the southwestern margin of the Carpathian Basin, where despite some evidence for fired stronghold defenses and the presence of Pontic projectile points, there was no lasting negative impact on local populations or hierarchies (Glörscher 2009). In the Carinolian highlands of Slovenia, the Scythian incursions were met with a more dynamic response. Elite warriors who were buried in their traditional lineage cemeteries were systematically integrating Scythian horse gear, arrows (and thus, obviously, reflex bows), and steppe battle axes into their weaponry in the late sixth/fifth centuries (Teržan 1998, pp. 526–30; Preložnik 2007). Anja Hellmuth has demonstrated that arrows in the quiver of an elite warrior buried near the Libna stronghold, a gateway community on the interface between the rugged hill country



and the Pannonian plain, included types native to the Eastern steppes, which she believes arrived there as diplomatic gifts (Hellmuth 2007a).

Summing up, we can see that communities in different regions in Eastern Central Europe were affected by the late sixth-century BCE Scythian incursions in remarkably diverse ways. On the one hand, areas like Lower Silesia, Eastern Lusatia, Great Poland, Northeastern Austria, and Transdanubia were devastated by Scythian raiding, with only a fraction of their population and almost none of their regional identity and traditional hierarchies left intact. In stark contrast, areas such as the Upper Vistula basin, the Great Hungarian plane, and the Transylvanian basin, which had shown intensive interchange with the material and martial culture of the Eastern European warriors, thrived, as did rugged regions with martial elites such as the Slovenian/Carinthian highlands.

An obvious explanation for this remarkable and almost wholesale collapse of populations in areas impacted by Scythian raiding in the late sixth century BCE, and their replacement by immigrating groups in the fifth, is that raiders physically removed, i.e., captured, and enslaved, most of the inhabitants. The existence of slavery and the impact of slaving in European prehistory has been understudied, probably due, on the one hand, to its repellent nature and, on the other, the instinct of archaeologists to champion their academic charges. It is likely that enslaved individuals were present in ancient European societies from the Neolithic onwards (Gronenborn 2001), and while several studies have stressed the ubiquity of indigenous slaves in late prehistoric Europe, they have found little evidence for systematic commercial slaving or chattel slavery before the late Latène Period (Arnold 1988; Mata 2019; Schönfelder 2015).

Most scholars agree that slaves in “Homeric” society were a byproduct of successful warring, and captives were integrated in small numbers into the oikos of leading families (Finley 1962; see however Harris 2012). In the sixth century BCE, a significant shift occurs in both the intensity of slaving and the number of enslaved individuals. Timothy Taylor (2001, 2005) has pointed out the staggering numbers of enslaved barbarians reported by Greek authors, which he considers credible. Even authors who believe that ancient Greek slavery had been sporadic and had involved smaller numbers of enslaved individuals, see the capture and commodification of non-Greek captives as a significant factor driving colonial settlement (Braund 2011). In antiquity, the northwestern Black Sea was considered a slave coast by Mediterranean authors (Gavriljuk 2003; Parmenter 2020, p. 61; Harrison 2019) and the transshipment centre for Scythian captives. Since Moses Finley’s seminal survey (Finley 1962), there has been a significant increase in evidence attesting to the ubiquity of slaves in the Milesian colonial complex Berezan/Boresthene and Olbia. This involves, in particular, the remarkable quantity of ostraca, but also early lead letters and graffiti mentioning slaves that date back to the sixth century BCE (Avram 2007; Fischer 2016; Odrin 2019). Moreover, it is possible that the sizable amount of handmade indigenous Scythian pottery, as well as Thracian and Anatolian pottery found in early contexts in Berezan (Dupont 2018; Solovyov 2020a, 2020b), may be the footprint of enslaved women, analogous to the presence of African-style pottery excavated in antebellum North American plantations (Ferguson 1992; Fennell 2011). Like this African American pottery, the handmade “indigenous” pottery from Berezan is likely to have been produced and used by enslaved women in order to maintain their foodways and preserve their domestic dignity. In particular, the incorporation of captive women into the households may have reflected a traditional pattern of the Milesian elites’ dynastic representation, as they styled themselves as the descendants of Ionian conquerors and Carian captives (Crielaard 2009, p. 57). Moreover, Miletus’ Pontic apoikiai are thought to have played a crucial role in marketing Eastern European captives to Ionia (Heinen 2001), and both Miletos and Milesian Kyzikos marketed slaves in the sixth century BCE (Parmenter 2020, p. 63, tab. 1), while Chios was the fulcrum of the international slave trade of the day (Braund and Tsatskhelidze 1989; Schumacher 2001; Gavriljuk 2003, p. 80).

Interestingly, part of the sweeping changes that accompanied the systematic urban upgrade of Berzan/Boresthene in the second half of the sixth century included a significant

increase in imported Chian transport amphorae (Chistov 2020), probably reflecting the exchange of Chian wine for Pontic slaves recorded by Theopompos (Braund 2011, p. 115).

Before the rise of the Archaic Greek poleis, the distinction between the sporadic enslavement of prisoners of war as a side effect of victory and systematic profit-driven slaving is likely to have been porous. However, a key shift towards the systematic commercialisation of humans as chattel, which formed the core of mass slavery, was monetisation. Although Lydian and Ionian electrum coins had been minted since the mid-seventh century BCE, and low-value arrow and dolphin money was circulating in the western Pontic hinterland in the early sixth century (Stolyarik 2018), the full monetisation of Black Sea markets first begins in the mid-6th century. This involves Kyzikene electrum coinage becoming established as the standard high denomination coinage in the Pontus (Mildenberg 1995) in the second half of the sixth century BCE. It was this monetary upgrade that made large-scale trade in commodified humans possible. The ubiquity of this coinage among the elites of the Pontic steppe can be seen in the enormous influence that Kyzikene coin imagery had on Greco–Scythian art (Topal 2022; Zymovets 2023).

## 5. Understanding the Effect of Scythian Raiding in the Comparative Context of the Trans-Atlantic Slave Trade

Thomas Harrison (2019) drew heavily on close parallels between ancient and early modern slaving practices to explain ancient descriptions of enslaved peoples. It is equally striking how closely the impact of Scythian incursions into Central Europe in the late sixth century BCE corresponded to the effect that the Trans-Atlantic Slave Trade had on 16th-to-18th-century West Africa, adding both credence and coherence to the slaving model proposed in this article. Even a cursory study of the sources reveals remarkably similar patterns of interaction that were triggered by emergent commercial slavery. While the following selected examples are obviously not in any way comprehensive, they are more than random “ethnographic parallels”. Despite the gulf of time and space involved, the mechanisms governing commercial human trafficking and concomitant population extraction led, at least in selected cases, to such similar behavioural patterns that the better-documented early modern examples can serve to illustrate and flesh out the thin and often ambiguous evidence surviving from antiquity.

### 5.1. *Gifting and Monetisation*

In West Africa, indigenous elites and European merchants participated in highly sophisticated interactions and dialogues to facilitate the mass extraction of enslaved captives (Bennett 2018), a process in which gift-giving was inevitably embedded. A remarkably apt example that echoes the itinerary and nature of the Witaszkowo regalia has recently been used to illustrate the importance of ostentatious gifting in the context of forging slaving alliances (Araujo 2023). It was an 18th-century silver sword gifted by French traders to an African merchant in a coastal slaving port to cement trading relationships. He in turn, took it far inland and gifted it to the Royal House of Dahomey which was heavily involved in the slave trade (Obichere 1978; Law 1986). But obviously, large-scale systematic slave trading needed a monetary basis. In West Africa, when the value and quantity of slaves overextended traditional exchange currencies like cowry shells, at the turn of the 16th century, European traders introduced the remarkable manillas, massive cast copper alloy armlets with splayed finals, in the slaving port of Calabar (Herbert 1984). They were accepted as money in parts of West Africa up to the early 19th century. Their manufacture and distribution involves an anabasis of brass from the Rhineland over Antwerp as manillas to the Gold Coast and, finally, as payment for slaves to the court of Benin. Indeed, in a close parallel to the posited use of molten Kyzikene coinage to produce electrum for Scythian treasure, in particular, the Witaszkowo regalia, the manillas in Benin were subsequently recycled and used as the raw material for the Benin Bronzes (Skowronek et al. 2023).

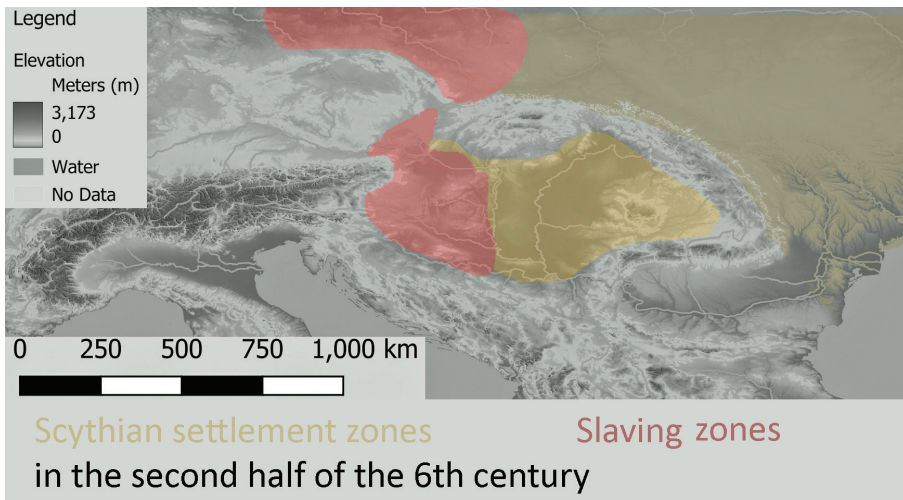
### 5.2. Creolisation

Most archaic Greek emporia were multiethnic communities (Demetriou 2012), and this holds true for Milesian foundations in the Northern Black Sea coast in general (Morel 2010) and Berezan/Olbia in particular. West African ports involved in purchasing captives and transferring them to European slave ships also had sizable multi-ethnic and multilingual communities. While the forts in these factories were nominally under European control, ethnically diverse African and Creole inhabitants dominated and, in many cases, ruled the settlements in which they were embedded. Moreover, people who transcended regional and lineage-based allegiances were pivotal as merchants and negotiators in the interior (Heywood and Thornton 2007, pp. 109–68; Seibert 2012; Law 2013). This significant inland impact of heterogeneous elites in West Africa echoes the sizable Greek component in the heterogeneous pottery assemblages of proto-urban inland strongholds Bilsk and Nemyriw (see above), the mix of Greek, Anatolian and indigenous pottery in Berezan and Olbia, the diverse regional backgrounds of the arrows used by archers involved in sixth-century BCE western raiding (Hellmuth Kramberger 2017a, 2018), and finally the welding of Ionic iconography to Scythian armament in the treasure of Witaszkowo.

### 5.3. Slaving Zones

A crucial aspect of the Atlantic Slave Trade that plays a pervasive role in the argument of this paper is that commercial slaving in West Africa was not conducted on a random basis. While subjects of slaving states were occasionally enslaved for judicial or financial reasons, as were war captives from competing states, actual slave raiding took place in “slaving zones”. Indigenous slavers considered these areas peripheral and their populations culturally other, thus open for “legitimate” raiding and depopulation (Lewis 2018, p. 274f.; Flynn-Paul and Pargas 2018; esp. Thornton 2018). In Western Africa and elsewhere, not only did the enslaved captives suffer social death, but they also became kinless, defenceless, and homeless (Patterson 1982). The effect of slaving on the traditional patterns of authority and legitimacy within the targeted communities was equally corrosive. Societies in these slaving zones not only had to cope with the irrevocable physical removal of significant proportions of their population (Manning 1990) but also the inevitable concomitant breakdown in traditional authority and social and cultural cohesion (Nunn and Wantchekon 2011; Whatley and Gillezeau 2011; Whatley 2014), further fueling cultural erosion and population collapse. Unsurprisingly, communities that bore the brunt of slaving during the 16th-to-18th century continue to be negatively affected up to this day (Gerschman 2020; Whatley 2022).

The existence of targeted slaving zones is the most convincing explanation for the radically divergent effects of the Scythian presence in various Eastern Central European landscapes in the late sixth century BCE (Figure 19). To recapitulate: In Poland, for instance, regions southeast of the Vistula populations with traditionally close cultural bonds to the steppes show no impact of raiding, while there is drastic evidence for raiding in neighbouring Western regions like the Silesian Oder Basin, whose population has deep ties to the central European Hallstatt circle. Silesia and the neighbouring Western Polish lowlands were not only raided but also depopulated by the end of the sixth century BCE. Similar patterns of Scythian impact can be seen in the Western Carpathian Basin: lowland regions in Transdanubia and Lower Austria suffer massive destructive raiding, drastic depopulation, cultural fragmentation, and replacement. In stark contrast, rugged uplands show evidence of stable populations experiencing cultural continuity, and no discernable negative impact affects the steppe allied cultures of the Great Hungarian Plain and Transylvania.



**Figure 19.** Scythian settlement and slaving zones in the 6th century BCE.

#### 5.4. *The Oyo, West Africa's Steppe Slavers*

Besides these general similarities, a very specific parallel with the European situation may have more anecdotal than systematic value. That is, the emergence of the Oyo Empire at the turn of the 17th century (Law 1977; Ogundiran 2012) in today's Northern Nigeria. Like the sixth-century Scythian polities, the success of this highly organised centralised state, which was the largest of the Yoruba kingdoms, was linked to territorial expansion, raiding, and attendant commercial slaving. It based its success on an army that included a highly effective cavalry of mounted spearmen, as well as archers. Their horses were bred and maintained in the northern savanna and used for highly effective invasions in the neighbouring forest zone, where these mounted warriors raided for slaves (Law 1975). Their captives were sold to Saharan traffickers as well as to the slave markets on the Atlantic coast. Interestingly, and this is another parallel to the situation in Iron Age Europe, Oyo's horse-born warriors had heterogeneous backgrounds, and many of them were former slaves.

#### 5.5. *Rugged Refuges*

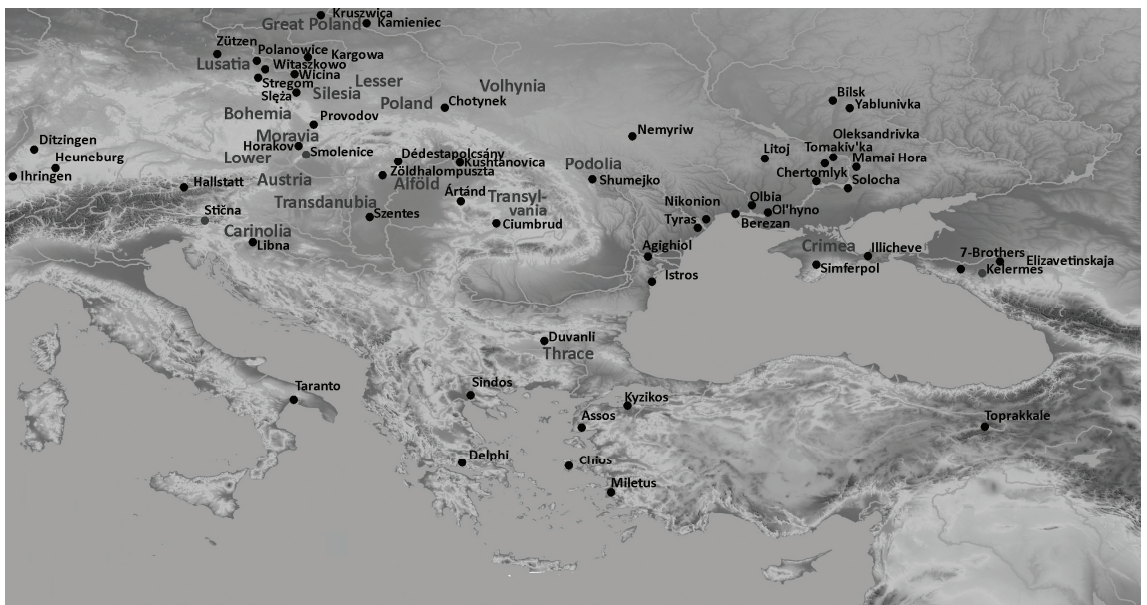
The mountainous regions of Eastern Central Europe, like the Slovenian and Moravian highlands, experienced no noticeable negative impact from Scythian raiding (see above). In West Africa, rugged landscapes also protected sedentary communities from predatory raiding. Oyo's mounted army, for instance, was a lethal force in open agricultural landscapes but ineffective in hilly forested countryside where it often faced defeat (Law 1975). Rugged areas on the East African littoral were also systematically avoided by commercial slavers since both access to and the extraction of slaves from rangy terrain were dangerous and complicated (Nunn and Puga 2012).

## 6. Conclusions

The gold treasure farmer Lauschke ploughed up from his soggy field 150 km southeast of Berlin was the regalia of a noble Scythian from the Pontic littoral. Crucial to understanding the background of the deposition of these regalia in the Far West is the fact that golden akinakai, neck rings, and courtly costumes were standard diplomatic presents gifted by Persian rulers to loyal servants or allies (Ellis 2021, pp. 79–83; see also Moshtagh Khorasani 2006, pp. 75, 407 cat. no. 49). The recipients were then designated as friends of the king, and wearing their gifts enhanced their status within the Achaemenid court's hierarchy (Sancisi-Weerdenburg 1989; Briant 2002, pp. 304–15; Miller 2010; Wright and Hollman



2021). Artapates, Cyrus the Younger’s favourite courtier, for instance, “had an akinakes of gold, and he also wore a necklace and bracelets and all the other ornaments that the noblest Persians wear; for he had been honoured by Cyrus because of his affection and fidelity” (Xenophon, *Anabasis*. 1.8.27–29). The westernmost Persian export in the fifth century is a precious glass bowl from a rich early fifth-century BCE grave in Ihringen in the Upper Rhine Basin. While this may reflect the expansion of Achaemenid gifting to the Far West, it is more likely that the bowl was handed westward down the diplomatic line (Kistler 2010). Although ample evidence exists for obviously gifted ostentatious Persian weapons and tableware in Scythian contexts, dating back to the sixth century BCE (Treister 2010; Rehm 2010), the Witaszkowo hoard was clearly not a Persian gift. It is best explained as a diplomatic gift from a ruler whose regal iconography was rooted in the Ionian–Scythian ambience of the western Pontic littoral. In particular, Milesian agency can be suspected, as, like the Persians, they also conflated diplomatic ties between polities with personal bonds between their rulers. These bonds were inevitably underscored by gifting (Tausend 1992, pp. 96f., 199f.; Wagner-Hasel 2006; Tsetsckhladze 2010). Before their disastrous rebellion in 496 BCE, the tyrants of Miletus were vassals closely allied to the Persian court. It is highly likely that, encouraged by the Persians (Nielsing 2010) and facilitated by Persia’s Scythian allies (Beckwith 2023), the Milesians and their Thracian and Pontic colonies were involved in a massive program of expansion and territorial consolidation, accompanied by systematic slaving (Kerschner 2005; Badian 2007; Greaves 2007; Nielsing 2010, pp. 124–27) in this hotly contested periphery of the civilised world (Chase-Dunn and Hall 1997, p. 37). The increasingly hollowed-out slaving zones, leaving large swaths of Eastern Central Europe virtually depopulated with thoroughly degraded martial hierarchies and defensive infrastructure, would function as protective marches or buffer zones separating the projected European domains of the Achaemenid’s Scythian allies from the martial societies of Western and Northern Europe (Figure 20).



**Figure 20.** Map of the major sites and regions mentioned in the text.

Analogous to early modern Western Africa, such goals could only have been realised with the help of local allies (Heywood 2009). As Denis Topal has pointed out, gilded Scythica regularly turns up on the outer fringes of the Scythian world, pointing to analogous

gifting strategies by the elites of the steppes (Topal 2018). In the case of the Witaszkowo hoard, the Lusatian leader designated to receive this spectacular gift was likely embroiled in the mercurial and duplicitous shadow world of violence and deceit that invariably accompanies slaving.

Instead of donning these regalia and embodying the allegiances it entailed, this member of the Stary Kraj elite followed his religious duty and performed a regionally typical material sacrifice on the banks of the Kozów wetland and spring, releasing the fish and its glittering accessories into the water.

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## Note

<sup>1</sup> In this article, the term “Scythian” refers to the Early Iron Age steppe cultures of Eastern Europe as a whole, rather than a specific ethnic group. Other terminologies are perhaps more accurate but much too wordy. This article, which is a compacted and updated version of an article written in 2022, was completed thanks to the encouragement and patience of Caspar Meyer and is dedicated to our many Ukrainian colleagues who are risking their lives defending their country and its heritage.

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## Article

# Jewelry, Accessories, and Decorative Elements of Women's Funeral Costume of the First Half of the 6th Century BCE in the Territory of Forest-Steppe Scythia

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**Abstract:** Among the antiquities of the archaic period of Forest-Steppe Scythia, a group of elite burials of women, possibly endowed with priestly functions during their lifetime, stands out. Until recently, only two unrobbed burial complexes were known to contain the main burials of women of high social rank, in whose graves golden costume elements were found—primarily expressive details of headdresses. The barrows (kurgans) were discovered at the end of the 19th century when amateur excavations were actively carried out on the right bank of the Dnipro. As a result of research conducted by the author at the Skorobir necropolis (in the area of the Bilsk fortified settlement, on the left bank of the Dnipro), two similar graves were recently discovered, which provided new material that significantly expanded the known geographical distribution of this phenomenon. The materials are closely analogous to the previously discovered elite female burials of the Middle Dnipro (barrow 100 near the village of Syniavka, barrow 35 near the village of Bobrytsa) and allow us to highlight a number of stable elements of the funeral costume of noble women and the sets of objects that complemented them. In this article, we consider the social and cultural significance of female attire in elite burials and delimit the chronological framework of this previously understudied phenomenon within the first half of the 6th century BCE. The new finds offer unprecedented insight into the form and meaning of one type of female headdress which researchers have tried to reconstruct for over a century.

**Keywords:** North Black Sea area; Forest-Steppe Scythia; right and left tributaries of the Dnipro River; Skorobir necropolis; women's elite burials; elements of funeral costume and accessories; headdress; reconstruction options; first half of the 6th century BCE

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## 1. Introduction

Among the burial mound complexes of the 7th–6th centuries BCE discovered in the territory of Forest-Steppe Scythia are burials of women who probably had high social status during their lifetime (Bobrinskoy 1901, p. 141; Skoryi 1990, pp. 69–70; Daragan 2011, pp. 615–16; Hellmuth Kramberger 2015, pp. 152–53), as is indicated not so much by the large size of the burial chambers or the body's central location (the burials were the main ones) but by the characteristic set of accompanying equipment as well as the features of the funeral costume. In ancient societies, funeral costume traditionally performed several functions—it reflected the worldview of the people of different regions and their aesthetic preferences and therefore presented a complex system of visual signs (Yatsenko 2006, p. 5).

The main element of the funeral costume was a headdress decorated with gold plaques of various types and gold earrings, breast jewelry in the form of beads, pendants, bracelets, and pins. The costume complex was complemented by various accessories (a mirror, a stone dish, etc.). The consistent combination of elements of women's clothing with specially designed gold objects distinguishes such assemblages from those of other burials.

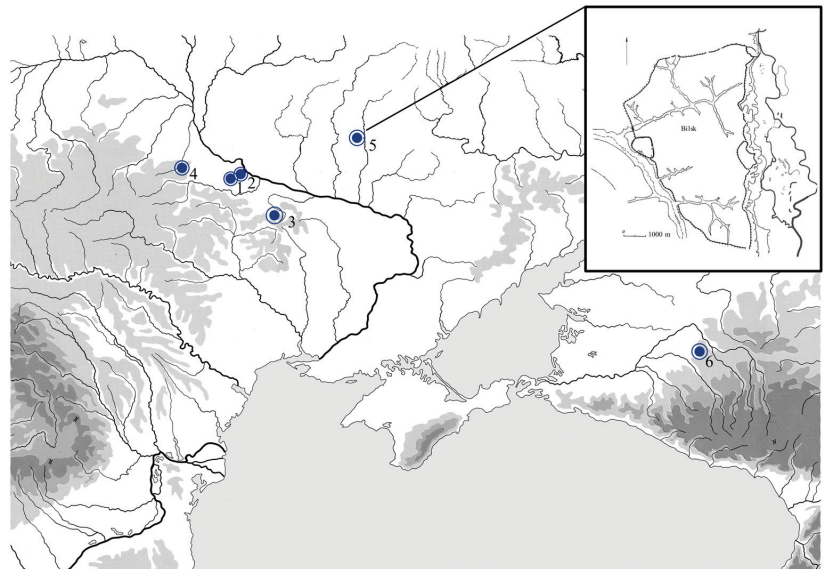
Given that a greater number of these complexes have now been excavated, and their geographical range has expanded significantly, it is possible to trace the features of this

stable tradition that existed in the territory of Forest-Steppe Scythia in a rather narrow chronological range of the Scythian archaic period.

For the first time in many years, the information that was obtained in the late 19th century, and became the starting point for identifying a special group of elite female burials of the archaic period in the area of Forest-Steppe Scythia, can be supplemented with materials from new excavations carried out in the territory of the Dnipro Left Bank Forest-Steppe, in the vicinity of the Bilsk fortified settlement. Now, we can significantly expand our previous knowledge and take a fresh look at the problem of women's headdresses. To do this, within the framework of the article, data from the last century are compared with the results of modern research. The explanations are complemented by a summary comparison table, as well as a 3D reconstruction created based on the most compelling new data about one of the headdresses.

## 2. Barrow Complexes with the Remains of a Funeral Costume in Materials from the Dnipro Right Bank

Since the main sources for studying the local population's funeral costume are archaeological, the four barrows excavated in the territory of the Dnipro Forest-Steppe give us the most complete picture of this cultural expression (Figure 1). Two were discovered at the end of the 19th century through amateur excavations. As the integrity of their burial chambers was not violated by robbers, researchers had valuable information at their disposal for studying the features of the funeral costume of the Early Scythian period.



**Figure 1.** Archaeological sites discussed in the article. 1—barrow 100 near the village of Syniavka; 2—barrow 35 near the village of Bobrytsa; 3—barrow “Repiakhuvata Mohyla”, near the village of Matusov; 4—Perepiatykha barrow; 5—Bilsk hillfort; 6—Kelermesskaya burial ground.

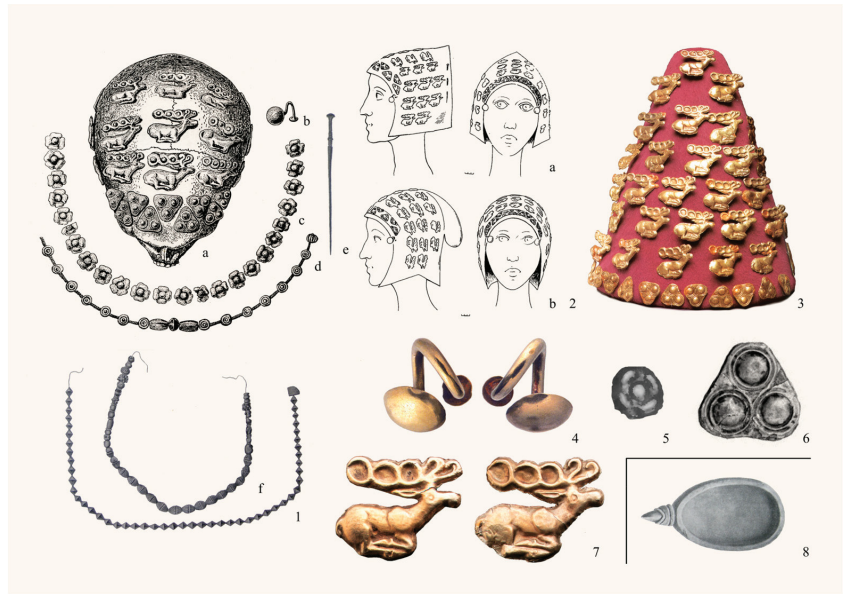
### 2.1. *Kurgan 100 (Mohyla Ternovka) near the Village of Syniavka*

Located in the Ros River basin, in the territory of the Dnipro Right Bank Forest-Steppe (Figure 1: 1), and excavated in the fall of 1897 by Yevhen Znosko-Borovsky (Bobrinsky 1901, p. 92; Khanenko and Khanenko 1900; Kovpanenko 1981, p. 13), the barrow was 4 m high and 93 m across; the burial chamber was a 4 × 3.5 m pit lined with wood and oriented along the west–east line. The type of wooden structure is difficult to establish due to the brief description presented in the original publication (Kovpanenko 1981, p. 67). The barrow was not robbed; however, to understand how reliable this information was, it is

important to note that the bottom of the burial chamber consisted of an undifferentiated mass of black earth, sand, and wood dust due to groundwater. “The earth and wood saturated with water turned the bottom of the grave into solid mud” (Bobrinskoy 1901, p. 139). This situation calls into question the usefulness of the recorded details of the design of the headdress and the funeral costume as a whole, which has already attracted scientists’ attention (Klochko 2008, p. 29); however, there is no reason to question the general accuracy of their findings.

According to published information, four people were buried in the grave, among them, three adults (two women and a man) and one child. The main burial was of a woman wearing a headdress, placed in the center of the grave with her head oriented to the west, the others were laid perpendicular to her, with their heads to the north. Thus, the dependence and subordination of the accompanying persons are established by the location of the skeletons and the objects left with them. According to Halyna Kovpanenko (1981), it is the burial of an elite woman, accompanied by a concubine with a child and a bodyguard (pp. 74–75). The high status of the buried woman was also emphasized by Yevhen Znosko-Borovsky: “Apparently, high-ranking local female persons were buried here, with all the attributes of their greatness.” He also draws attention to the fact that “only whole objects were placed in the grave, such as earrings and a gold band with gold necklaces. In the same way, the dishes are of local, ancient types” (Bobrinskoy 1901, p. 141). Furthermore, data are presented on the location of the gold plaques on the skull, which, according to the author, had been recorded accurately (p. 140). These locations later served as a powerful argument to justify various possible options for the appearance of the deceased’s headdress. Other details recorded during excavations also turned out to be important for the reconstruction of the funeral costume. Thus, the published text not only indicates the location of various decorations but also describes the appearance of the gold plaques and notes their number for different types: 11 in the form of “circles,” 31 in the form of “deer plaques.” It is important, for example, to observe that a gold nail-shaped pin (Figure 2: 1, e) lay under the skull, and two nail-shaped spiral pendants of gold (Figure 2: 4) were at the temples, and it was noted that they were on a headband (Bobrinskoy 1901, p. 140). There were three necklaces on the buried woman’s neck: one of 24 gold plaques in the form of rosettes, the second of 14 gold piercings alternating with 14 gold round plaques, between which there were three beads made of rock crystal and one of carnelian (Bobrinskoy 1901, p. 140, Figure 71); the third consisted of 26 beads made of semi-precious stones and glass and 84 faceted amber beads (Bobrinskoy 1901, p. 140, Figure XVII: 8, 10; Kovpanenko 1981, p. 51, Figure 41: 5–16). In the first publication of the materials, drawings were also included to give a general idea of the jewelry set related to women’s funeral costumes (Figure 2: 1). The information about certain accessories (a stone dish and a bimetallic mirror) is also important. While these objects were found near another female skeleton, they undoubtedly related to the tradition of leaving such objects in women’s graves.

Based on the presence of rare forms of molded pottery in the grave and the absence of Greek imports, the head of the excavations dated the burial to the Cimmerian period, 10th–9th centuries BCE, though Alexey Bobrinskoy did not agree, attributing it to the later, Scythian period (Bobrinskoy 1901, pp. 140–42). Halyna Kovpanenko placed this complex among the antiquities of the 6th century BCE, proposing a date in the first half of the century (Kovpanenko 1981, p. 130). Recently, various attempts at dating the barrow have been proposed in the scientific literature; it is attributed either to the second half of the 7th century BCE (Daragan 2010, pp. 106–8; Daragan 2011, p. 615) or to the first half of the 6th century BCE (Makhortykh 2019, p. 356). The latter date, in our opinion, is more convincing since it is consistent with the materials of our excavations. In addition, a bronze mirror with an iron side handle found in the barrow<sup>1</sup> (Bobrinskoy 1901, p. 140; Kovpanenko 1981, p. 114) indicates the possibility of attributing the complex even to the second quarter of this century.



**Figure 2.** Funerary complex of barrow 100 Syniavka. 1—objects found during excavations: a—location of gold plaques on the skull; b—gold earring; c—gold plaques in the shape of a rosette; d—necklace made of gold piercings and beads; e—gold pin; f—necklace. 2—appearance of the headdress after the reconstruction of Tetyana V. Miroshina. 3—appearance of the headdress after reconstruction by Liubov S. Klochko. 4—gold earrings. 5—golden plaque in the shape of a rosette. 6—gold triangular plaque with three inscribed circles. 7—zoomorphic golden plaques. 8—stone dish. 1, 5, 6, 8—after Khanenko and Khanenko (1900), Bobrinskoy (1901), Yatsenko (2006), Hribkova (2014). 2—after Miroshina (1977). 3, 4, 7—after Reeder (2001). 4—after Klochko et al. (2021).

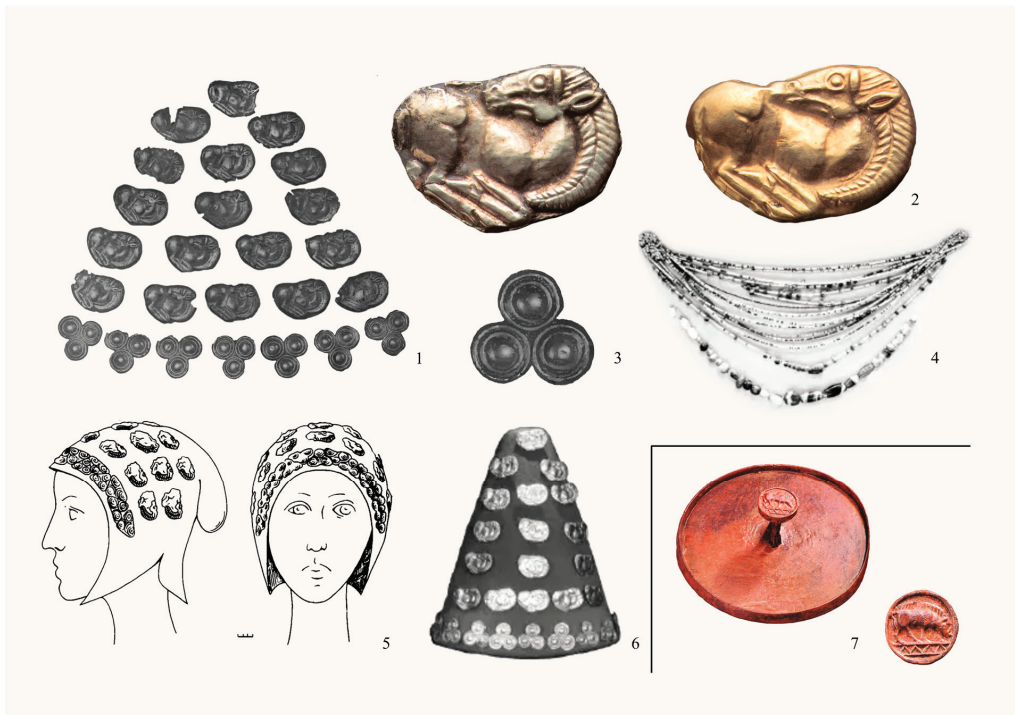
## 2.2. Kurgan 35 near the Village of Bobrytsa

Kurgan 35 is located in the Ros River basin, in the territory of the Dnipro Right Bank Forest-Steppe (Figure 1: 2), and was excavated at the end of the 19th century by Yevhen Znosko-Borovsky (Kovpanenko 1981, p. 13). Znosko-Borovsky's diary, published after his death by Alexey Bobrinskoy (1901, p. 92), contains basic information about the barrow. At the time of excavations, the barrow was 5 m high. Though they recorded traces of looting, they did not reach the grave (Bobrinskoy 1901, p. 112), which allows us to trace the features of the funerary rite. The burial took place in a square pit of 5.6 × 5.6 m and 2.8 m deep. The burial chamber was a wooden crypt with five supporting pillars for the ceiling and a gently sloping entrance (6 m long dromos) on the south side. It was a double burial, as the excavator reports: "At the bottom of the grave there were two buried people lying in an extended position on their backs. The primary body was in the center and was turned with its head to the west, while the body which accompanied it lay at the northern wall, perpendicular to the main body, with its head to the south" (Kovpanenko 1981, p. 13). The main burial was female. Elements of the funerary costume, primarily the headdress, have been recorded. "On the forehead of the main buried person, which was preserved, lay a bandage composed of two types of gold plaques: along the bottom of the forehead there were 15 gold plaques in a row, each composed of three circles. Above them—in what order, it is difficult to say—lay plaques with the image of a recumbent horse, with its legs bent under itself and its head bent onto its back. There are 19 such plaques. All of them are stamped on one side" (Bobrinskoy 1901, p. 113). Two necklaces were found in the chest area:<sup>2</sup> the upper one consisted of 32 beads made of carnelian, topaz, agate, rock crystal, and chrysolite; the lower one consisted of 40 beads of various shapes and



combinations, including two large amber beads that were heavily burned. By the right shoulder, there was a cluster of small beads forming a set three meters long. A charred wooden quiver covered with leather was found to the right of the skeleton, containing 21 bronze arrowheads with “hooks”; nearby lay a bronze ring and poorly preserved iron fragments. To the left of each buried individual was a bronze mirror with a central handle (Bobrinskoy 1901, p. 113, Figure 62). The excavators made other observations that are significant in reconstructing the appearance of the headdress. For instance, the diary entries note that “some of the plaques were inside one another, it is likely that the material to which they were affixed had burned and curled the plaques as a result. There are no holes for sewing on the plaques, no lobes, and no traces of soldering are visible, and therefore we can only assume that these plaques were either glued or that each was covered with a fabric border and attached separately. An elegant mirror, precious necklaces, whitewash and rouge cannot be recognized as belonging to the second structure” (Bobrinskoy 1901, p. 114).

The dating of the complex is determined by the burial goods: first of all, a bronze mirror with a central handle (Figure 3: 7), a stone dish, and some types of sewn-on plaques that have a fairly wide range of analogies (Kovpanenko 1981, pp. 113–14; Skoryi 1990, pp. 59–62; Fialko 2006, p. 67, Figure 3; Kuznetsova 2018, pp. 453–54; Makhortykh 2019, p. 354), allowing us to date the burial between the end of the 7th and the first half of the 6th centuries BCE.



**Figure 3.** Funerary complex of barrow 35, Bobrytsa. 1—gold plaques—headdress decorations. 2—zoomorphic golden plaques. 3—gold triangular plaque in the form of triple circles. 4—necklace. 5—appearance of the headdress after the reconstruction of Tetyana V. Miroshina. 6—appearance of the headdress after reconstruction by Liubov S. Klochko. 7—bronze mirror with an image of a boar on the central handle. 1, 3—after Khanenko and Khanenko (1900). 2, 7—after Reeder (2001). 4, 6—after Klochko (2012). 5—after Miroshina (1977).

### 2.3. *Kurgans near the Villages of Perepyatykha and Matusov*

Some materials for the reconstruction of women's headdresses of the archaic period came to light in the excavations of two barrows: Repiakhuvata Mohyla (the village of Matusov) and Perepiatykha in the Dnipro Right Bank, in the Tyasmin River basin (Figure 1: 3–4). In one of them (Repiakhuvata Mohyla, tomb 1), a different, simpler type of headdress is attested, although complemented by temple ornaments in the form of nail-shaped spirals and bronze nail-shaped pins (Illinska et al. 1980, pp. 35, 39; Klochko 2008, p. 24). In the Perepyatykha barrow, according to researchers, there is no certainty that the elements of the costume (silver and gold appliqué plaques, plates, earrings) belong to the same set. However, the fact that the buried person was of the highest nobility is not disputed (Skoryi 1990, pp. 12, 69–72; Klochko 2008, pp. 27, 35–36; 2012, pp. 423–24), although in both cases, the female burials were not the primary ones. In addition, gold appliqué plaques and gold plates carved along the contour of the griffin figure were found not in the area of the skull of the woman's skeleton (bone no. 4) but near the broken clay vessel with cremation remains, located near her feet (Skoryi 1990, p. 12). It is also possible that these appliqué plaques were used to decorate a vessel (Daragan 2010, p. 88). Thus, the most complete and fairly well-described (for their time) complexes should be recognized as the two barrows excavated by Yevhen Znosko-Borovsky.

### 3. Interpretation of Excavated Materials

The information obtained through excavations offered a fairly complete picture of the funeral rites of elite female burials in Forest-Steppe Scythia and allowed us to propose various reconstructions of headdresses as the main element of the funeral costume.

When studying archaeological sources, one of the most important methodological approaches remains typology. Typological classification allows us to identify the main decorative elements, consider options for their combination, and trace the stable tradition of decorating headdresses as the main part of women's funeral costume in a certain territory in a relatively short period of time, namely, in the first half of the 6th century BC.

#### 3.1. *Social Status of the Buried*

One of the first who drew attention to the similarity of these two archaeological complexes was the original excavator, who emphasized that representatives of the local aristocracy were buried in them (Bobrinskoy 1901, p. 20). The identification of the buried with the local elite, according to researchers, was indicated by the size of the barrow and graves, the presence of dependent persons, the wealth of grave goods, the abundance of jewelry, and a headdress decorated with gold plaques (Miroshina 1977, p. 87; Klochko 2008, p. 35; Daragan 2010, p. 108). The semantics of images of horned animals (deer, mountain goat) depicted on gold plaques are associated with the military class in the Iranian world (Vertiienko 2018, pp. 422–23). In this regard, it seems significant that in one of the graves, there were weapons (a quiver, a bow with arrows) and a horse skeleton, which are likely the attributes of noble female priestesses associated with the cult of the warriors and are likely endowed with the special powers of this warrior deity (Vertiienko 2018, p. 423)<sup>3</sup>. If this is the case, they were not Amazon warriors, as Yevhen Znosko-Borovsky assumed (Bobrinskoy 1901, p. 114)<sup>4</sup>. It has also been suggested that images of a deer or mountain goat could serve as unique markers, indicating that the buried women belonged to specific social groups (Hellmuth Kramberger 2015, p. 153).

Other appliqué plaques, in the form of triangles with circles inscribed in them (Figure 2: 6), as well as triple circles cut along the contour (Figure 3: 3), were apparently a more common decorative element. Such plaques are widespread in the early Scythian period on various objects, including funeral dishes and clothing (Miroshina 1977, p. 89; Fialko 2006, pp. 64–65; Daragan 2010, pp. 87–91).

### 3.2. Reconstructions of Headdress

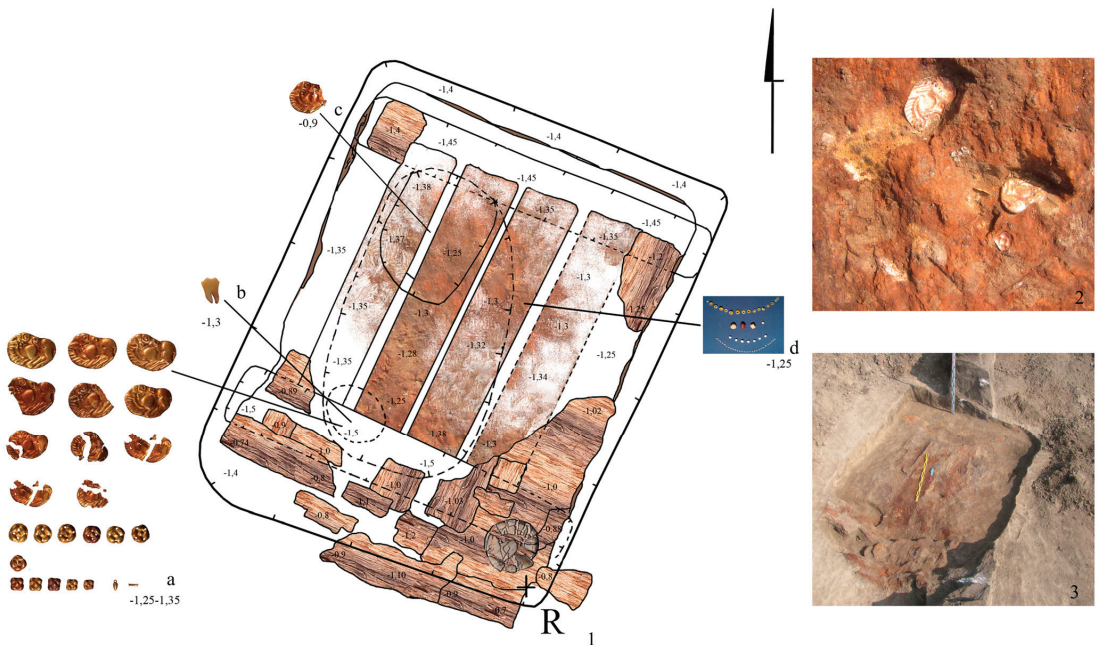
The fairly detailed description of the burials, together with the location of the finds, the available sketches of their appearance (Figure 2: 1 and Figure 3: 1–4), as well as the publication of photographs of the rarest items (Khanenko and Khanenko 1900), provided reliable data on the overall quantity and types of jewelry (Bobrinskoy 1901). In combination, this evidence served as the basis for several reconstructions of female funeral headdresses in Forest-Steppe Scythia.

According to the initiator of the excavations, the women buried in barrows 100 near the village of Syniavka and 35 near the village of Bobrytsa wore headscarves or headbands, which were fastened at the back of the head with a pin (Bobrinskoy 1901, pp. 138–40). While the version presented in the scientific literature of the beginning of the last century (Rostovtsev 1925, pp. 494–95) looked quite convincing, Varvara Illinska and Oleksii Terenozhkin (Illinska and Terenozhkin 1971, p. 144) later suggested low tiaras decorated on the front with gold plaques. Tatyana Miroshina (1977) subsequently tried to make some clarifications to the existing interpretations. Paying attention to the size of the gold plaques and their location, the researcher proposed two possible options for the appearance of female funeral attire (Figure 2: 2 and Figure 3: 5), defining them as caps reminiscent of those worn by the Saka (Miroshina 1977, pp. 83–86, Figures 8–9)<sup>5</sup>. According to Liubov Klochko (2008, p. 29), the author of the latter reconstruction based her proposal only on the drawing given in Alexey Bobrinskoy's publication, due to the lack of other field documentation. In addition, the visibility of the zoomorphic images on the plates was not taken into account, since the golden elements should have been perceptible above all on the front side of the ceremonial headdress, demonstrating that the woman belonged to a certain social circle. To ensure clear visibility, the headdress should be reconstructed in a different shape altogether, including a more rigid base (Klochko 2008, p. 30). Sergey Yatsenko also criticized Tatyana Miroshina's reconstructions (Yatsenko 2006, p. 53), noting that headdresses such as caps or kerchiefs have no analogies in the societies of ancient Iranians, and the combination of a felt cap (bashlyk) with temple pendants and a pin on the back of the head requires additional proof.

In developing possible options for the appearance of women's headdresses, almost all researchers have proceeded from the fact that the gold appliqué plaques found in both barrows did not feature through holes for sewing or loops on the reverse that were usual in later periods. The lack of fastening devices made it possible to inquire about the material from which the headdress was made, as well as the technique of attaching gold elements, which may have involved the use of adhesive solutions (Miroshina 1977, pp. 79–80; Kovpanenko 1981, p. 116; Skoryi 1990, pp. 42–43). This technique may indeed be characteristic of the Early Scythian time (Klochko 2008, p. 27).

For the manufacture of ceremonial headdresses, felt was most likely selected, while triangular plaques could be attached to a forehead band. Yet the use of other, alternative materials cannot be ruled out (Miroshina 1977, pp. 79–80). Sergey Yatsenko also considers the variant of the headband more acceptable for the archaic period (Yatsenko 2006, pp. 53–54). In the case of the headbands that Alexey Bobrinskoy reportedly discovered on the skulls of women (1901, pp. 113, 140), despite the lack of a clear record of finds in the water-filled burial of kurgan 100 near the village of Syniavka, and in the fire-ravaged grave in barrow 35 near the village of Bobrytsa, some recurring patterns in the combination and number of individual elements of the costume can be traced, since both burial complexes had escaped previous looting. We can, to a certain degree of certainty, assume that the gold earrings found in the skull area (Figure 2: 1, b and Figure 4), the gold pin (Figure 2: 1, e), and the set of triangular plaques from kurgan 100 near Syniavka could have come from a headband decorated with patches of appliqués in the shape of triangles. The idea of decorating items with juxtaposed rows of triangular plaques with three sets of concentric circles can be seen on other items from burials of the Early Scythian period. For example, the neck and shoulders of a black-polished pot found in a barrow near the village of Hlevakha were decorated with similar plaques, arranged in one row and grouped in threes, which formed a pattern of

triangles with multidirectional (up and down) vertices (Terenzhkin 1954, pp. 95–96; Fialko 2006, pp. 61–62, 64, Figure 2). The earlier burial complex of Kleinklein (Austria) contained a bronze face mask with a forehead band decorated with multidirectional triangles (Fialko 2006, pp. 70–72, Figure 5). In view of this find, it seems likely that this motif, possibly associated with the idea of masculinity and femininity, is of Western origin and that its popularity in the territory of Forest-Steppe Scythia in the early Scythian period was due to the strong influence of the Hallstatt culture circle on the local population. Local people not only borrowed the idea of using the individual elements in the decoration (triple triangles) but also included them in the semantics of funeral rituals, employing them in the design of burial items in the funeral set of persons of high social rank, primarily women who belonged to the priestly class (Fialko 2006, p. 69; Daragan 2010, pp. 108–9; 2011, p. 615; Hellmuth Kramberger 2015, p. 152).



**Figure 4.** Kurgan 1/2016. Skorobir Necropolis. 1—general plan of the burial indicating the location of the costume elements. a, c—gold elements. b—human tooth. d—beads. 2—gold plaques, recorded during the clearing of the burial. 3—general view of the burial. Drawing and photograph by Iryna B. Shramko, Stanislav A. Zadnikov.

Probably, triangular plaques with impressed concentric circles or in the form of three triple circles were associated with solar cults (Illinska 1971, pp. 73–79)<sup>6</sup>. However, they still cannot be considered “a characteristic element of the ceremonial headdress of the archaic type” (Miroshina 1977, p. 89), since they were used more widely for decorating clothes and vessels. Nail-shaped spiral temple ornaments (Figure 2: 4), in this case, could be attached to the headband. They are made of round gold wire, to which two shields of different diameters are attached (Klochko et al. 2021, p. 29). Since such earrings were found only in female burials, they could serve as a kind of ethnocultural marker of the costume of a certain region (Klochko 2007, pp. 87–89; 2008, p. 24).

In barrow 35 near the village of Bobrytsa, triangular plaques in the form of stacked concentric circles could have been used differently, for example, in combination, in the decoration of a hat or headscarf, as indicated by the absence of earrings and a pin near



the head in the grave, although the latter could have fastened a hairstyle rather than a headband.

The authors who studied the materials of these archaeological complexes came to a consensus that, in both cases, the gold decorative elements could have been used to decorate various headdresses: a headband decorated with applied triangular plaques glued to the base, a hat decorated in the Scythian animal style; at the same time, the use of a headscarf is not excluded (Miroshina 1977, p. 85; Klochko 2008, p. 26). Thus, it can be assumed that, in each barrow, three types of headdresses (headband, headscarf, and cap) could have been worn together (in any possible combination) as a social and ethnocultural marker of women's costume, although the presence of a headscarf or veil is archaeologically difficult to substantiate (Klochko 2008, pp. 26–28). In any case, the three elements can be considered as a kind of "ensemble," a unified whole, indicating the high position of a woman in society, who had a priestly status during her lifetime; however, such compositions are not reflected in the reconstructions proposed by the previous authors (Figure 2: 2, 3, and Figure 3: 5, 6).

Having considered all possible options for women's headdresses of the archaic period (headbands, headscarves, and hats), Liubov Klochko concluded that the most plausible option is a high conical hat (Klochko 2008, pp. 29–33) covered with a cape (Klochko 2012, pp. 417–26). This type of headwear reflected the Scythian tradition of producing hats that had a special sacred meaning (Klochko 2008, pp. 30, 34–35, 37). In a later period, conical hats were traced in a wider range of archaeological material (Klochko 1986). Researchers of the Saka archaeological culture came to the same conclusion when studying the headdress from the Issyk mound, drawing attention to the convergence of this phenomenon across a large geographical area (Akishev and Akishev 1980). The size and shape of the headdress in each individual case were determined by the number of gold plaques and their sizes. We should point out that Liubov Klochko assessed the specific options for placing gold elements on a hat of this shape based on their presentational role in the design of ceremonial funeral attire (Figure 2: 3 and Figure 3: 6). For instance, a hat from barrow 100 near the village of Syniavka could have a height of 30 cm, and the one from barrow 35 near the village of Bobrytsa 20 cm (Klochko 2008, pp. 32–33). Gold appliqué attached to the base of the conical hat, conveying the image of a recumbent deer or mountain goat with its head turned back, not only emphasized the shape of the front part of the headdress but also carried considerable semantic load as solar symbols (Klochko 2008, p. 34; Hribkova 2014, p. 102) comparable to the triangular plaques made of stacked circles (Hribkova 2012, p. 148). The zoomorphic images (mountain goat, deer with legs drawn up) in the decoration of the headdresses discussed above emphasize the Iranian connections in the funeral costume of the population of Forest-Steppe Scythia, which should be associated with broader cultural affiliations among the nomadic Scythians (Klochko 2008, p. 37; Toleubaev 2016, p. 853; Andreeva 2018, pp. 119–20, Figure 2.38).

### 3.3. Other Elements of the Funeral Costume and Accessories

Twenty-four gold plaques in the form of four-petalled rosettes were found during the excavations of barrow 100 near the village of Syniavka. They may have decorated the collar of the funeral dress, since they were located in the neck area, above necklaces with beads made of amber and semiprecious stones. As in the examples discussed above, the construction of the plaques suggests that they may have been glued to the fabric (Bobrinskoy 1901, p. 140).

The costume was complemented by chest ornaments—necklaces made of gold plaques and beads, as well as pins that could be used to secure hairstyles or headscarves but likely not to clothes. These items could have served as a kind of amulet or indicator of belonging to a certain social group or clan (Klochko 2008, p. 25). The necklaces, which included beads made from semi-precious stones, rock crystal, amber, and paste, undoubtedly had a special semantic meaning. The selection of beads and their combination in the necklace were obviously not random. As in the other elements of the costume, the deliberate selection of the items is clear first and foremost from their arrangement, which was determined less by

the external characteristics of the products than by their protective properties as a kind of amulet (Miroshina 1977, p. 24).

Among the accessories of the female funeral set were, in almost all cases, two main attributes: a bronze or bimetallic mirror and a stone dish. Both items belong to the category of ritual cult objects, placed more often in women's than in men's graves; they could be located either near the head or next to the body of a person (Kuznetsova 2002, p. 9; Makhortykh 2019, pp. 347–48).

In general, the traditional funeral costume of noblewomen with priestly functions in Forest-Steppe Scythia was characterized by a number of stable features of both the burial itself, the accompanying equipment, and the funeral costume. Its obligatory attribute was a headdress decorated with gold elements, which probably reflected the specific functions of a woman in the sacred sphere, perhaps indicating a local ethnocultural feature or affiliation. In addition to the type of headdress appropriate to their status, the standard set for persons of this rank probably included breast decorations in the form of necklaces made of amber, semi-precious stones, paste, and even gold elements. Bracelets and pins could also be included in the set. The collar of the dress may also have been decorated with gold plaques. The funeral ensemble also regularly included a mirror and a stone dish, possibly intended for use as a palette.

#### **4. The Funeral Costume Complex in the Materials Discovered in the New Excavations at the Skorobir Necropolis**

The burial ground is located on the left bank of the Sukha Hrun River (a tributary of the Psel River), to the west of the ancient settlement, and is one of its largest necropoleis. The first barrows were excavated back in 1906 (Gorodtsov 1911). Subsequently, more than 20 barrows of different periods were studied, with burials of the Early Scythian era predominating (Shramko 1994, p. 102; Makhortykh 2013, pp. 223–24).

##### *4.1. General Information about the Bilsk Hillfort*

The settlement is located on a watershed plateau between the rivers Vorskla (left tributary of the Dnipro) and Sukha Hrun (right tributary of the Psel). It is known as the largest fortified settlement of the early Iron Age in Europe, the seat of a tribal union, and an important craft, trade, and political center of Forest-Steppe Scythia (Shramko 1987). Materials from long-term excavations indicate the complex ethnic and social composition of the population that inhabited the site (Boiko 2017). Most scientists consider it possible to identify the Bilsk hillfort with the city of Gelon, described by Herodotus (4.108) (Havrysh and Kopyl 2010).<sup>7</sup> The settlement was founded between the last third and the end of the 8th century BCE by settlers from the right bank of the Dnipro, bearers of the Middle Hallstatt Basarabi culture (Shramko 2006; Shramko 2021). Objects from the early Scythian cultural complex appear in cultural deposits of the last quarter to the late 7th century BCE, and especially the first half of the 6th century BCE. Among the most expressive of these are bone and antler objects decorated in the formal idiom known as the “Scythian animal style” (Shramko et al. 2021). The features of Scythian material culture stand out clearly against the general background of remains left by the local sedentary population. This population continued to maintain contact with the circle of Hallstatt cultures (Shramko and Zadnikov 2021), the western regions of the Forest-Steppe, and the Greek centers of the northern Black Sea region, with which they began trading as early as the third quarter of the 7th century BCE (Shramko 2021, pp. 192–94; Zadnikov and Shramko 2022, pp. 882–85).

##### *4.2. Research of Barrows in the Southern Part of the Necropolis*

During the study of the barrows in the southern part of the burial ground, two female burials were recently discovered, containing elements of the funeral costume of the local elite.<sup>8</sup>

Burials of women of high social rank are quite rare. Thus, in the many years of research on this burial ground, only a few examples of gold objects or imported prestige items have

come to light, indicating the special status of the buried person (Shramko 1994, pp. 103, 107). Of the 11 archaic period barrows we excavated, decorative elements of funeral headdresses were found in three, and two used gold plaques of various types.

#### 4.2.1. Kurgan No. 1/2016

One burial dating back to the Early Scythian period was discovered in this barrow (Shramko 2017, p. 368; Shramko and Zadnikov 2017, p. 47). The burial chamber was a wooden crypt with plank flooring (Figure 4). The wooden structure was damaged during looting in antiquity; however, we can get an idea of its former appearance from the fragments of decayed wood found in the chamber. Most likely, the floor had been covered with thick boards, and the ceiling was supported by three rows of logs of medium thickness on which three ceramic vessels had been placed (Shramko 2017, pp. 371–72). Despite the severe destruction of the grave and the absence of bone remains, more than 30 gold plaques, one piercing, and a pendant were discovered where the skull must have been placed, based on the find spot of the teeth which were preserved. The gold plaques were of different types. Some were stamped with a full-figured image of a recumbent mountain goat with its head turned back, while others had four-petalled rosettes (Shramko 2017, pp. 375–76, Figure 7: 1–5). Since the elements of the funeral costume, especially the headdress, were incomplete, it is difficult to offer a convincing reconstruction. However, this funeral complex can undoubtedly be correlated with the previously discovered elite female burials from the Dnipro Right Bank Forest-Steppe discussed above, particularly with barrow 35 near the village of Bobrytsa.

#### Headdress Details

Gold appliqué plaques with a full-figure image of a recumbent mountain goat with its head turned back (Figure 5: 1) were found at the bottom of the grave, in the area of the skull. The intact specimens (4 pieces overall) were 3.6 cm long, 2.5 cm high (or wide), and 0.01 cm thick (Shramko 2017, p. 375). Several items were found in the fill of the tomb (19 fragments). The plaques were made of thin gold sheets, the images stamped on a relief matrix with the figured emblems oriented to the left. The quality of the impression differs among the plaques. Similar headdress elements are quite well known in the territory of Forest-Steppe Scythia (Illinska 1968, p. 38, pl. XXIV: 22; Illinska 1971, p. 75, Figure 2; Kovpanenko 1981, p. 13, Figure 10; Bandrivsky 2010, pp. 151–54, Figure 6). Most of them were found in the barrows of the Middle Dnipro region, on both the right and left banks of the Dnipro, outlining the boundaries of their distribution area. What is important for us is that such plaques were part of a set of decorative elements of a woman's funeral costume discovered in barrow 35 near the village of Bobrytsa (Figure 3: 1–2), where they were probably also associated with the design of the headdress.

The scientific literature justifiably takes the view that this series of plaques depicts not horses but mountain goats (Vynohrodska 2000, pp. 17–23, etc.). In our opinion, the Skorobir specimens are somewhat different from others, representing one of the variants of this motif (Shramko 2017, p. 376). On the front and back sides of the plaque (Figure 6: 1), one can see a paired image (two eyes and two ears are clearly visible), bringing it closer to the idea conveyed on the plate from barrow no. 2 near the village of Zhabotyyn (Figure 6: 2) in the Middle Dnipro region (Viazmitina 1963, pp. 158–69, Figure 4). However, this is only one way of interpreting the image, since there are other possibilities (Polidovych 2017).

Six plaques in the form of a four-petal rosette, measuring  $1.3 \times 1.3$  cm, have a rounded outline (Figure 5: 2), with the edges of the petals forming a solar diamond-shaped sign. Four holes, 0.15 cm in diameter, cm were punched through the edges, allowing it to be attached to a backing. One of the plaques (Figure 5: 3) had no holes. Comparable gold appliqué plaques in the shape of a four-petal flower (Figure 2: 1, c and Figure 2: 5) were found in barrow 100 near the village of Syniavka, in the Middle Dnipro region (Khanenko and Khanenko 1900; Kovpanenko 1981, pp. 51–52, Figure 41, 7). Kurgan no. 1/2016 also produced five plaques in the form of a stylized flower of square shape with petals worked

in relief (Figure 5: 4). Like some of the examples discussed above, they do not feature holes. Three plaques measure  $1.2 \times 1.2$  cm, the other two  $1 \times 1$  cm. We recently discovered similar plaques, also without holes, in a female burial from the first quarter of the 6th century BCE in barrow 1/2021 in the Skorbir necropolis (Shramko 2023, p. 182, Figure 9: 1–8).



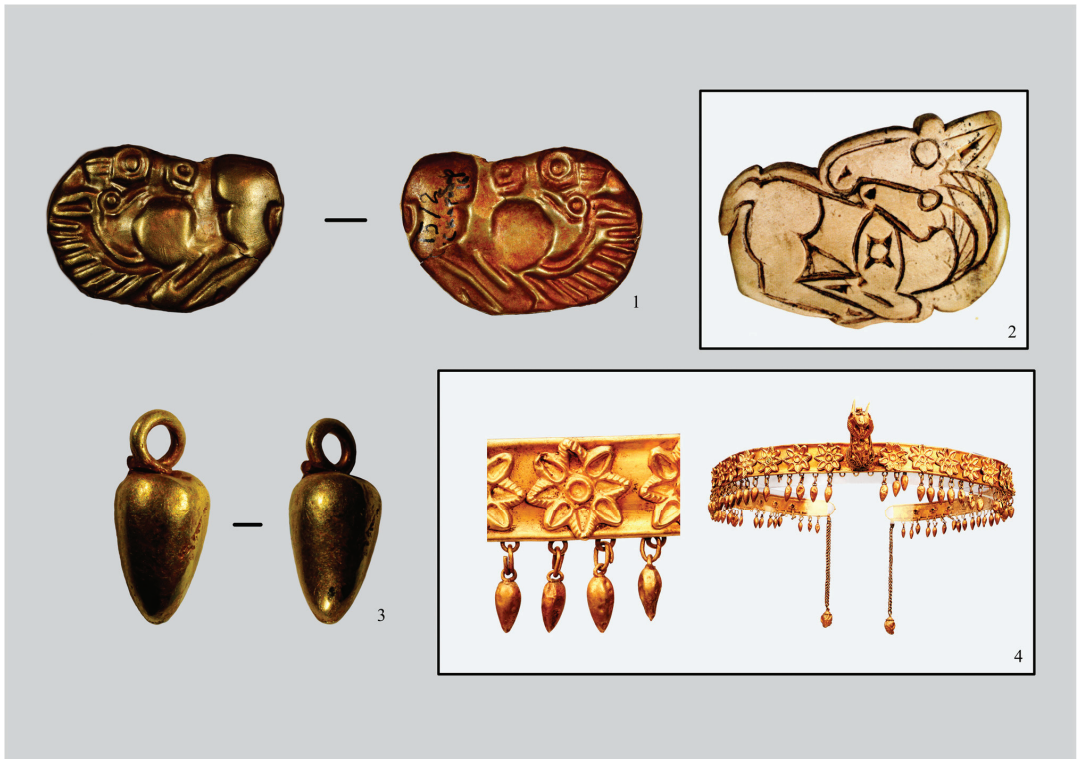
**Figure 5.** Elements of a funeral costume from barrow 1/2016 of the Skorbir necropolis. 1–4—gold plaques. 5—golden thread. 6—gold pendant. 7—amber beads. 8–9, 11–12—beads made of glassy mass (paste). 10—golden glass beads. Drawing and photograph by Iryna B. Shramko, Stanislav A. Zadnikov.

Similar gold items were also found in the burial complexes of Psel region: in barrow 13 near the village of Popivka and barrow 1 near Gerasimovka (Illinska 1968, p. 60, pl. LII, 17–25; p. 55, pl. XLV, 33; 1971, p. 75, Figures 2, 17, etc.).

Among the elements of the headdress in barrow 1/2016 of the Skorbir necropolis were two-part drop-shaped pendants made from a smooth gold sheet, one of which (Figure 5: 6), weighing 0.12 g, was found during the excavations (Shramko 2017, p. 377). The junction of the two parts is clearly visible, and one features a soldered-on loop-shaped wire eyelet (Figure 6: 3) of 0.8 cm long and 0.3 cm wide, while the soldered eyelet is 0.15 cm in diameter. Similar pendants were found as part of a golden diadem in the royal barrow 3III of the Kelermesskaya burial ground in the Kuban, which was decorated with a griffin (Galanina 1977, p. 186, 227–28, Table 30; Alekseev 2012, p. 105). The pendants are not only similar in appearance but show the same dimensions and manufacturing techniques. This may indicate a single production center and the same pattern of use of this gold element in the funeral costume. The hollow pendants found in barrow no. 1 of the Novozavedennoe-II burial ground in the Kuban (Maslov and Petrenko 2021, pp. 80, 90, Figure 1: 2) were similar, but slightly different in shape (conical) and manufacturing technique (rolled from gold foil with a soldered lid and loop). It can also be noted that among the numerous gold



pendants of various types found during the excavations of the Artemision at Ephesus, similar teardrop-shaped specimens came to light (Pülz 2009, p. 70, 149, Taf.18, kat. 148).



**Figure 6.** Golden elements of the headdress from barrow 1/2016 and analogies to them. 1—zoomorphic golden plaque. 2—bone plaques from mound 2 near the village of Zhabotyń. 3—gold pendant. 4—gold pendants on a diadem from barrow 3/III Kelermesskaya. 1, 3—after Iryna B. Shramko. 2—after Lifantii and Strelynyk (2021). 4—after Alekseev (2012).

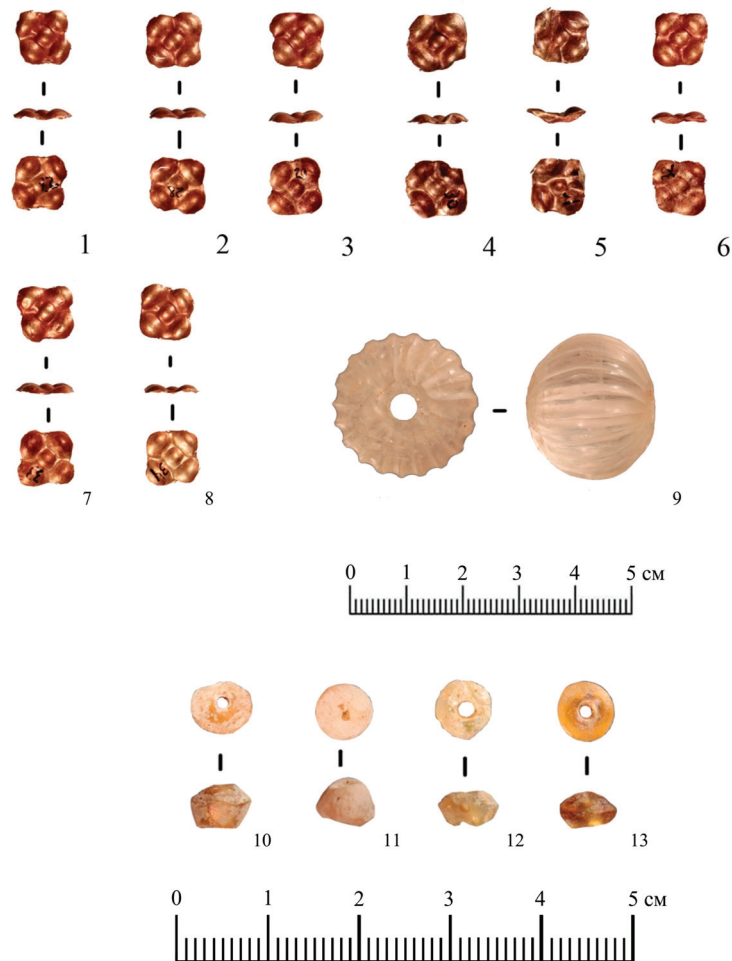
The woman buried in the Skorobir necropolis could also have worn a headband with gold drop-shaped pendants, or the pendants may have been attached to the edge of a conical cap. This design of the headdress, along with the use of appliqué plaques in the form of rosettes, may be associated with a West Asian tradition (Maslov and Petrenko 2021, pp. 80–81). In any case, such golden decorative elements indicate a connection with the Caucasus, where jewelry workshops serving nomads could have existed, as well as an Eastern tradition mainly expressed in the design of this headdress. It is important to note that in the territory of Forest-Steppe Scythia, for the Early Scythian period, such an element of headdress decoration as a drop-shaped pendant is not yet known.

Plaques decorated in the animal style had a sacred meaning, and women of high social rank whose headdresses were decorated with such plaques may have been priestesses, belonging to the elite strata of society.

#### Chest Decorations

The funeral costume was complemented by necklaces of beads made from semi-precious stones, amber, opaque golden glass, and paste (Figure 5: 7–12). Based on an analysis of the entire set of burial goods, we dated the burial to the first quarter of the 6th century BCE (Shramko 2017, p. 378). The basis for dating was, firstly, the golden-colored

biconical glass beads (Figure 5: 10). This type of bead is well known from the materials of the Yagorlyk settlement and was probably made in local, northern Black Sea workshops (Kolesnychenko et al. 2019, pp. 25–26; Kolesnychenko 2022, p. 54), from where they could have come to the Bilsk hillfort. Biconical beads made of translucent yellow glass were also found in the fill of a dugout constructed in the first quarter of the 6th century BCE on the Western fortification of the settlement (Shramko et al. 2021, p. 369, Figure 11: 8). Further examples of this type came to light in the female burial of barrow no. 1/2021 in the Skorobir necropolis (Figure 7: 10–13) (Shramko 2023, p. 182, Figure 9: 10–13), along with a grooved bead made of rock crystal (Figure 7: 9) and eight gold square appliqué plaques (Figure 7: 1–8) similar to those found in barrow no. 1/2016 (Shramko 2017, Figure 7: 4–5).



**Figure 7.** Decorations of a funeral costume from barrow 1/2021 of the Skorobir necropolis. 1–8—gold plaques. 9—rock crystal bead. 10–13—golden glass beads.

The variety of gold elements discovered in barrow 1/2016 attests to the complexity of the funerary headdress. Various decoration techniques were used in its production, since some plaques with perforations were sewn onto their support, while others were glued. The presence among the gold items of a drop-shaped pendant with a soldered loop and a piercing tube may indirectly indicate that the headdress included a forehead band. But alternatives cannot be ruled out, since the teardrop-shaped pendant could have been

attached to the edge of a conical cap or been part of an imported gold headdress, perhaps a crown, brought to the settlement by nomads. Since the barrow was almost completely robbed in antiquity, it is difficult to offer a graphic reconstruction of this part of the costume. We can only say that all the gold jewelry belonged to the headdress and that the ceremonial funeral costume was complemented by a necklace made of various beads.

#### 4.2.2. Kurgan No. 2/2019

This barrow occupies a special place among others studied in recent years because it was not robbed. All the objects left in the grave at the time of the burial remained in situ, which makes it possible to trace the peculiarity of the funeral rite. The barrow is tentatively dated to the second quarter of the 6th century BCE (Shramko and Zadnikov 2020, p. 10), perhaps even the middle of the century. The basis for proposing this date was a bronze mirror with an iron handle, a stone dish, a quiver set, parts of a horse bridle, and other objects that have analogies among other finds of this period (Illinska 1968, pp. 41–45; Kuznetsova 2018, p. 452, Figure 5; Makhortykh 2019, pp. 352–56; Andruh and Toshev 2022, pp. 411, 413–14, etc.).

In antiquity, the barrow had a diameter of about 15 m; its original height cannot be established, since at the time of excavation, the kurgan was almost completely plowed by farmers. The burial chamber had a sub-square plan, with dimensions of  $4.8 \times 4.5$  m (Figure 8: 1). In some areas at the bottom, remains from the floor were preserved; parallel grooves for logs that served as a basis for the wooden structure can be traced along the northern and southern walls. The grave was covered with massive logs (average diameter about 0.3 m), laid perpendicularly in three rows.

The burial contained the partial remains of the skeleton (only the crushed skull bones and decayed pelvic bones were preserved) of one person, who was laid outstretched on their back, with the head oriented to the west. The bones had almost completely decayed, since the grave was not deep and the wooden ceiling had collapsed.

The set of objects left on and near the body of the buried person, as well as the location of the skull and pelvic bones, suggest that a young woman was buried in the grave, perhaps a teenager given that her reconstructed height amounted to only 1.3–1.4 m. A set of pots, clay spindle whorls, a sandstone dish, and a mirror were intended for the deceased. The weapons and parts of a horse's bridle found in a compact arrangement in the southeastern corner of the grave (Figure 8: 1) can be interpreted in different ways. Either they emphasized the special status of the buried woman or they were associated with another, symbolic burial (cenotaph) of a man in the open area to her right, possibly a relative of the deceased who had died in a foreign land. Since the "military kit"—consisting of an akinaes, spear, quiver, and bronze arrows in addition to the horse bridle—was deposited at some distance from the body, it is impossible to interpret the burial we discovered as the grave of an armed woman, or Amazon, which, according to Elena Fialko, was buried with personal weapons (Fialko 2023, p. 22).



**Figure 8.** Kurgan 2/2019. Skorobir Necropolis. 1—general view of the burial. 2–4—details of the funeral costume and a mirror in the process of being cleared. 5—general plan of the burial indicating the location of elements of the costume and accessories. a—earrings. b—forehead decoration. c, d—necklace. e—mirror. f—earthenware beads and piercings. g, h—stone dish. i—remains of a leather handbag. Drawing and photograph by Iryna B. Shramko, Stanislav A. Zadnikov.

#### Elements of a Funeral Costume

All items that could be related to the design of the ceremonial costume were found on or around the buried woman's skull, chest, and hands (Figure 8: 5). There was a bronze bracelet, located where the woman's right hand most likely lay (Figure 8: 5, g; Figure 9: 11). To the left of the almost completely decayed skeletal remains, level with the pelvic bones,



were two iron pins and a bracelet (Figure 8: 5, j). To the right of the skull was a bronze mirror with an iron handle (Figure 8: 5, e). Another iron pin was found between the mirror disk and the skull (Figure 8: 5, c and Figure 9: 1, 3). In the chest area, there was a cluster of beads (Figure 8: 5, d).



**Figure 9.** Details of a funeral costume and accessories from barrow 2/2019 of the Skorobir necropolis. 1—golden forehead decoration. 2—necklace. 3—earrings. 4–5—round piercings and cylindrical piercing tubes. 6—plaques-applications. 7—beads made of amber, semi-precious stones and rock crystal. 8–9—faience beads and piercings. 10—iron bracelet. 11—bronze bracelet. 12–13—iron pins. 14—bronze mirror with an iron handle. 15—stone dish. 16—remains of a leather handbag. 17—bronze rivets from a leather handbag.

#### Jewelry Made of Bronze and Iron

Bracelets were found where the right and left forearms would have been. One of them, measuring 5.1 cm × 6.6 cm, is made of bronze twisted wire with conical ends and a diameter of 0.25 cm (Figure 9: 11). The woman probably wore it on her right hand. Vladimira Petrenko classified the twisted wire bracelets as type 16, noting that all documented examples date back to the 4th century BCE (Petrenko 1978, p. 56), but they

obviously first appeared in the archaic period, since we found a fragment of a twisted bracelet with a conical end in the Early Scythian deposits of ash pit no. 28 of the western fortification of the Bilsk hillfort (Shramko 1995, p. 175, Figure 1: 24). Vladimira Petrenko included another fragment of a twisted bronze bracelet, found on the surface of this settlement, in the summary table (Petrenko 1978, Table 43: 16). The dating of the Western fortification limits the upper date of the possible existence of this object to the middle of the 5th century BCE.

Due to severe corrosion, the iron bracelet and nail-shaped pins did not have clear outlines. After restoration, their contours became discernible (Figure 9: 12–13). The head of one of the pins is close to hemispherical (type 13 according to Petrenko), and in the other two, the head is conical, more closely analogous to the iron pins that Vladimira Petrenko included in type 16. According to the researcher's observation, pins with caps of such shapes appeared in the 6th century BCE and existed throughout the Scythian period (Petrenko 1978, pp. 14–15). The ends of the iron bracelet (Figure 9: 10) were riveted and overlapped with each other slightly.

An iron pin with a conical head (Figure 9: 13), lying near the occipital part of the skull (Figure 8: 5, c), could have been used to secure a leather headband or, less likely, one of fabric. The combination of nail-shaped pins and temple pendants among the grave assemblages in the burial mounds of the Middle Dnipro region led Sergei Yatsenko to reconstruct the women's headdress as a diadem as opposed to a high hat or bashlyk (2006, pp. 53–54). Diadems are well known in elite burials of the Early Scythian period (Galanina 1997, pp. 132–36; Maslov and Petrenko 2021, p. 82). In some cases, they were not worn independently but used as an addition to a conical cap (Kisel 2003, pp. 50–52, 128).

#### Beads

In the chest area (Figure 8: 5, d), there was an accumulation of beads made of semi-precious stones, rock crystal, amber, white paste (Figure 8: 3), and faience (Figure 8: 5, f and Figure 9: 8–9), which were probably part of the necklace (Figure 9: 2). An unexpected find was a faience pierced bead in the shape of a scarab beetle (Figure 9: 9). Such decorations were previously unknown at inland sites in the northern Black Sea region of such an early period. The fragments of two "Eye of Horus" amulets from kurgan no. 14/1975 at the Skorobir necropolis are of a similarly early date (Shramko and Tarasenko 2022, p. 145, Figures 2 and 3). Egyptian faience amulets could have been brought to the site by nomads who had taken part in the West Asian campaigns south of the Caucasus. Even though the Greek colonies may have received other imports from Egypt (that is, the workshops of Naukratis), the scarab from barrow 2/2019 does not belong to their production (Shramko and Tarasenko 2022, p. 150).

#### Accessories

To the left of the decayed bones of the skeleton, level with the pelvic bones, lay a sandstone dish (Figure 8: 1 and 5, h) with a set of pottery and clay spindle whorls deposited next to it.

*The sandstone dish*, measuring 43 × 21.8 cm, had an oval shape; one end of the object was pointed, while the other was cut straight across, possibly broken off (Figure 9: 15). The item was discovered broken into three pieces. No traces of organic matter were observed on the surface of the dish. It is interesting that, just as in the "Repiakhuvata Mohyla" barrow (Illinska et al. 1980, pp. 40, 48, Figure 21), the dish was found in the northeastern corner of the burial. Sandstone dishes are quite common in early Scythian burials, but the specimen found in barrow no. 2/2019 belongs to a typological group that became widespread in the second and third quarters of the 6th century BCE (Makhortykh 2019, p. 356). Fragments of stone dishes were also found in the cultural deposits of the Bilsk hillfort (Shramko 1987, Figure 43: 7), and further examples were recorded in barrow 100 near the village of Syniavka and kurgan 35 near the village of Bobrytsa (Figures 2 and 3).

A *bronze mirror* is one of the main accessories which accompany women's burials. Mirrors found in barrow 100 near the village of Syniavka and kurgan 35 near the village of Bobrytsa belonged to different types (Kovpanenko 1981, pp. 112–14). The mirror with a central handle from Bobrytsa (Figure 3: 7) is earlier. The mirror from barrow 100 near the village of Syniavka was lost, but Yevhen Znosko-Borovsky's description (Bobrinskoy 1901, p. 140) puts it closer to the type found in barrow no. 2/2019 of the Skorobir burial ground (Figure 9: 14). The bronze disks of both mirrors had iron handles. On the Skorobir specimen, two rivets are visible, which helped attach the disk to the handle. The mirror itself was in a wooden case (Figure 8: 4), on which the imprints of a fabric lining were preserved. According to Tatyana Kuznetsova, this type of mirror could have appeared in Scythia no earlier than the second quarter of the 6th century BCE, which serves as a *terminus post quem* for the burial in which it was excavated (Kuznetsova 2017, pp. 103–14; 2018, p. 455).

Among the rare and even unique items that complement the female funeral costume is a *leather handbag*, the dark brown debris of which was recorded in the northeastern corner of the burial chamber (Figure 8: 5, i). The bag was likely closed with a flap, using a clasp similar to that found on a quiver; but for the time being, this detail of the reconstruction remains hypothetical. When the clearing took place during fieldwork, the object was preliminarily contoured on an area of 20 × 20 cm and removed in a block of soil matrix. In the restoration workshop,<sup>9</sup> it was possible to trace the location of bronze rivets on one of the sections of the object (Figure 9: 16), which established that one side of the bag was probably about 10 cm long and that the shape of the whole item was close triangular with a rounded lower part, about 10 × 15 cm. The bag was sewn from two pieces of leather, fastened with bronze rivets which were also decorative. During clearing, 115 miniature bronze rivets were found (Figure 9: 17) composed of short, round rods 0.4 cm long and 0.2 cm in diameter. A similar bronze rivet (0.35 cm high and 0.1 cm in diameter) was found in one of the barrows of the Early Scythian period in the Peremirky tract, west of the western fortification of the Bilsk hillfort; according to the excavators, it was fastened to the bone plates of an iron knife (Kulatova and Suprunenko 2010, pp. 24–25, Figure 16: 4).

#### Gold Costume Elements

A distinctive feature of this burial is a set of appliqué plaques and piercings in geometric shapes as well as earrings made of a yellow metal (Figure 9: 1). These gold objects were used to decorate funeral headdresses. Some plaques and threads remained in situ, others were displaced from their original location. However, all of them were found among the frontal bones of the skull, partially displaced to the facial area (Figure 8: 2). The arrangement of gold elements (round pierced plaques and pierced tubes) clearly indicated the type of head decoration: a headband in the form of a ribbon. In some cases, it was possible to trace the location of the triangular plaques (Figure 9: 6), with their apices facing in opposite directions. Cylindrical piercings (Figure 9: 5) alternated with round "checkered" piercings (Figure 9: 4), consisting of two halves. It can be assumed that the headdress was also complemented by gold temple pendants with conical caps at the ends (Figure 9: 3), found on opposite sides of the skull. In total, during the excavation, 62 gold plaques were discovered: 21 triangular, 21 round piercings, and 20 cylindrical piercing tubes (Figure 9: 4–6). Most of them were recorded in situ.

#### Appearance of the Headdress

Unfortunately, the supports to which the plaques were affixed in ancient times were usually made of organic materials and are therefore hardly ever preserved in the burial mounds of the northern Black Sea region. As a result, the ceremonial female headdress of the archaic period has been reconstructed in a variety of ways in the scientific literature (Figure 2: 2–3 and Figure 3: 5–6) (Miroshina 1977, p. 85, Figure 7; p. 86, Figures 8 and 9; p. 88, Figure 11; Klochko 2012, pp. 417–26). More complex sets of plaques that combine various elements in complementary ways cannot be ruled out (Yatsenko 2006, p. 53).

Since the female burial in barrow no. 2/2019 of the Skorobir necropolis had escaped looting, we were able to record the location of the golden elements (round and cylindrical) of the piercings, in the form of two parallel rows (Figure 9: 2). Golden triangular plaques, decorated with three large and three small hemispherical convexities, were located above two rows of piercings, but they did not form a clear complete pattern; it was only possible to understand their relative position. It is very probably that the woman was wearing a leather headband, onto the base of which triangular plates were glued. Below, longitudinally, two gold threads were attached to the strap. Undoubtedly, the main additional elements of the dress were two gold earrings or temple pendants.

A 3D digital model of the possible appearance of the headdress was made, based on the study of the complete set of gold decorative elements (Figure 10).



**Figure 10.** 3D reconstruction of a woman's headdress and necklace from mound 2/2019 of the Skorobir necropolis. The reconstructions differ in the length and position of the temporal rings: 1. Placement of temple rings in the temple area (fastening distance is less). 2. Placement of temple rings in the ear area (fastening distance is greater). 3. Close-up view with the placement of the temporal rings in the temple area. Digital Drawing by Valentin S. Shramko.

The lower part of the headdress was decorated with two rows of parallel elements, consisting of alternating plaques and piercings of two types: (1) round composite ones, decorated with concentric circles, 0.1 mm thick, 1.8 cm in diameter, with a hole diameter of 0.4 cm, and (2) hollow, corrugated cylindrical tube, 1.45 cm long, 0.4 cm thick, with a hole diameter of 0.3 cm (Figure 9: 4–5).



Round, two-piece piercings were made from thin gold sheets using the stamping technique. The two halves were soldered together. A hole was punched through the finished product. Cylindrical tubes were made of thin corrugated sheets, the ends of which were connected into a joint or, in most cases, overlapped one after the other.































The plaques used in alternating designs were short in length, corresponding to the distance between the temples. Consequently, the sizes of individual elements and their quantity were selected to give the overall composition of the headdress a balanced appearance. The dimensions and number of decorative elements significantly limit the size and shape of the reconstructed headdress.

The arrangement of the triangular plaques on the upper part of the headband in the form of a ribbon is determined equally by the local decorative tradition and by the dimensions of the headband and the length of the leather ribbon indicated by the surviving decorative elements. The plaques, which have a maximum size of 1.25 cm × 1.3 cm and a thickness of 0.5 mm, were made using the stamping technique and were decorated with three large hemispherical impressions and four small ones (Figure 9: 6). It is important to note that the plaques were stamped onto a thin gold sheet using two different dies to form the pattern. At the same time, the location of the hemispheres imprinted with stamps on different plaques is slightly irregular; some carelessness is noticeable in the work of the craftsperson.

The reconstruction of the headdress as a headband with decorative plaques is confirmed by the presence of two gold earrings found in the area of the skull. This type of decoration is specifically associated with this form of headdress and excludes other options. In addition, our proposed version of reconstruction is supported by the discovery of an iron nail-shaped pin near the occipital part of the skull, which was probably used to fasten the ends of the band. Such fasteners would be useless and incompatible with other types of headgear. The only alternative interpretation is a pin used to secure the hairstyle.

Of course, the main element of the funeral costume of barrow no. 2/2019 was the headband in the form of a ribbon, which indicated the status of the buried woman. However, the completeness of the costume composition was achieved through other components: a necklace made of various beads, bracelets and pins, and an amulet, which completed the ceremonial vestments and helped create a unified image of the traditional costume of elite women of the early Scythian period, buried in compliance with a specific ritual.

The closest analogies to such a set come from the costume complex we examined from barrow 100 near the village of Syniavka (Figures 2 and 11). These two burials probably date back to the same time. In addition, they demonstrate a stable combination of golden elements of the headdress. Only these barrows contained pierced plaques complemented by gold earrings, triangular appliqué plaques, and skull pins. This can hardly be coincidental. The arrangement of the elements of the headdress, reliably recorded during the excavations of barrow 2/2019, allows us to quite safely assume that the headdress from barrow 100 near the village of Syniavka (Figure 2: 1a) was indeed a forehead band, as the original excavator originally claimed (Bobrinskoy 1901, p. 140). The headdress from barrow 35, near the village of Bobrytsa, showed some differences in the set of decorative elements—notably, the absence of piercings and earrings (Figures 3 and 11). However, in general, these cases allow us to talk about a coherent burial tradition that persisted over an extended period of time in the territory of Forest-Steppe Scythia. Its range encompassed not only the Dnipro Right Bank, where it probably had some local basis (Klochko 2008, 2012), but also the territory of the Dnipro Left Bank Forest-Steppe, where it is so far most fully represented in the materials of elite female burials of one of the necropoleis of the Bilsk hillfort.

Subject category	Barrow 100, Syniavka	Barrow 35, Bobyrytsa	Barrow 1/2016, Skorobir	Barrow 2/2019, Skorobir
<b>Elements of headdress</b>				
Zoomorphic plaque				
Triangular plaque				
Two-component plaque of a round shape				
Plaques in the form of a four-petal rosette of round shape			 <i>with and without holes</i>	
Plaques in the form of a four-petal rosette of a square shape				
Cylindrical beads (proniz)				
Teardrop pendant				
Headdress rings				
<b>Decorations</b>				
Bead sets				
Pins				
Bracelets				
Amulets				
<b>Accessories</b>				
Mirror	<i>Bronze mirror with iron handle</i>			
Leather handbag				
Stone dish		<i>Sandstone shuttle-shaped dish</i>		

**Figure 11.** Comparative table of elements of funeral costume and accessories from barrows of Forest-Steppe Scythia. Images after Khanenko and Khanenko (1900); Bobrinsky (1901); Kovpanenko (1981); Reeder (2001); Klochko (2012); Hribkova (2014); Klochko et al. (2021); Iryna B. Shramko, Stanislav A. Zadnikov.

## 5. Conclusions

For the first time since the end of the 19th century, the golden details of a female headdress of the Early Scythian period were recorded in an archaeological context in the Ukrainian Forest-Steppe. Because these materials were brought to light in an undisturbed burial, we obtained a fairly complete picture, confirming the assumptions made by a number of previous authors about the high social status and potential priestly function of women belonging to the local elite. The main features of this group of burials were the stable elements of the ceremonial (funeral) costume, which included a headdress decorated with gold appliqué plaques and piercings, supplemented in some cases with gold earrings or temple ornaments, sets of bead necklaces, pendants, metal bracelets, and nail-shaped pins. The funeral tradition involved leaving some accessories near the deceased, among which a bronze or bimetallic mirror and a stone dish should be especially highlighted. In one case, the remains of a leather handbag decorated with bronze cylindrical rivets were recorded.

In our opinion, the headdresses from kurgans 100 near the village of Syniavka, 35 near the village of Bobrytsa, and 1/2016 Skorobir could have had the appearance of conical hats; there were probably also headbands. In barrows 100 near the village of Syniavka and 2/2019 of the Skorobir necropolis, they consisted of ribbon-shaped headbands. Headscarves could have been used in all burials. Interestingly, all examples are characterized by a combination of Scythian animal-style decorative elements (appliqué plaques depicting a deer with bent legs and a mountain goat with its head turned back), the Asia Minor tradition of decorated ceremonial headdresses and headbands (golden drop-shaped pendants and rosette plaques), and the Hallstatt tradition of decorative geometric patterns (triangular appliqué plaques, triple circles). The use in the decoration of round pierced “checkers” and triangular geometric plates with hemispherical convexities in the center, along with plaques showing concentric circles in relief and other appliqué plaques of various types, may indicate that the local Forest-Steppe environment had absorbed Western traditions, ideas gleaned from the cultures of the Hallstatt circle, with which they had quite close contacts as researchers have repeatedly demonstrated (Fialko 2006, p. 61; Daragan 2010, pp. 96–106; 2011, p. 615; Shramko and Zadnikov 2021). However, since archaeological sources from the late 19th century do not provide reliable field documentation, and new excavations do not yet provide a complete picture, all proposed options for reconstructing the appearance of an archaic female headdress from these burial complexes can only be accepted as hypothetical.

Drawing on the new discoveries of 2019, we can demonstrate with a high degree of certainty that all burials contained headdresses in the form of a headband, for example, a ribbon-shaped leather headband.

A review of materials from four burial mounds of the Early Scythian period—including those from new excavations in the Dnipro Left Bank Forest-Steppe—confirms the previously stated assumption about the existence in the territory of Forest-Steppe Scythia of a group of women who occupied a special place in society, belonging to the local elite and, possibly, performing priestly functions during their lifetime. The funeral ceremony involved dressing this category of the deceased in a costume richly decorated with gold elements and a headdress complemented by a necklace made of semi-precious stones, amber, glass, and paste; Egyptian amulets; metal bracelets and pins; and gold earrings. In three out of four cases, a bronze mirror was left near the deceased; in one case, a leather handbag with bronze studs. Of course, like most female burials of the archaic period, our examples also included a stone dish, a set of molded ceramic vessels, and clay spindle whorls among the offerings. The period of such a stable funeral tradition with the noted types of funeral equipment, as well as a ceremonial funeral costume with a headdress for noblewomen, should, in our opinion, be confined to the first half of the 6th century BCE.

We can agree with Marina Daragan that such a tradition undoubtedly finds correspondences in the Hallstatt world, has Western features, and persisted for a relatively short time (Daragan 2010, p. 616; Daragan 2011, pp. 607–12, 617–8). In the northern Black Sea region,

this tradition apparently took shape no earlier than the beginning of the 6th century BCE, and in the territory of Forest-Steppe Scythia, it became widespread in the first half of this century, primarily in the Middle Dnipro region, on the right and left banks of the Dnipro. Materials from new excavations indicate that representatives of the local aristocracy may have been buried in more modest burial chambers than previously thought; their burials were simple, without accompanying persons. In addition to purely female items of funeral equipment, attributes of warriors were also left in the grave, notably bridles and weapons, which could well have belonged to representatives of the aristocracy of any gender.

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## Notes

- <sup>1</sup> Not preserved.
- <sup>2</sup> Halina Kovpanenko's monograph (1981) erroneously states that the necklace was worn around the neck (p. 13).
- <sup>3</sup> Ganna Vertienko comes to this conclusion based on a deep analysis of Iranian mythology, from which it follows that the military force (*ama*) was located above the horns of ungulates (or in the area above the forehead). Hence, it is important to pay special attention to the exaggerated depiction of the horns of such animals, as they may indicate the concentration of such power inherent in the military deity and warriors. Consequently, according to the researcher, products and objects with such images could endow their owners with military force or associate them with a military deity. In cases like ours, the presence of military ammunition in the burial is not accidental, and does not necessarily mean the woman's participation in hostilities.
- <sup>4</sup> According to Yevhen Znosko-Borovsky, the fact that the main buried woman belonged to the Amazons was indicated by the presence in the grave of weapons (bows and arrows), parts of a horse bridle, the burial of a horse, and the absence of "actually male weapons", such as a spear or sword. Based on the totality of features, the researcher dated the artifact complex to the Sarmatian period (Bobrinsky 1901, p. 114).
- <sup>5</sup> Other researchers also paid attention to the similarities of the headdresses among the European Scythians, Asian Sakas and Persians of the Achaemenid period (Yatsenko 2006, pp. 38–39; Toleubaev 2016, p. 851).
- <sup>6</sup> According to Varvara Illinska, such plaques were a kind of emblem of the daily solar arc. In general, the set of ceremonial headdresses, in her opinion, had a magical meaning associated with the cult of the sun and its ritual symbolism (Illinska 1971, pp. 77–78).
- <sup>7</sup> Herodotus 4.108. "... The Budinoi are a very great and numerous race... in their land is built a city of wood, the name of which is Gelonos, and each side of the wall is thirty furlongs in length and lofty at the same time, all being of wood; and the houses are of wood also and the temples; ..." (Herodotus 2008).
- <sup>8</sup> Excavations of barrows in the southern part of the Skorobir necropolis have been carried out since 2013 by the Scythian expedition of the V.N. Karazin Kharkiv National University (Kharkiv, Ukraine) together with the Historical and Cultural Reserve "Bilsk" (Kotelva, Ukraine).
- <sup>9</sup> The leather product was cleaned by specialist restorer Serhei Omelnik.

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# Looking at the Evidence of Local Jewelry Production in Scythia

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**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

## 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.<sup>1</sup>

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

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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<sup>2</sup>

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 Chortomyk 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 Pischochin 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 Oksiyutyntsi, 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 Ivanyshchuk (Skoryi 1990). One silver gilt (Figure 1, 1) and twenty-three gold griffin-shaped plaques were found there (Figure 1, 2)<sup>3</sup>. 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 appliques: (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), appliques from Berdianskyi kurgan with fighting and drinking scenes (Figure 2, 2–3), and openwork appliques 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 appliques: (1)—found in Bratoliubivka kurgan (photo by Oksana Lifantii); (2)—appliques from Berdianskyi kurgan; (3)—openwork appliques from Kamianka kurgan No.21 sewn on hat reconstruction (photos by the Treasury of the National Museum of History of Ukraine).

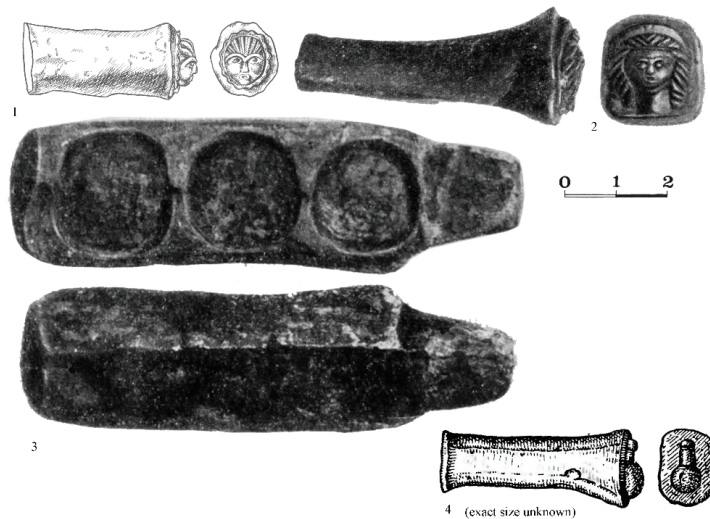
### 3.1. Tools Found in Scythia

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 Bosphoran Kingdom.



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

Moreover, the same two hillforts (Kamiianka 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 Archeology of NAS of Ukraine	4,1
Bronze "pillow" (die) for hammering appliquéés	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 Bosporean 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 Tyrityake 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 tereutics". Another interesting find was the discovery at Yahorlyk of a fragment of a stone "pillow" (or die) for hammering appliquéés 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, Tyrityake, 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 appliqué 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 appliqué from Solokha and one unknown kurgan in the lower Dnieper (or North Pontic) area (after Veselovskiy 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 Veselovskiy 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 Chortomyk 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 Chortomyk 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).<sup>4</sup>

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.<sup>5</sup> 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.

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#### Notes

<sup>1</sup> 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 civilizations.

<sup>2</sup> 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 Saitaferme”), 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 appliquéés.
- 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 (Mozolevskiy and Polin 2005, p. 425).
- 5 For more arguments on diplomatic gifts, see (Meyer 2013, p. 127; Porucznik 2021, pp. 95–97).

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## Article

# The Construction and Functional Technology of Scythian Graves: A Recent Find from the Elite Kurgan 6 near the Village Vodoslavka, Southern Ukraine

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**Abstract:** In the North Pontic region, bronze greaves appeared among the Scythians and noble members of the tribal world of the eastern European steppe in the middle of the fifth century BC and were used until the end of the fourth. Both the “classic” full-length Greek greaves and greaves without knee pads were in use. Surviving greaves and fragments thereof from different Scythian burials allow for analysis of the peculiarities of their construction. A distinct feature of the greaves from the burial in Barrow 6 near the village Vodoslavka, Ukraine, is a series of large openings made on the inner side of both greaves, in the area where the muscles of the calves protrude most prominently. These holes are covered (both from the inside and from the outside) with sewn-on pads made of thick leather. Similar holes can also be seen on the greaves from Kerch in eastern Crimea and were likely cut to make these greaves more suited for horse riding. The greaves from Soboleva Mogyla were additionally modified for horse riding in that the parts that covered the knees were shortened and the side parts had deep cuts (more than a half-height) on the inside of the calf muscles. Thanks to this cut, the rider’s leg (around the medial gastrocnemius in particular) fitted snugly to the horse’s side.

**Keywords:** Northern Pontic region; Scythians; protective armament; greaves; Greeks; production; leather

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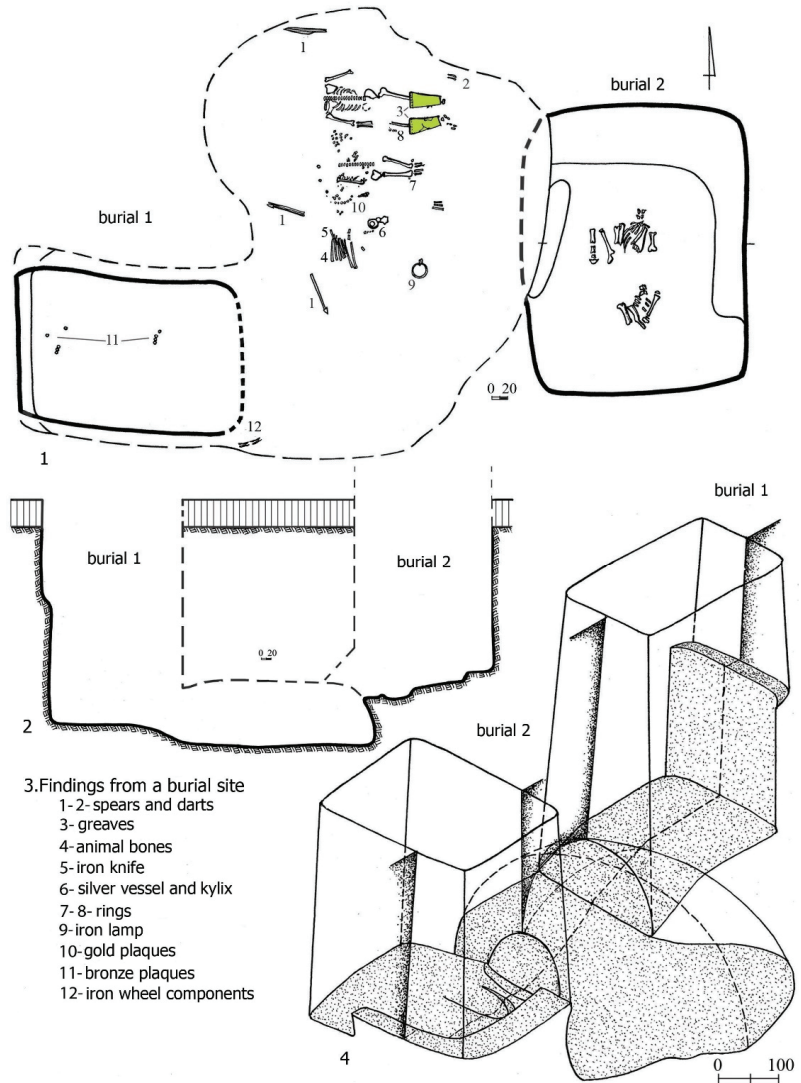
## 1. Introduction

The subject of research in this article is the bronze greaves from Barrow 6 near Vodoslavka village. Detailed analysis of the Vodoslavka greaves and several comparable finds demonstrates how the Scythian horse riders who inhabited the northern Black Sea region in fifth and fourth centuries BC adapted object types of Mediterranean origin to the requirements of their mobile lifeways. Bronze greaves from Scythian tombs have not previously been considered from the perspective of local culture and technology to highlight the ingenuity of nomadic metalworking practices. The burial ground near Vodoslavka (Novotroitskiy district of Herson oblast) was excavated by V.V. Dorofeyev’s unit of the Kherson Expedition, a project under the overall direction of A.I. Kubyshev. Despite the modest size of the barrows from this burial mound, some of them belonged to the members of the local nobility, probably at the tribal level (Daragan and Polin 2022). It should be noted that in the northern Prissivashie–northern Azov region the elite barrows are generally of relatively small size.

## 2. Barrow 6 of Vodoslavka and Its Burials

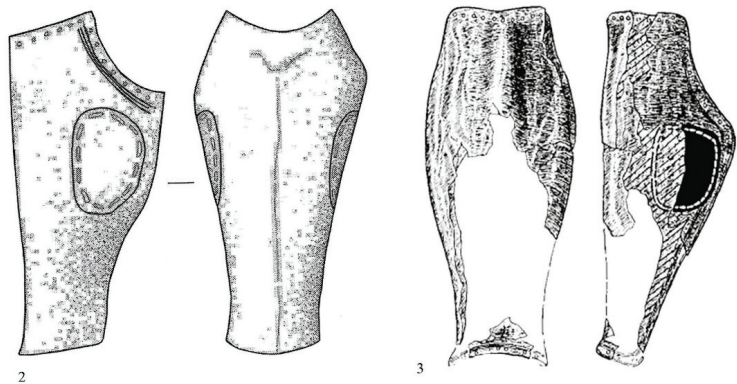
At the time of the excavations, previous agricultural plowing at the site had reduced Barrow 6 to a height of 1.4 m, with a diameter of 45 m. The barrow contained only one tomb accessed by two separate vertical shafts that had been dug at different times. Initially, a female body was conveyed into the subterranean structure through the first shaft (Burial 1); then, after some time, a man’s body was added to the shared catacomb through the second shaft (Burial 2). Furthermore, two horses were buried in the second shaft (Figure 1(1)),

providing stratigraphic evidence to show that the secondary male interment occurred through the second pit (Daragan and Polin 2020, pl. 1: 3, fig. 1: 8). At the southwestern periphery of Barrow 6, at 17 m distance from the center, another horse burial was discovered. While this burial was found in a separate pit, its construction must have been connected to the male inhumation added to the tomb through the second shaft, confirming yet again that the two deceased were buried at different times and that the primary burial in elite mounded tombs need not always be male. This scenario is further corroborated by the absence of a circular ditch around the perimeter of the tumulus, which is characteristic of Scythian barrows yielding a female primary interment. The area near the third horse burial in the southwestern part of the barrow produced stray fragments of an amphora.



**Figure 1.** Vodoslavka Barrow 6 Burials 1–2. (1)—General plan of the Burials 1–2; (2)—General section of the catacomb burial ground 1–2; (3)—Findings from a burial site; (4)—Axonometric view of the Burials 1–2 (reconstruction T. Menchinskaya).

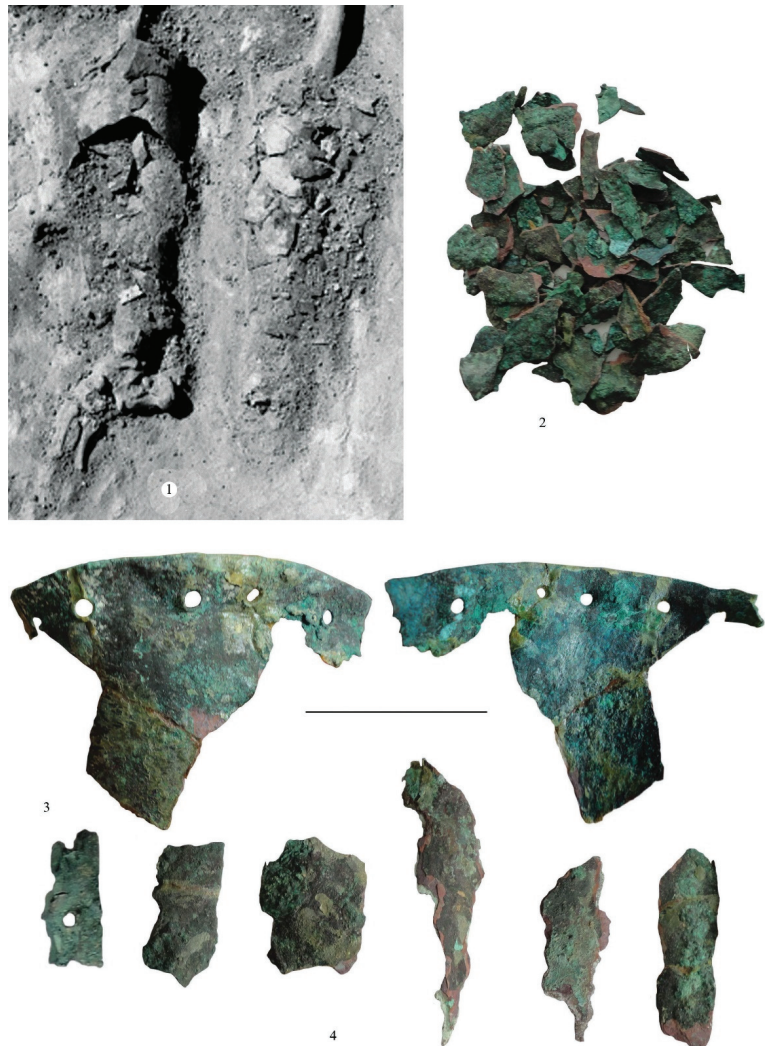
In the shared burial chamber of Burials 1 and 2, the skeletons of a woman and a man were discovered (Figures 1(1) and 2(1)). Despite previous disturbance by tomb robbers, the remains of numerous and diverse objects indicate the wealth and relatively high social status of the buried. Among the finds are numerous gold objects which belonged to the woman (Daragan and Polin 2022, figs. 9–25), and the remains of a cart and its decorations (Polin et al. 2022, figs. 20–21). The military status of the man is clearly attested not only by the accompanying horse burials, but also by the full set of offensive weapons (arrowheads along with a bow, and a set of no less than eight spears and darts), as well as items of protective armor, including a cross belt covered with iron scales and bronze greaves.



**Figure 2.** Vodoslavka Barrow 6 Burials 1–2. (1)—Skeletons of the buried. Left—female, right—male (photograph from field report); (2)—Greave from the Barrow 6. Reconstruction by E.B. Černenko (after: Černenko 2006, pl. 33: no. 665); (3)—greave from the Barrow 6. Reconstruction by S.A. Kupriy (after: Kupriy et al. 2019, fig. 5: 20).

### 3. The Greaves from Vodoslavka

As mentioned above, in the shared burial chamber of Burials 1 and 2 numerous objects—even metalwork of silver and gold—have been preserved despite the looting of the tomb. As is often the case with such rich discoveries, little attention was paid to the greaves during the clearing of the tomb. The preserved excavation records include only two field photographs that show the greaves in situ—a wide-angle shot and one taken close-up. From these photographs, it is clear that the greaves were not damaged by the robbers but by the weight of the soil and by the people conducting clearance. The greave from the left leg was especially damaged, crushed into a mass of small fragments. The greave on the right leg was somewhat less badly affected, with several bigger fragments remaining intact for restoration work (Figure 3(1)).



**Figure 3.** Vodoslavka Barrow 6 Burials 1–2. (1)—The greaves on a man’s legs; (2)–(4)—Fragments of the left greaves; (3)—Upper edge of greaves; (4)—Fragments of the “body” of the greaves (1—photograph from field report; 2–4—photograph M. Daragan).



In the report of the expedition the greaves are described very briefly: “Bronze greaves in bad condition, made of a sheet of up to 1.15 cm thickness; covered from both sides with leather attached by a narrow rawhide string that was threaded through the holes in the top and bottom edges. Dimensions: length 34 cm, top width 18 cm, bottom width 10 cm” (Kurbyshev et al. 1983, p. 69). On an accompanying photographic plate (reproduced in this article in Figures 2(1) and 3), the report shows the greaves in situ on the legs of the male skeleton, alongside figures that document a cup-like silver jar and an iron brazier in their find spot (Kurbyshev et al. 1983, pl. 34, fig. 4). Overall, the documentation in this report is very confusing. The photographs reproduced on the plates were printed on the wrong side of the negative and are therefore mirror-reversed. This mistake was only discovered when the published photographs were compared with drawings in the field notes.

The condition of the greaves in the excavation photograph is quite consistent with that described in the report, though the passage in the publication stating that the greaves were “covered” with leather is confusing. Many Greek greaves have come down to us from across the ancient world, but none of them matches the description in the report. Those greaves always have a lining of leather or of a combination of materials affixed to the area of the inside leg to prevent the soldier’s calf from making direct contact with the metal and keep the protective equipment firmly in position.<sup>1</sup>

Partial restoration of the greaves took place during post-excavation conservation work. During the process, characteristic details of the design of the greaves from Vodoslavka were observed. It was discovered that the greaves were formed to match the shape of the lower part of the leg, from the knee to the feet. The report states that the details of the muscles were well-defined on the surface of the metal, in an exaggerated manner. The overall height of the greaves, 34 cm, was determined through restoration, and the thickness of metal was specified at 0.1 cm. Among the unique design features of the pair of greaves from Vodoslavka were the cutouts at the top, in the area that covered the knee joints. Furthermore, on the inner sides of both greaves, where the rider’s leg fitted snugly against the sides of the horse, there were large oval openings measuring 8 × 6 cm, which were covered with leather pads from the inside and the outside. These pads were mistakenly called inserts in the original publication, even though they cover the cutout holes and are sewn to the greaves with a narrow leather strap threaded through small holes that were pierced through the metal around both openings (see below for further discussion). As a result, it became clear that the leather cover on the outside of the greaves covered only a small section of the exterior, not the entire surface as claimed in the initial report. The reason for the existence of these holes also emerged more clearly from this renewed examination. As the greaves were used by a Scythian rider, the leather pads on the sides of the greaves, which were in direct contact with horse’s body, protected the horse from being injured by the metal of the greaves and helped to prevent the greaves from rubbing on the horse’s hair during riding (Kupriy 1994, pp. 72–73). While the contact with the polished surface of the greaves could by itself hardly injure the horse’s body, the explanation seems convincing in view of the fact that stirrups were still unknown in Scythian times. Without the help of stirrups, Scythian riders were required to use the strength of their legs and thighs to stay in the saddle. Because of this, a tight grip on the horse was extremely important in everyday life, and even more so in battle, where horses made sudden movements during maneuvering. Moreover, the removal of a section of the greaves’ metal fabric decreased their overall weight, which could have been important to counteract the relatively small size of the Scythian horses and the resulting limited ability to carry heavy loads.

On the basis of the different measurements of the objects’ dimensions provided by previous investigators, two different reconstructions were proposed. The graphic reconstruction of the Vodoslavka greaves by S.A. Kupriy, based on his work on the greaves in 1983, has only recently come to light (see Figure 2(3) (Kupriy et al. 2019, fig. 5: 19–21)).

E.V. Chernenko presented an earlier reconstruction of the greaves based on information which he had received from S.A. Kupriy.<sup>2</sup> For some reason Chernenko envisioned sizable oval openings on both sides of each greave and wrote that these holes measured

7–8 × 15 cm in size (Figure 2(2)). According to his account, the openings were covered with oval pads made of thick leather (Černenko 2006, p. 103, no. 665, pl. 33: no. 665). The recorded dimensions differ substantially from the measurements of the surviving objects. The reconstruction was carried out carelessly, without giving much thought to the actual purpose of the openings. The two side-holes were apparently depicted, for the sake of symmetry, without considering that such large openings on the external sides of the greaves would significantly lower their protective characteristics. The addition of external pads, for which there is no evidence, did not solve this problem.

The impossibility of the reconstruction is demonstrated by the technical characteristics of a modification identified on greaves from the Oloneshtskiy hoard. According to a convincing suggestion made by G.P. Sergeev, this hoard was buried by hoplites from Zopyrion's Macedonian army during the retreat after the debacle near Olbia (Sergeev 1966). In this case, the objects' modification had a completely different purpose, connected to their use by infantry. The greaves from the Oloneshtskiy hoard had too large a gap at the back of the calf. To cover it, additional bronze plaques were inserted. This "repair" demonstrates the foresight of some hoplites, who wanted to be protected from all directions, including from the back when running from an enemy.

All in all, Černenko's reconstruction of the Vodoslavka greaves is very unreliable when it comes to the number of openings at the sides, their supposed dimensions, and especially their purpose.

### 3.1. *The Modern Condition of the Greaves from Vodoslavka*

Today, the upper part of one greave and fragments of its lower part are held in the repository of finds from Vodoslavka<sup>3</sup>. Of the second greave, only some of the fragments are still available for study. Among them, the fragments of the "body" of the greaves survive, and there are very few fragments from the edges of the greaves that can provide insight into their shape. A detailed analysis of the fragments is required in preparation for the reconstruction presented further below in this article.

#### 3.1.1. Left Greave

1. A large fragment (Figure 3(3)) from the top edge of the greave, folded outward to provide a snug fit with the soldier's knee. Thanks to this flaring edge, the top part of the greave remained in good contact with the protruding knee joint without creating too much friction. Small holes were pierced along the edge from the inside (as is demonstrated by the traces of smoothed down burrs visible on the outside) for sewing the leather lining to the inside of the greave. The holes measure 0.2–0.3 cm in diameter. They are placed at 0.5–0.6 cm from the edge, with intervals of 0.4–0.9 cm.

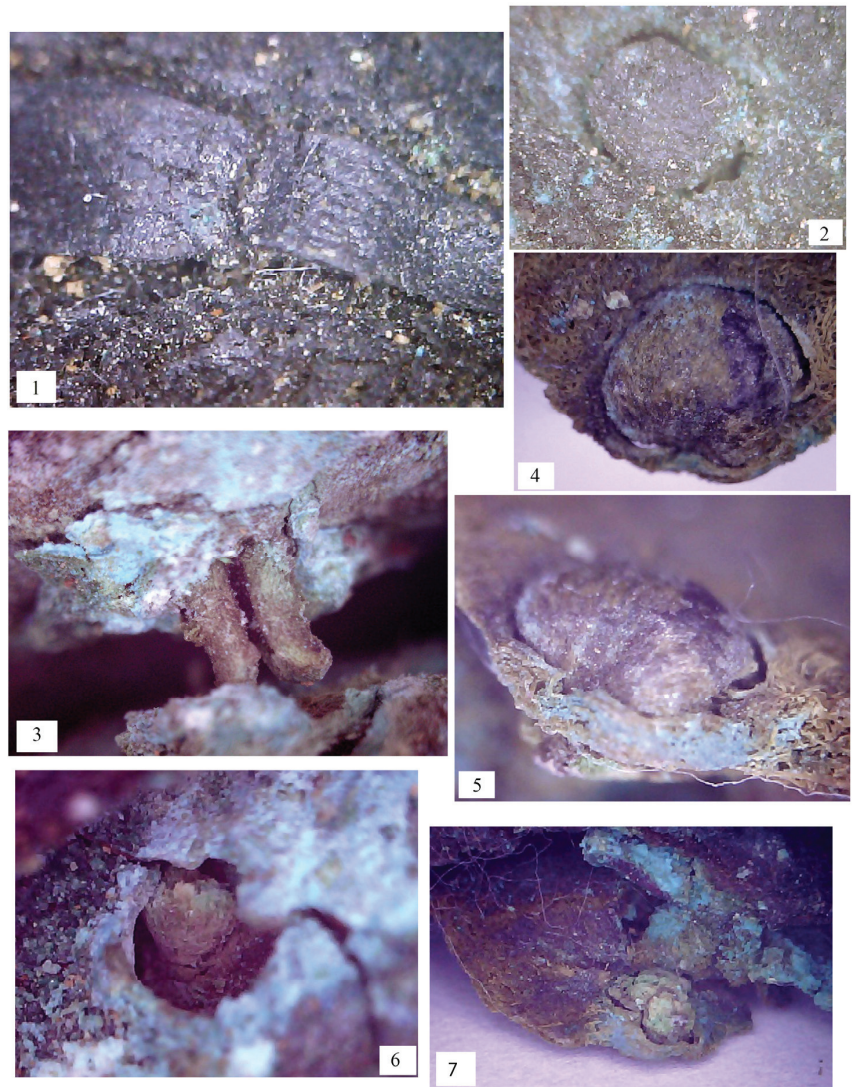
2. A fragment from the upper right calf of the greave: that is, from the side that was touching the horse's body. Two oval leather pads that were covering the oval opening from the inside and the outside are partially preserved. The pads were made of thick well-processed leather resembling suede. A fragment of a leather pad from the inner side is preserved to its full height of 9 cm (Figure 4(2)). As the bottom end of the pad is broken off on the outer side, the remaining height amounts to 7.3 cm (Figure 4(1)). Measuring no more than 4 cm, neither pad is preserved to its full width. The pads are sewn to the greave from both sides with one narrow leather strap. Wide stitches of 1.0–1.2 cm, made with a very narrow flat leather strap of 1–1.5 mm width, can easily be seen on the exterior (Figures 4(1),(4) and 5(1)–(3)). On the inside every stitch was at least 2–3 mm wide (Figures 4(2),(5) and 5(4)–(6)). It appears that on the inner side, which was in close contact with the leg, these tiny stitches were made to prevent the strap from sticking out and chafing the leg. The strap used for sewing on the pads—probably a sinew thread—is very narrow in cross section and surprisingly thin (Figure 4(1),(4)).



**Figure 4.** Vodoslavka Barrow 6 Burials 1–2. The left grave. (1), (4)—Fragment of the right side corner of the greaves on the side adjacent to the body of the horse. External side; (2), (5)—A right side-angle from the outer side of the right greave. Inner side; (3)—Lateral view (photograph M. Daragan).

3. A fragment of the upper left corner from the inner side of the left greave, measuring  $9.3 \times 8$  cm (Figure 6(1)). At 0.5 cm from the edge, a series of small holes with a diameter 0.3 cm was pierced at an interval of 0.4–1.6 cm (with filed down burrs around the holes remaining on the exterior). The holes were for sewing the lining of the greave.



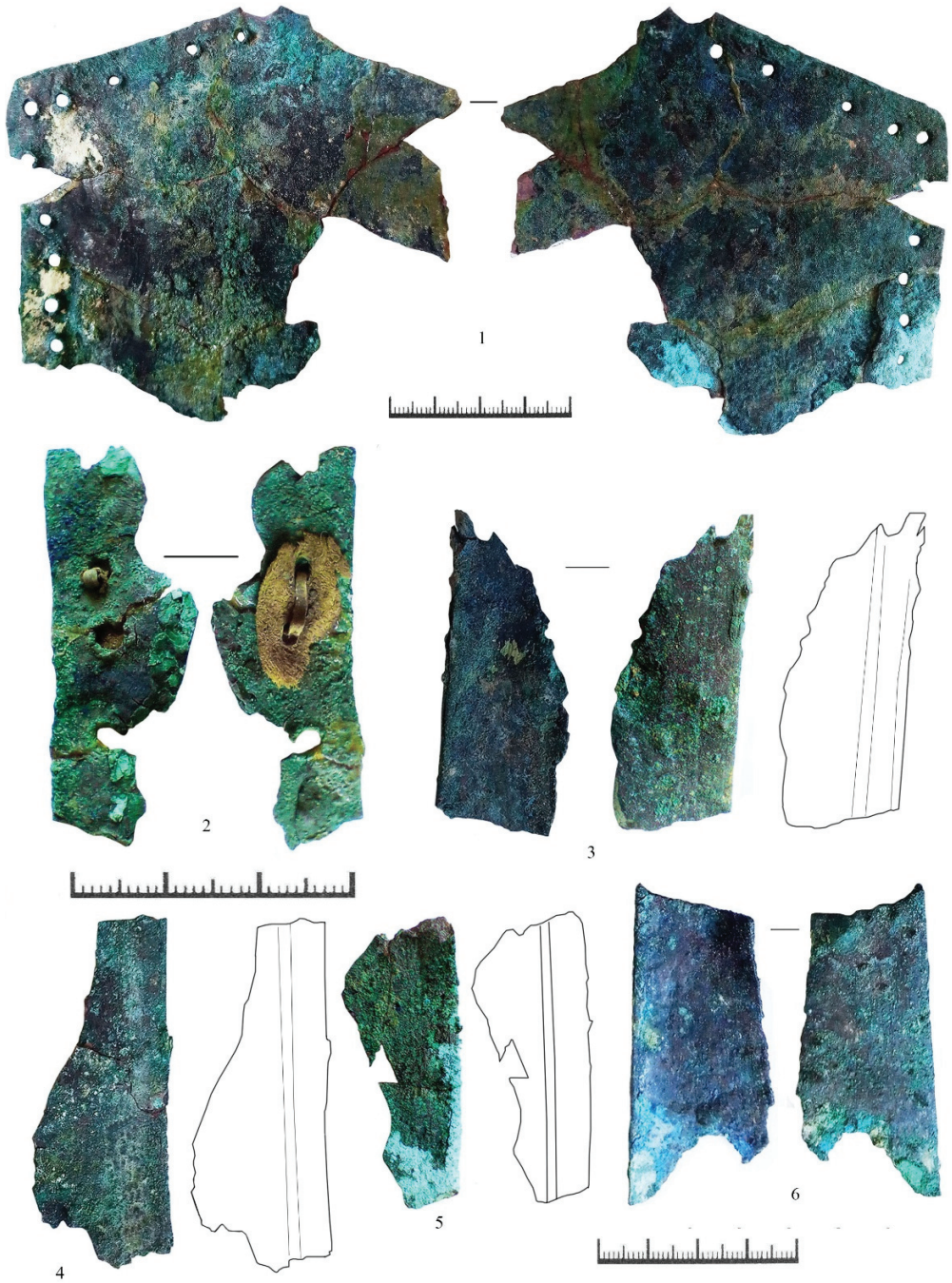


**Figure 5.** Vodoslavka Barrow 6 Burials 1–2. Stitching on the leather pads with a sinewy strap. Macro photography. Zoom  $\times 20$ . (1)—Stitch on the outside; (2), (3)–(7)—Stitching of the strap through the leather overlay and metal of the greave; (3)–(7)—Stitching on the inside (photograph S. Didenko).

4. A small fragment of the side edge with three holes for sewing on the lining. On the outside of the greave a small piece of leather lining, measuring  $1.5 \times 0.7$  cm in size, remained. It was sewed to the greave with a very narrow, flat strap (Figure 6(2)), probably made of sinew. The leather pads that covered the interior openings were sewn to the greave with the same kind of strap (as seen in Figure 4(1),(4)).

5. Fragments from the sides of the greaves with edging in the form of two parallel lines chased into the surface 0.6 cm from the edge (Figure 6(3)–(6))





**Figure 6.** Vodoslavka Barrow 6 Burials 1–2. The left grave. (1)—Left side corner; (2)—Side edge with inner leather lining sewn on; (3)–(6)—Fragments of the lower part of the side edges of the graves (photograph M. Daragan).

### 3.1.2. Right Greave

1. Better preserved than its counterpart, the right greave allows for a more complete understanding of its overall shape and construction (Figures 7 and 8(2)). The upper edge, evenly trimmed, only covered the lower part of the knee joint and with its subtle outward bend was shaped to accommodate the elevation at the upper end of the tibia. Small round holes were punched along the edge from the inside (as is clear from the remnants of burrs that can be seen on the outside) for sewing a leather lining onto the inside of the greave. The holes range from 0.2 to 0.3 cm in diameter and are located 0.5–0.6 cm from the edge at intervals of 0.4–0.9 cm. On the sides of the greave, there was a border of two or three chased lines 0.6 cm from the edge.

The greave completely covered the front of the leg from the foot to the knee, the outer sides, and the back of the calves. On the inside, a vertical oval opening was cut, measuring 68–70 mm in height. A series of holes was pierced along the edge at a distance of 80–84 mm from each other. Along the upper edge of the foot opening small holes of 0.3 cm diameter were punched through the bronze sheet from the inside at intervals of 0.8–1.0 cm for sewing on the lining. Furthermore, pairs of holes were punched into the curved edges of the greaves lining the top of the calves (Figure 7).

The hole was covered by a two-layered leather overlay sewn to the greave with a thin strap, one layer on either side. The dimensions of the outer leather overlay are 88mm vertically, the distance between the holes 80–81 mm (Figures 7 and 8(1)).



**Figure 7.** Vodoslavka Barrow 6 Burials 1–2. The right greave (photograph T. Shelemeteva).





**Figure 8.** Vodoslavka Barrow 6 Burials 1–2. The right greave. Details: leather overlay covering the lateral opening (1); upper lateral section (2) (photograph T. Shelemeteva).

Separately preserved is a leather pad that covered the opening on the inner side of the right greave. The bent pad measures 8.6 cm in its current state, 9 cm when unrolled (i.e., the same as the pad on the left greave). The right side of the pad is broken off and lost. The remaining width ranges from 2.8 cm at the bottom to 5.5 cm at the top. On the inner side of the pad, a sinew strap with extremely short stitches (no longer than 0.2 cm and a distance of 0.4–1.0 cm between them) can be made out (Figure 9(1),(3)). On the side of the pad that was in contact with the inside of the greave, torn-off ends of the strap can be seen protruding. They are covered in bronze oxide, which apparently indicates the tightness of stitching—the strap was fixed so firmly to the rim of the hole that the leather fused with the corroded metal (Figure 9(2),(4)).

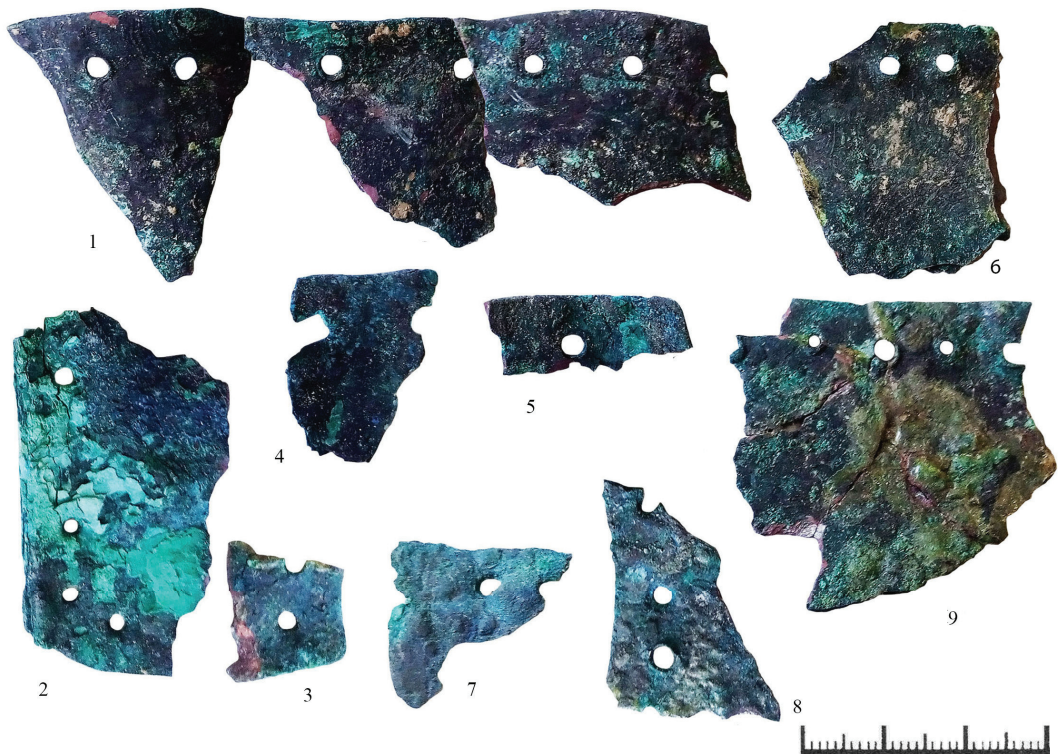
2. Three fragments from the bottom edge of the greave (Figure 10(1)). The restored section has a horizontal arch-shaped curve. Along the edge, small holes for sewing on the lining were pierced into the metal from the inside. They measure 0.3 cm in diameter and are placed at 0.8–1.0 cm intervals from each other. Smoothed burrs around the holes remain visible on the exterior. The length of the fragment is 9.5 cm.

3. Two fragments from the right and left bottom corners of the greaves (Figure 10(2),(3)). Along the edges, small holes for sewing on the lining were pierced from the inside. They are of the same size and located at regular intervals between them. The dimensions of the fragments are 5 × 2–2.9 cm and 1.9 × 1.6 cm.



**Figure 9.** Vodoslavka Barrow 6 Burials 1–2. The right greave. Leather overlay that covered the lateral opening. (1)—the side that adhered to the warrior's leg; (2)—the side that covered the hole and adjoined the greaves; (3)—detail of (1); (4)—detail of (2) (photograph M. Daragan).





**Figure 10.** Vodoslavka Barrow 6 Burials 1–2. The right greave. (1)—bottom edge; (2), (3)—bottom corners, right and left; (4)–(9)—lateral edges (photograph M. Daragan).

4. Assorted fragments from the side edges of the greaves, with holes for sewing on the lining pierced from the inside (Figure 10(4)–(9)). The sizes of the holes and the interval between them remain relatively regular throughout. The dimensions of the fragments vary from 1.5–3.0 × 1.1–3.4 cm.

### 3.2. The Reconstruction of the Greaves from Vodoslavka

The greaves from Vodoslavka covered the rider's leg fully—the inner and outer sides of the calves as well as the shin from the feet to the knee (Figure 11(1)–(3)). The knee pads were partly removed from the greaves in order to accommodate the bent knee of the seated rider. As a result of this modification, the horizontal top edge of the knee pads only covered the lower part of the knee joint. Along the inner sides of both greaves (the sides that were in direct contact with the horse's body), large oval-shaped openings were cut out in places where the muscles of the calves jutted out the most. The holes were covered from the inside and from the outside with sewn-on oval and slightly angular pads of thick leather, 6 × 8 cm in size. The pads were sewn to the greaves with an extremely thin, flat strap (probably of sinew) of 1–2 mm width through small holes pierced into the metal around the openings.

Along the sides of the greaves two grooves running parallel to the edge were chased into the metal's surface. The grooves are interrupted along the top edge of the side flaps and along the top and the bottom of the greaves, at the openings for the knee and the foot. To judge from the remaining fragments, the bottom edge of the greaves was slightly convex in outline.



**Figure 11.** Vodoslavka Barrow 6 Burials 1–2. (1)—“Pattern” of the Vodoslavka’s greaves (a—outside view, b—inside view); (2)—“Finished” greaves; (3)—rider’s leg view; (4)—Greaves from Kerch, an accidental finding (after: Galanina 1965, fig. 3: 5–7).

#### 4. Discussion

In the existing literature on the subject, it is generally agreed that protective armor made of iron or bronze scales appeared in the northern Pontic region at the end of the eighth century BC (as demonstrated by the finds from kurgan Zhabotin 524) (Ryabkova 2010), and that by the seventh, the use of armor had already become fairly widespread. Initially, Scythian armor consisted of a plated shirt and a helmet of Kuban type, characterized by a tight-fitting skull cap with cutouts above the brows (Alekseev 2019, p. 222). At the end of

the sixth century BC, trousers and helmets of a different design—made of metal scales of various shapes and sizes—became part of the armor. In the first half of the fifth century BC, shields and sashes made of scales were added. During the fifth and fourth centuries BC, armor of this type continued to be in use, as is shown by the finds from Novorozanovka, Gladkovshina, and other sites. In the middle of the fifth century BC, greaves of the type studied in this article finally became a part of the armor of the steppe Scythians and other tribal elites of the eastern European forest steppe. While greaves with metal scales of local manufacture had appeared at the beginning of the fifth century BC, in the middle of the fifth Greek-made greaves of forged bronze sheet came into use (Černenko 1968, pp. 112–122; 1988, p. 13; 2006, pp. 98–109). They were combined with scale armor, thigh armor and other items to form extended sets. Occasionally, bronze greaves and belts reinforced with metal scales were used alongside protective equipment made of leather or felt without metal components, which was consequently very hard for archeologists to discover. The combination of bronze greaves with other parts of armor made of leather is attested by the finds from Burial 2 of Soboleva Mogyla, Burial 1 in Barrow 9 near the village Peski, Barrow 1 of Kairy-V Tomb and Barrow 6 in Vodoslavka, Barrow 32 near the village Katerinovka, and Barrow 8 in the Pyatibratniy (Mozolevskiy and Polin 2005, pp. 353–54; Daragan and Polin 2020, pp. 119–20, fig. 5: 7–19).

#### 4.1. Finds of Greaves

Several lists of greaves found in the northern Pontic region have been assembled (Galanina 1965, p. 27; Černenko 1968, p. 112; 1988, p. 13). An early one by Galanina already included finds from 30 locations (Galanina 1965), whereas Černenko's most recent version of 2006 featured data on bronze greaves discovered in 58 locations and greaves with scales from 12 locations. But this more recent list requires some corrections (Černenko 2006, pp. 98–109, nos. 634–706, pls. 31–33). The find from Barrow 2, near the village Gladkovshina appears on the lists of both those containing bronze greaves and those containing scaled greaves (Černenko 2006, nos. 645, 697), but in fact, this burial only contained items of the latter type<sup>4</sup>. The find from Barrow 3, near the village Butova Dolina, is mistakenly included in the list of those containing bronze greaves (Černenko 2006, no. 646), yet only bronze overlays from plated greaves were found in that barrow (Murzin and Shelehan 2018, pp. 72–74). In the Barrow 3, near Novotroitskoe (Černenko 2006, no. 664), only the pieces of a scaled cuirass were found; greaves, especially bronze ones, are never mentioned in reports on the finds (Kubyshev et al. 1976, pp. 94–95). The same mistake was made in listing the finds from Barrow 3 of tomb Shevchenko-I (wrongly designated Barrow 1, tomb Shevchenko-II in Černenko's publication), where a fragment of a set of straight iron plates was found. Measuring 26 × 2 cm, the fragment could belong either to greaves or to a shield (Černenko 2006, no. 678; Zarayskaya and Privalov 1992, pp. 122, 124, fig. 2: 5). Overall, out of the 58 locations mentioned in Černenko's summary of finds, only 46 are reliably identified.<sup>5</sup> More recently, S. Polin expanded Černenko's list (Mozolevskiy and Polin 2005, p. 175; Bidzilya and Polin 2012, pp. 175). Among the find spots which Polin added to the list is Gaimanova Mogyla, where fragments of bronze greaves were excavated not only in northern Tomb 1, but also in central Tomb 2, dating, respectively, to 365–350 and 390–380 BC (Bidzilya and Polin 2012, pp. 271, 447, 510, Figs. 396, 649). Bronze greaves or the traces thereof were also found in Burial 1, Barrow 1 of the tomb Vilna Ukraina-I (Leskov et al. 1969); Burial 3, Barrow 2 (1972), from the tomb Sovhoz Suvorova near the village Bol'shaya Belozerka (dating to the quarter of the fourth century BC) (Boltrik and Shelehan 2020, pp. 91, 97); Burial 2, Barrow 29 of Sahnova Mogyla (second quarter to beginning of the third quarter of the fourth century BC), a group of barrows to the south of the same village; Burial 1, Barrow 2, near the village Bol'shaya Znamenka (second to third quarter of the fourth century BC) (Otroschenko et al. 1979, pp. 8, 67; Polin 2014, pp. 361–62, 508–9), the central tomb of Denisova Mogyla (end of the second quarter to the beginning of the third quarter of the fourth century BC) (Mozolevskiy 1980, p. 130; Polin 2014, pp. 179–80); Burial 1, Barrow 1, in the tomb of Kairy (end of the fifth to the

beginning of the fourth century BC) (Polin and Dargan 2020, pp. 119–20, fig. 5: 7–19); Burial 2, Barrow 4, near the village Illinka (second quarter to the beginning of the third quarter of the fourth century BC) (Pleshivenko 1991, p. 63, fig. 7,1; Polin 2014, p. 370); Burial 2 of Soboleva Mogyla (the middle to the beginning of the third quarter of the fourth century BC) (Mozolevskiy and Polin 2005, p. 175, cat. 23, 353–54, fig. 104: 10–11; Polin 2014, p. 480); the central Tomb of Vodyanaya Mogyla (beginning of the third quarter of the fourth century BC) (Mozolevskiy and Polin 2005, pp. 346, 57; Polin 2014, p. 465); Burial 3, Barrow 1, in tomb Kamenka-Dneprovskaya-I (beginning of the fourth century BC) (Otroshenko et al. 1986, pp. 44–45; Polin 2014, pp. 313–14); Barrow 11, Burial 3, near the village Akimovka (end of the fifth century BC) (Boltrik and Fialko 2010, p. 106); Barrow 2, Burial 3, near the village Nikolskoe (end of the fifth century BC) (Agulnikov and Sava 2004, p. 32, fig. 15: 9–10; Teleaga 2008, p. 442, pl. 173,11); Burial 1, Barrow 5 of tomb Dubossary-B (first half of the fourth century BC) (Ketaru and Chetverikov 2003–2004, p. 103, fig. 14,1); Barrow 7, near the village Pukar' (end of the fifth to the beginning of the fourth century BC) (Agulnikov et al. 2013, pp. 263, 271, fig. 10, 1–2); Barrows 3 and 11, near the village Staryy Merchik (Bandurovskiy and Buynov 2000, Figs. 8, 17; 20, 5) (second to third quarter of the fourth century BC); Barrow 33, near Pesochina (Babenko 2005, pp. 96–97) (first quarter of the fourth century BC); and Barrow 13 of the tomb Gorki-I (Gulyaev and Shevchenko 2017, fig. 17, 1). The most recent discovery of bronze greaves occurred in 2007 in Burial 4, Barrow 32, near the city Ordzhonikidze, a find dating to the second quarter of the fourth century BC (Polin et al. 2008, p. 144; Polin 2011, pp. 246–47). To date, there are therefore data on finds of bronze greaves or the traces thereof from 69 locations in the steppe and forest-steppe northern Pontic region and the northern Caucasus (Figure 12)<sup>6</sup>.

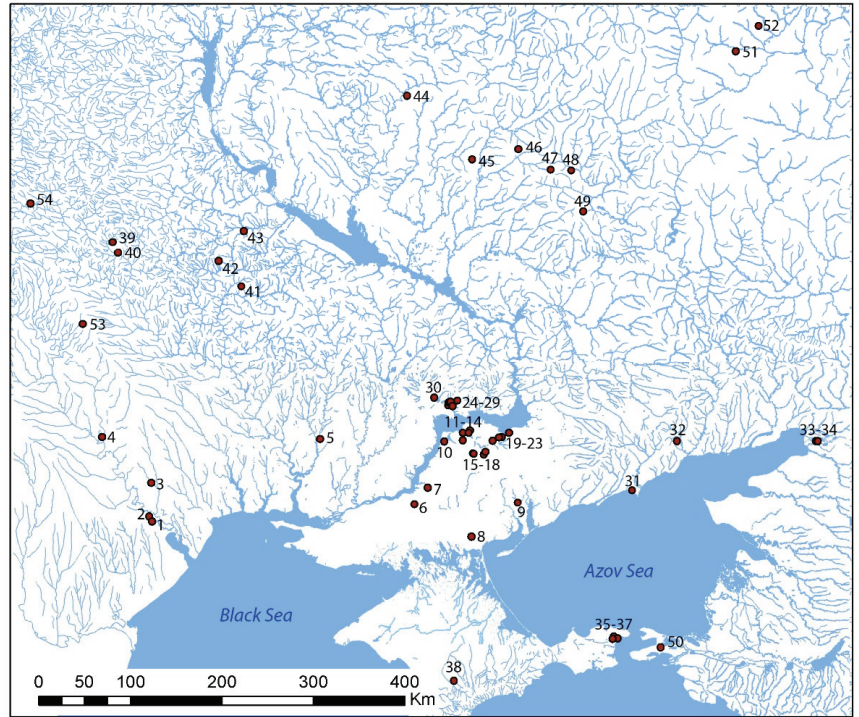
Unique greaves made of very thick leather without metallic reinforcements were found in Barrow 3, Burial 1, near the village Otradnoe (Grebennikov 2008, p. 87). What makes these greaves unique is the fact that they are preserved at all, given that objects made of organic materials hardly ever come down to us in the northern Pontic region. Despite their rarity in the archaeological record, it is very likely that such leather greaves were originally the most common type among Scythian warriors.

Galanina dated the use of bronze greaves in the northern Pontic region from the middle of the fifth century BC to the end of fourth or the beginning of the third century BC. After the first half of the third century BC, as Galanina noticed, the presence of greaves in the northern Pontic region peters out both in the archaeological record and in depictions of the figured arts of the Bosporean Kingdom (Galanina 1965, pp. 9–12). More recent work on the chronology of Scythian material culture might justify a slightly earlier date for the end of the series, no later than the end of the fourth century BC.

In previous scholarship, Černenko debated the end date of the series proposed by Galanina, arguing that greaves continued to be in use in the northern Pontic region in the second as well as third centuries BC. He cited the find of greaves in the so-called Barrow of 1949 near Scythian Neapolis (Simferopol) and the depiction of similar protective equipment on the Gazuria tombstone from Chersonesus (which in his opinion dates to the second century BC) to corroborate his assumptions (Černenko 1968, p. 120). But in Barrow of 1949, the greaves were found in the earliest burial of this mound, which is nowadays dated within the fourth century BC (Puzdrovskiy 2007, p. 22). The Gazuria tombstone from Chersonesus, on the other hand, was even then dated to the first century BC, and more recently the consensus has shifted to an even later chronology, placing the piece no earlier than AD 110–120 or 140–145 (OAK 1892, p. 26, fig. 23; Latyshev 1895, p. 12, no. 9; Latyšev 1916, p. 424, no. 471; Takhtai 1947, p. 61; Kadeev 1985, p. 69). With this in mind, we can safely conclude that the greaves depicted on the Gazuria tombstone show the realities of the Roman era, marked by the permanent presence of a Roman garrison in Chersonesus. In the second and third centuries AD, greaves were fairly widespread in the Roman army, in particular among the cavalry (Junkelman 1996, pp. 74–76, figs. 151–159). As V. Masyakin noticed, “the composition of the panoply on the Gazuria stele mostly matches the equipment of *lonchóforoi* (λογχοφόροι), a type of Roman cavalry mentioned



in Arrian's treatise 'Tactical Arts' of 136/137<sup>7</sup>. Separated by half a century, the graves depicted on the Roman-era Gazuria tombstone are at best very distant descendants of the Greek graves of the fourth century BC.



**Figure 12.** Location of graves in burials of Scythian times in the northern Black Sea region. (1)—Oloneshty; (2)—Pukar'; (3)—Nikolskoe; (4)—Dubossary; (5)—Peski; (6)—Vilna Ukraina-I; (7)—Kairy; (8)—Vodoslavka; (9)—Akimovka; (10)—Pervomaevka; (11)—(14)—Solokha, Bol'shaya Znamenka, Illinka, Kamenka-Dneprovskaya; (15)—(18)—Gyunovka, Sahnova Mogyla, Bol'shaya Belozerka; (19)—(23)—Sovhoz Suvorova, Gaimanova Mogyla, Kurgan 11 Gaimanova Mogyla, Dneprorudnyj; (24)—(29)—Kurgan 32 near Katerinovka, Tovsta Mogya, Strashnaya Mogyla, Denisova Mogyla, Soboleva Mogyla, Chertomlyk; (30)—Vodyanaya Mogyla; (31)—Berdyanskiy Kurgan; (32)—Shevchenko; (33)—(34)—Pyatibratniy Kurgan 8 and 7; (35)—(37)—Kerch, Kul'-Oba, kurgan Kukovatsky; (38)—Scythian Neapolis; (39)—(40)—Novosel'tzy, Ilyintsi; (41)—Romneykovka; (42)—Ryzhanovka; (43)—Steblev; (44)—Aksyutintsy; (45)—Skorobor; (46)—Polkovaya Nikitovka; (47)—Staryj Merchik; (48)—Pesochin; (49)—Bol'shaya Gomol'sha; (50)—Bol'shaya Bliznitsa; (51)—Gorki; (52)—Mastyugino; (53)—Krinichki; (54)—Jackovichi.

The dating of Greek graves from the barrows of the northern Pontic region before the end first half of the third century BC proposed by Galanina (or before the end of the fourth century BC, in the view of the present authors) matches the evidence that was available at the time and is further corroborated with every new find.

The internal chronology of the bronze graves found in the Scythian barrows of the northern Pontic region remains unchanged since Galanina's publication. Only seven of them date within the second half of the fifth century BC (including the finds from Romeykovka; Steblev Barrow 3, Burial 2; Shevchenko-II Barrow 1; Akimovka Barrow 11, Burial 3; Nicolskoye Barrow 2, Burial 3; Pukar' Barrow 7; Kairy-V Barrow 1, Burial 1). The rest of the finds are dated within the fourth century BC.

#### 4.2. The Specific Features of the Scythian Greaves

Classical Greek greaves of fifth and fourth centuries BC feature relief modeling that corresponds to the main anatomical details of the leg, including the knee joint, gastrocnemius, and long parallel muscles of the shin (Galanina 1965, p. 6). The height of such greaves with knee pads could reach 47 cm at the extended front side. In the fourth century BC, some attempts were made by craftspeople beyond the borders of the Greek world to adapt the greaves to local technological conditions and ways of fighting. Among the Scythians and the inhabitants of the Kingdom on the Cimmerian Bosphorus, these attempts were dictated by the fact that the greaves were commonly used by cavalry. Galanina noticed that greaves from Kurdzhips and Kerch had their knee pads removed in an intentional modification (Galanina 1965, p. 12, fig. 3: 1,2,5–7). A pair of greaves from Kerch featured large openings of 11–12 × 5–6 cm with small holes around them that had been purposefully cut into the inner sides of the greaves. These sizable openings escaped the attention of previous researchers (Figure 11(4)). Due to the lack of analogies, it was most likely hard to comprehend and explain these cuttings. Moreover, the accidental discovery of the greaves from Kerch probably suggested that later changes might have been made by the person who had found them. The find from Vodoslavka shows that the presence of such openings was not arbitrary and offers new evidence for explaining their appearance. Just as in the pair from Kerch, the adaptation of these greaves was determined by the needs of a horse rider. The greaves from Soboleva Mogyla are even more distinctive in this regard. The section covering the knee was shortened to prevent it from protruding whilst the rider was mounted and potentially cause injury, and a deep cut of more than a half of the greave's height was made on the inner side (Figure 13). Thanks to this cut-out, the rider's upper calf fit snugly against the side of the horse (Mozolevskiy and Polin 2005, p. 353, fig. 104: 10–11).

The knee pads were also removed on the greaves from Burial 1, Barrow 9, near the village Peski (Grebennikov 2008, p. 87, fig. 36: 2) and from Burial 2, Barrow 4, near the village Illinka. The greaves from Illinka resemble the ones from Vodoslavka in that they had lines engraved along the perimeter of their edges but differed in so far as they had only four holes on the top edge and a couple holes of 3 mm in diameter at the bottom corner and on the outer edge of the side (Figures 14(5)(6) and 15(8)). At the top of the left greave from Illinka a fragment of a 1.2 cm wide strap remained. It allows us to conclude that the greave was attached to the leg with straps that hugged the leg below the knee and above the ankle (Pleshivenko 1991, p. 68, fig. 7: 1). This method of fitting the armor to the leg would explain the five bone beads found in Barrow 13 of the cemetery Gorki-I. The beads were probably attached to the ends of the thin leather straps that were used to tie the greaves to the leg (Gulyaev and Shevchenko 2017, p. 32, fig. 17, 2–6). The truncated conical bone beads from the burial Vodoslavka 8 might have served the same purpose, but the proposition remains hypothetical owing to the lack of a precise find spot within the grave assemblage.

The earliest greaves currently known with removed knee pads in the northern Pontic region were found in Burial 2, Barrow 3, near the village Steblev and measure 35 cm in height (Figure 14(1),(2)) (Skoryi 1997, pp. 35, 82). Like the examples from Vodoslavka, the greaves from Steblev had holes of 1.5 mm in diameter pierced along the top edge and the top parts of the sides for sewing on the lining as well as lines chased along the side edges to form a border (Figure 14(3)).

The data currently available allow us to suggest that if the removal of knee pads was documented in the fifth century BC as the first modification, then the other alterations to the design of the greaves that we came across date from the second to third quarter of the fourth. In Figure 15, some ways in which the Scythians upgraded Greek greaves are shown in comparison with the standard design of classical Greek or Macedonian counterparts of the second and third quarters of the fourth century BC, exemplified in the finds from Grave A of Derveni and the Graves 2 and 3 from Vergina. The first modification, illustrated in Figure 15(2),(8), is the removal of half of the knee pad; the second, as seen in Figure 15(3),(4), is the cutting of the lateral openings; the third is the removal of most of the side flap (Figure 15(6)). At the same time, the Scythians continued to use full greaves of Greek or

Macedonian type (or Vergina—Derveni type) as attested by the finds from Katerinovka, Barrow 32; Pervomaevka Barrow 4, Burial 8 (Figure 16); Gorki-I Barrow 13; and others (Figure 15(1),(5),(7)).



**Figure 13.** Greaves from Soboleva Mogyla Burial 2. (1)–(5)—The right greave; (6)–(7)—The left greave ((1)–(3), (6), (7)—photograph M. Daragan); (5)—Drawing (after: Mozolevskiy and Polin 2005, fig. 104: 10–11).

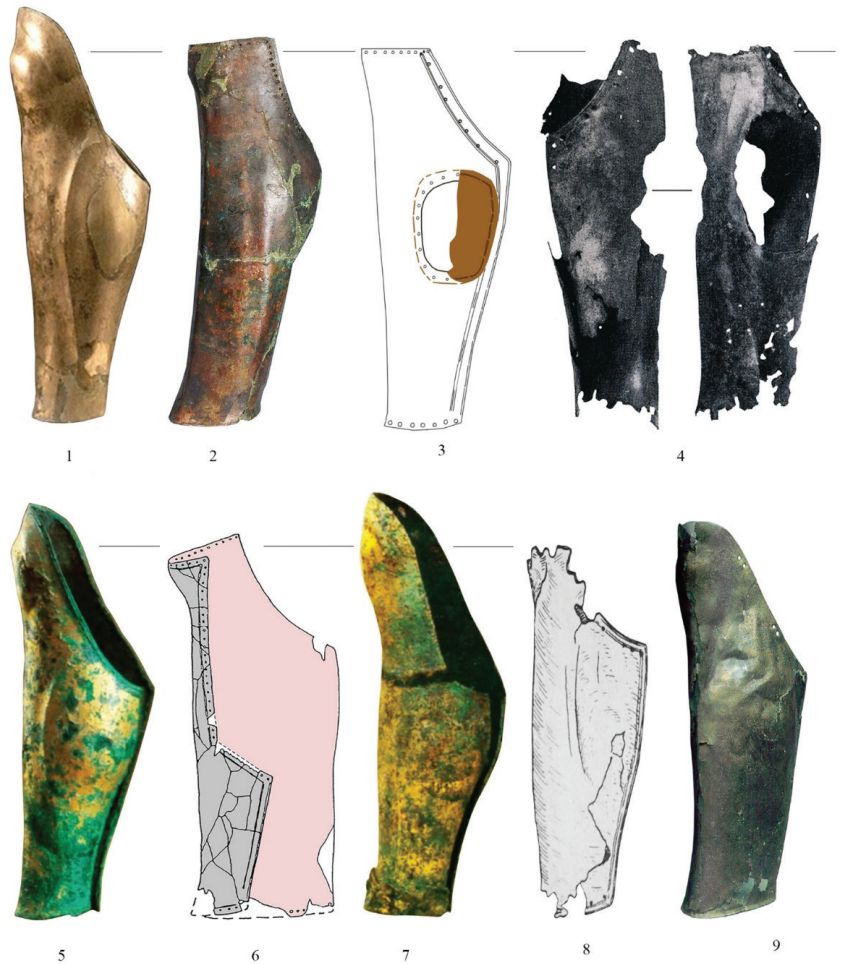




**Figure 14.** Greaves from Scythian kurgans with cut knee pads. (1)–(4)—Steblev Barrow 3, Burial 2 (photograph T. Kurgina-Kovalenko); (5)–(6)—Illinka Barrow 4, Burial 2 (photograph A. Antonov).

Let us turn our attention to the fact that most greaves—Scythian and Greek as well as Macedonian—feature an edging consisting of one, two or three chased lines running parallel along most of the perimeter of the bronze sheet. Such a border was present on the greaves from, for instance, Barrow 6 in Vodoslavka; Burial 2 of Soboleva Mogyla; Burial 2, Barrow 4, near the village Illinka; Burial 1, Barrow 9 near the village Peski, Pyatibratniy Barrow 8; and Barrow 13 in cemetery Gorki-1.





**Figure 15.** Variants of modifications of bronze greaves in the northern Black Sea area. (1),(5),(7)—Normal greaves; (2),(8)—Cutting of the kneecap; (3),(4)—Cutting of the kneecap and cutting of large holes in the sides; (6)—Cutting the kneecap and removing more than half of the side ((1)—Derveni tomb A (after: Themelis and Touratsoglou 1997, pl. 7:A15); (2)—Steblev Barrow 3, Burial 2 (photograph T. Kurgina-Kovalenko); (3)—Vodoslavka Barrow 6; (4)—Kerch, an accidental finding (after: Galanina 1965, fig. 3: 5,6); (5)—Vergina Tomb 2 (after Andronikos 1984, p. 187); (6)—Soboleva Mogyla Burial 2 (after: Mozolevskiy and Polin 2005, fig. 104: 10); (7)—Vergina, Tomb 3 (after: Andronikos 1984, p. 216); (8)—Illinka Barrow 4, Burial 2 (after: Pleshivenko 1991); (9)—Illintzi K.493 (after: Piotrovski et al. 1986, no. 216)).

#### 4.3. Who Was Manufacturing the Greaves?

Whereas plated armor in all its varieties was apparently produced by the Scythians themselves (as is indicated by the lack of imported equipment of this type), the situation was different in the manufacture of greaves. The greaves of organic materials with bronze or iron overlays were obviously produced in the northern Pontic region by the Scythians themselves and are represented in the archaeological record half a century earlier than the examples made entirely of bronze. This transition from locally produced to imported items provides clear evidence for the relevance of this kind of protective armor to Scythian

lifeways and demonstrates that its appearance as a component of Scythian protective armor was not accidental.



**Figure 16.** Pervomaevka Barrow 4, Burial 8. After G. Evdokimov (photograph and drawing from the personal archive of S. V. Polin).

As for the place where the bronze greaves were produced, different researchers have different opinions. L. K. Galanina and E. V. Černenko considered all full-metal greaves to be Greek-made imports (Galanina 1965, p. 15; Černenko 1968, pp. 121–22; 1988, p. 17). A. I. Melyukova hypothesized that some of them could have been made in local workshops located in the cities of the Bosporan Kingdom (Melyukova 1964, p. 76). More recently, S. V. Polin suggested that the distinctive cavalry greaves from Soboleva Mogyla—shortened at the knees and with cuts on the sides—could have come from the northern Pontic region (Mozolevskiy and Polin 2005, p. 353). We can only guess whether the modification of the Greek bronze greaves was carried out by Greek bronze workers or whether the Scythian craftspeople or users were redesigning the items or even making them from scratch according to local functional requirements. The Scythians certainly had the technical capabilities for undertaking such alterations.

We should also emphasize that greaves were not mass-produced. Their making required accurate measurements and consideration of their intended owner's anatomical characteristics. Since only specialized craftspeople could produce such custom-made objects, it seems likely that the greaves were made to order (Rustoiu 2012, p. 166). The differences in the design of the greaves and the different sizes of the surviving greaves with cut off knee pads further substantiate this supposition. The recorded dimensions of the objects range in height from 28 cm for the greaves found on the legs of a teenager from Burial 1, Barrow 9, near the village Peski to 34 cm for the examples from Barrow 6 near Vodoslavka; 35 cm in Burial 2, Barrow 4 near Illinka; 37 cm in Burial 2 of Soboleva Mogyla; and 35 cm in Burial 2, Barrow 3 near Steblev. Last but not least, the difference in

the placement of the holes and the chased edging on all of the greaves also indicates that these items were custom-made<sup>8</sup>.

#### 4.4. Who Wore Greaves?

Among the steppe Scythians of the second to third quarter of the fourth century BC, greaves were discovered only in tombs of the elite, such as those of Burial 2 in Soboleva Mogyla, Burial 1 in Peski Barrow 9, Burial 2 in Illinka Barrow 4, Pyatibratniy Barrow 8, and Burial 3 in Kamenka-Dneprovskaya-I Barrow 1. The burials included inhumations of single males as well as those of couples, as in Barrow 6 near Vodoslavka and Burial 32 near the town Ordzhonikidze. In the latter tomb, fully preserved greaves remained on the legs of a buried warrior, despite previous looting of the site.

In burials that were destroyed by robbers, the presence of greaves was also documented through the marked accretion of bronze oxide deposits on the calves. Such traces have been recorded, for instance, in the Scary Grave (Strashnaya Grave), Berdyanskiy Barrow, Vodyana Mogyla, Denisova Mogyla, Burial 1 in Bol'shaya Znamenka Barrow 2, Burial 2 in Bol'shaya Belozerka Barrow 29 (Sahnova grave). In Barrow 2, Burial 3 of the grave Sovhoz Suvorova near Bol'shaya Belozerka, the oxide accretions were accompanied by small bronze fragments. All surviving greaves were found in situ on the body of the deceased, except in Pyatibratniy Barrow 8, where the greaves rested against the northern wall of the tomb.

In general, bronze greaves were relatively rare among the Scythians of the northern Pontic region and were available only to members of the elite. Judging by the find in Barrow 3, Burial 1, near the village Otradnoe of greaves of very thick leather without any metal overlay (Grebennikov 2008, p. 87), it appears that common Scythian soldiers were accustomed to using comparable items made of organic materials. Whereas in Greece such greaves were normally worn by heavily equipped infantry men, in Scythia they were almost always used by the cavalry.

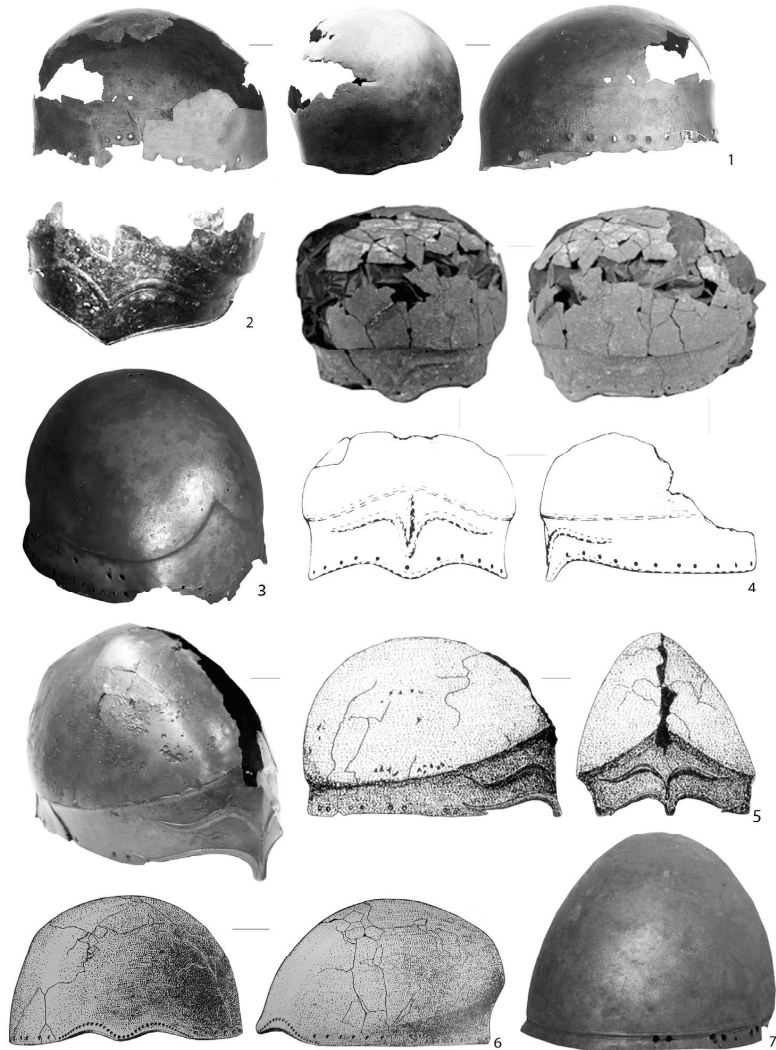
## 5. Conclusions

The findings presented in this article show that the co-existence of the diverse populations of the northern Black Sea region with the Greeks of the coastal cities initiated dynamic mutual exchanges in material culture and technology. During this process, the Scythians borrowed some types of Greek protective equipment and modified them to meet the demands of their mobile lifeways and military strategies. Thus, the horse-borne warriors of Scythia and the Bosphoran Kingdom adapted Greek greaves for riding by cutting off the knee pads, which were shaped in relief to fit the anatomy of the wearer's legs in upright stance, and by making incisions on the inner side of the object, where the rider's gastrocnemius muscle is in contact with the horse's flank and no protection from armor is needed.

Greaves are by no means a unique illustration of how Scythian riders transformed items of Greek protective equipment to fit their needs. Another key item of the hoplite panoply, the bronze helmet designed for fighting on foot was in some instances converted for horseback combat conducted remotely with spears, darts, and bow and arrow. Given that such cavalry engagements rarely involved direct contact with close-range offensive weapons, several standard elements of Greek helmets were superfluous, including the large cheek pieces, ear plates and neck guard. Unlike the hoplite, the rider in combat relied on a greater range of peripheral vision, which was achieved by trimming standard hoplite helmets (Figure 17).<sup>9</sup> The modified helmets were not only lighter but also enabled the rider to turn his head more readily.

All too often, items of Greek manufacture discovered at inland sites in the northern Black Sea region are published in archaeological literature as mass data without adequate attention to the local context and characteristics of the individual objects. As dots on a distribution map, such finds are too easily mobilized to substantiate simplistic accounts of cultural influence or borrowing that cast local populations in a passive role. The more we

learn about these objects, however, the less convincing is the model of one-way cultural diffusion or Hellenization to which many traditional treatments of the northern Black Sea area subscribe. The bronze greaves from Scythian sites discussed in this article present one of many potential case studies to demonstrate how detailed object analysis can enrich our understanding of the cultures and societies of the ancient world.



**Figure 17.** Trimmed helmets. (1)—Nadezhda (after: Polin and Koltukhov 2014); (2)—Talaevski kurgan (after: Koltukhov and Senatorov 2015); (3)—Solokha (after: Mantsevich 1987, cat. 35); (4)—Artsyz (after: Černenko 2006, cat. 600; Alekseeva et al. 2021); (5)—Konski Razdory (after: Pleshivenko 2013); (6)—Nikolskoe (after: Zasetzkaya 1977, fig. 28); (7)—Kardashinka (after: Černenko 2006, cat. 610; Kostenko and Abikulova 2016).

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### Abbreviations

НА ИА НАНУ	научный архив Института археологии Национальной академии наук Украины
SEAT	Studien zur Eisenzeitlichen Archäologie Thrakiens
ВДИ	Вестник Древней Истории
АСГЭ	Археологический сборник Государственного Эрмитажа
КСИИМК	Краткие сообщения института истории материальной культуры
АДПУ	Археологія та давня історія України
АМА	Античный мир и археология
САИ	Свод археологических источников
МАР	Материалы по археологии России
КСИА	Краткие сообщения Института археологии
ДАС	Донецкий археологический сборник

### Notes

- Large collections of archaeologically documented examples can be found in Kunze (1991) and Baitinger (2011).
- The catalogue mistakenly indicates Barrow 4 near Vodoslavka village instead of Barrow 6; see Černenko (2006, no. 665).
- The greaves are held in the National reserve “Khortytsia” in Zaporizhzhya.
- In the first case, there is a reference to an excavation report; in the second, a reference to a publication. The information appears to have been summarized as it appeared without verification.
- While the inclusion of the finds from the Taman peninsula within northern Pontic Scythia is generally acceptable, the finds from the barrows of the necropoleis of Anapa, Teberda and Vanya (see Černenko 2006, nos. 688, 693, 694) need not be connected with the Scythians or even Scythia.
- The work on greaves and trousers made from metal plates is part of a separate study for which data is being collected.
- Masyakin (2021, pp. 190–91). Arrian (*Tact.*, 4. 2–4) mentions *lonchofóroi* as a separate species of spear-bearing cavalry. Diodorus (XIX:29. 2; 39. 2) and Plutarch (*Eumen.*, 18. 4) also mention this type of cavalry, which was recruited into the army of Antigonos I Monophthalmus in Media.
- Metallographic analysis of the greaves from Vodoslavka, Soboleva Mogyla and Katerinovka showed that only oxide was preserved, no metal.
- Such helmets with trimming came to light in burial mounds near the village Nadezhda, in the secondary burial of the Solokha barrow, in the Talaevski kurgan, Burial 1 from Artsyz and Burial 1 from Konski Razdory. For discussion, see Pleshivenko (2013); Polin and Koltukhov (2014, pp. 317–22). To the east of Scythia, in the Lower Volga region, the same type of converted helmet was found in a Sauromatian context, Barrow 1 near the village Nikolskoe (Zasetskaya 1977, pp. 215, 219, fig. 28).

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Article

# Scythian Jewelry Meshes and the Problem of Their Interpretation

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**Abstract:** This article explores the phenomenon of a specific type of personal adornment worn by members of the Scythian elite in the North Black Sea region in the second half of the 5th century and throughout the 4th century BCE. The discussion juxtaposes the records from 19th-century and early 20th-century excavations with contextual analyses of very recent discoveries from Ukraine, which shed significant new light on the appearance, production, and meaning of Scythian jewelry. The reconstruction of the shape of the jewelry type in question is greatly complicated by two factors: the lack of relevant depictions in the contemporary corpus of Scythian and Greco-Scythian figure scenes and misleading scholarly references to supposed analogies in a Roman-era mosaic, which became the chief reason for the misinterpretations of the ornament's appearance. Composed of numerous gold or gilded silver tubes; beads; pendants; and, sometimes, "buttons," this jewelry type is reconstructed in two gender-specific variants in this article: one mesh-like and the other with a cross-chest form. For over a hundred years, scholars have considered only the mesh variant to be the correct reconstruction. As a result, many costume reconstructions of this jewelry form in specialist research and museum displays alike are still proposed without a sufficient evidentiary base.

**Keywords:** Scythian culture; jewelry; meshes; reconstruction

## 1. Introduction

This article concerns an aspect of Scythian material culture, specifically, its costume decor. Scythians formed a broad cultural unity with the sedentary native population of the Forest-Steppe and co-existed with the Greek colonists of the northern Black Sea coast during the 7th–4th centuries BCE (Figure 1). It should be noted that the term *Scythians* became so universal in many synoptic scholarly works that it started to gain use as a name that was given to many nomadic societies to the east of the Black Sea, as far as the Altai Mountains (Cunliffe 2019, pp. 169–172, 312; Beckwith 2022, pp. 35–37). This led to a situation in which it became problematic to refer to Scythian material culture without distinguishing between Scythian archaeological remains from the northern Black Sea region and those from the Scythians' eastern neighbors (i.e., Massagetae, Saka, and the peoples of the Pazyryk and Aldy-Bel archaeological cultures). Several scholars have highlighted the issues that have resulted from the broad use of the Scythian name (Raevskiy 1993; Yablonsky 2000, pp. 4–5; Raevskiy et al. 2013, p. 6; Meyer 2013, p. 98; Yablonsky 2015, pp. 109, 112; Shelekhan 2020, p. 28; Shelekhan and Lifantii 2022, p. 40, footnote 1; Lifantii 2023, p. 11, footnote 1). However, the problem remains unsettled to this day.

Therefore, I should emphasize that, with the term Scythians, this article refers to nomadic and farmer peoples who lived to the north of the Black Sea, mainly in the area between the Danube and Don rivers, from the early 7th till the end of the 4th or the beginning of the 3rd century BCE. Many kurgans with specific types of tomb constructions and funerary rites, as well as settlements with characteristic dwellings and occupation layers, represent the region's Scythian archaeological culture. The other neighboring peoples mentioned above, however closely related their culture might be to that of the

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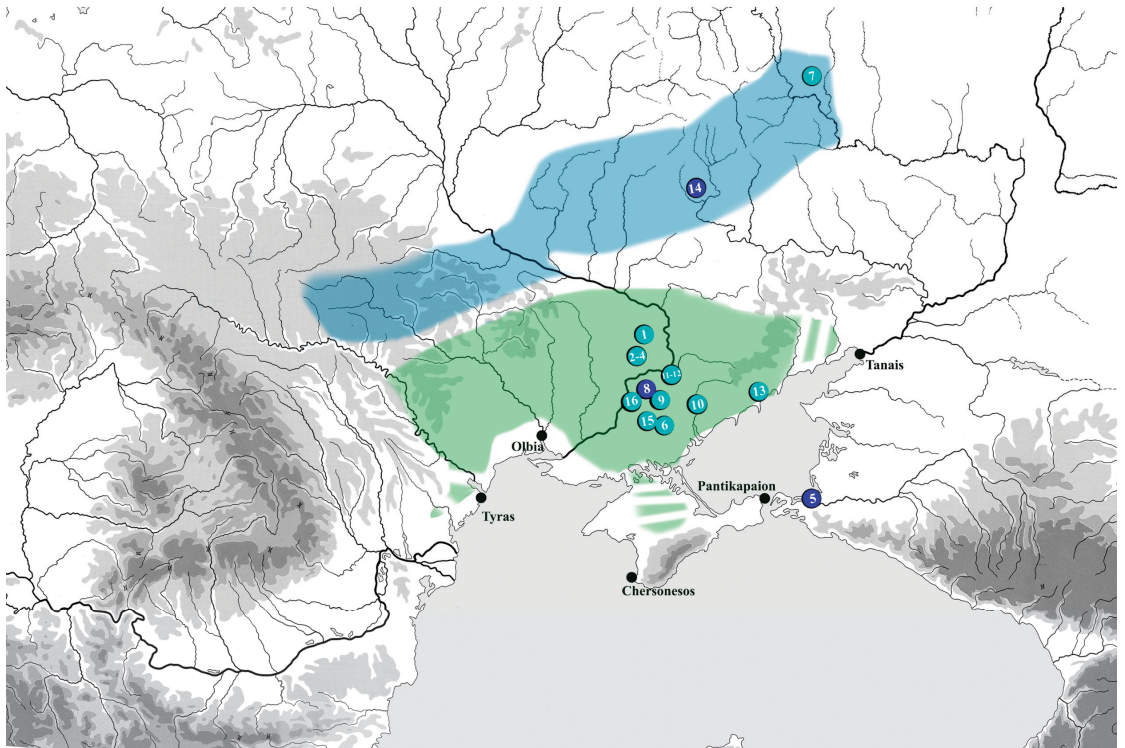
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Scythians, cannot be identified as such in the original meaning of the term given by Herodotus (4. 6) in the 5th century BCE.



**Figure 1.** Map of the finds of mesh-like and cross-chest jewelry. Middle 5th–4th centuries BCE. (Numbers correspond to the monument numbers in Table 1. Dark blue dots represent the 5th-century BCE kurgans, and turquoise dots represent the 4th-century BCE kurgans. The blue area shows the spread of Forest-Steppe monuments, and the green area shows the spread of Steppe monuments.)

In the present article, I shall revisit one peculiar type of Scythian personal adornment that gained the name “mesh” or “net jewelry”<sup>1</sup> and review the numerous misconceptions applied to this jewelry type during more than a century of research. This problem was briefly highlighted in earlier research (Lifantii 2020, p. 122), alongside other terminological and typological issues concerning garment appliques.

## 2. Materials

The jewelry finds that I analyze in this paper are known only from the burials of the elite Scythian nomadic strata (Figure 1; Table 1). They are absent from the materials of neighboring archaeological cultures (including most eastern Eurasian ones) in the region.

One distinctive feature of this type of jewelry is the impressive number of elements contained in each item: tubes (more than 60), beads or “buttons”<sup>2</sup> (around 20 or more), and pendants (more than 10). The elements are primarily found in one place in the grave. Sometimes, the number of elements in one set can be close to a thousand (see Table 1: No. 8 and 10).

Based on these construction elements, we can distinguish 16 instances among all probable finds of mesh decoration in which a particular type of shoulder ornament can be isolated (Figure 1; Table 1). The main identifying feature of this item is the integration of two types of appliques, namely, gold or silver tubes (10–25 mm in length) and pendants

(29–35 mm in length), into one assemblage (Figure 2). In certain cases, these components can also include simple, non-ornamented beads (4–10 mm in diameter) and “buttons” (5–6 mm in diameter).



**Figure 2.** Types of applique used in mesh-like and cross-chest (?) decorations from several kurgans: 1—Melitopol kurgan; 2—Luhova Mohyla; 3—Haimanova Mohyla; 4—Mala Lepetykha, kurgan No. 9; and 5—Berdianskyi kurgan (photographs by the Treasury of the NMHU and by the author, also after *Drevnosti Gerodotovoï Skifii* 1872 and Bidzilia and Polin 2012). Arbitrary scale.

Items of this type have been found, for instance, in situ around the skulls and necks and on the chests of skeletons in burials in Luhova Mohyla<sup>3</sup> (Table 1: No. 1), kurgan No. 2 of the Seven Brothers group (Table 1: No. 5), a side grave of Solokha kurgan (Table 1: No.8), and grave No. 1 of Melitopol kurgan (Table 1: No. 10). In other tombs, these items have been discovered in a small separate pile within the graves, as was the case in Mastyugino First barrow (Table 1: No. 7) and the central grave of Berdianskyi kurgan (Table 1: No. 13). Such assemblages have also been found in a separate pile in a special chamber of the tombs, as in the Chortomlyk (Table 1: No. 2–4), or in a small niche in the wall, as in grave No. 4 of kurgan No. 9 near Mala Lepetykha village (Table 1: No. 16).

Table 1. Probable finds of meshes and cross-chest decorations.

No	Monument	Shape of Element: Number of Items in the Grave	Sex, Age <sup>4</sup>	Place in the Grave	Excavation Date and Researcher of the Monument
1.	<b>Luhova Mohyla, side northeastern grave</b> (Petrykivka village, Dnipropetrovsk Oblast, Ukraine)	beads: 17 tubes: 60 short tubes: 3 pendants: 22	M (?), 30 y. o.	Near the skull, on the remains of fabrics, “which they probably decorated” ( <i>Drevnosti Gerodotovoii Skifii</i> 1866, p. 23)	1856, excavated by Oleksandr Liutsenko
2.	<b>Chortomlyk, central burial structure, chamber No. 1 (southeastern), mesh No. 3</b> (Chkalove village, Dnipropetrovsk Oblast, Ukraine)	buttons: 30 tubes: 99 <sup>5</sup> pendants: 58	F?	Near the southeastern wall of the grave	1863, excavated by Ivan Zabelin
3.	<b>Chortomlyk, central burial structure, chamber No. 2 (northeastern), mesh No. 1</b> (Chkalove village, Dnipropetrovsk Oblast, Ukraine)	buttons: 6 beads: 113 tubes: 442 pendants: 61	F?	In a pile near the southeastern wall of the grave	1863, excavated by Ivan Zabelin
4.	<b>Chortomlyk, central burial structure, chamber No. 2 (northeastern), mesh No. 2</b> (Chkalove village, Dnipropetrovsk Oblast, Ukraine)	buttons: 43 <sup>6</sup> tubes: 186 pendants: 97 <sup>7</sup>	F?	In a pile near the southeastern wall of the grave	1863, excavated by Ivan Zabelin
5.	<b>Seven Brothers group, kurgan No. 2</b> (stanitsa Varenikovskaya, Krasnodar Krai, Russia)	beads: 18 tubes: 126 pendants: 19	M?	Covered the remains of a skeleton on the burial platform	1875, excavated by Woldemar Baron von Tiesenhausen
6.	<b>Diiv kurgan, inlet grave</b> (Nyzhni Sirohozy urban-type settlement, Kherson Oblast, Ukraine)	buttons: 76 tubes: 210	F?	Unknown	1891, excavated by Nikolay Veselovskiy
7.	<b>Mastyugino First barrow</b> (Mastyugino village, Voronezh Oblast, Russia)	buttons without loops: 357 tubes: 308 pendants: 24	M?	Near the burial platform in the remains of fabric, along with many other types of appliques	1905, excavated by Aleksandr Spitsyyn
8.	<b>Solokha, side grave</b> (between Velyka Znamianka and Verkhni Rohachyk villages, Zaporizhzhia Oblast, Ukraine)	tubes: 979 pendants: 66	M?	Located in a row placed from skeleton B’s neck to the niche’s N wall. It may have been sewn on a fabric ribbon	1913, excavated by Nikolay Veselovskiy

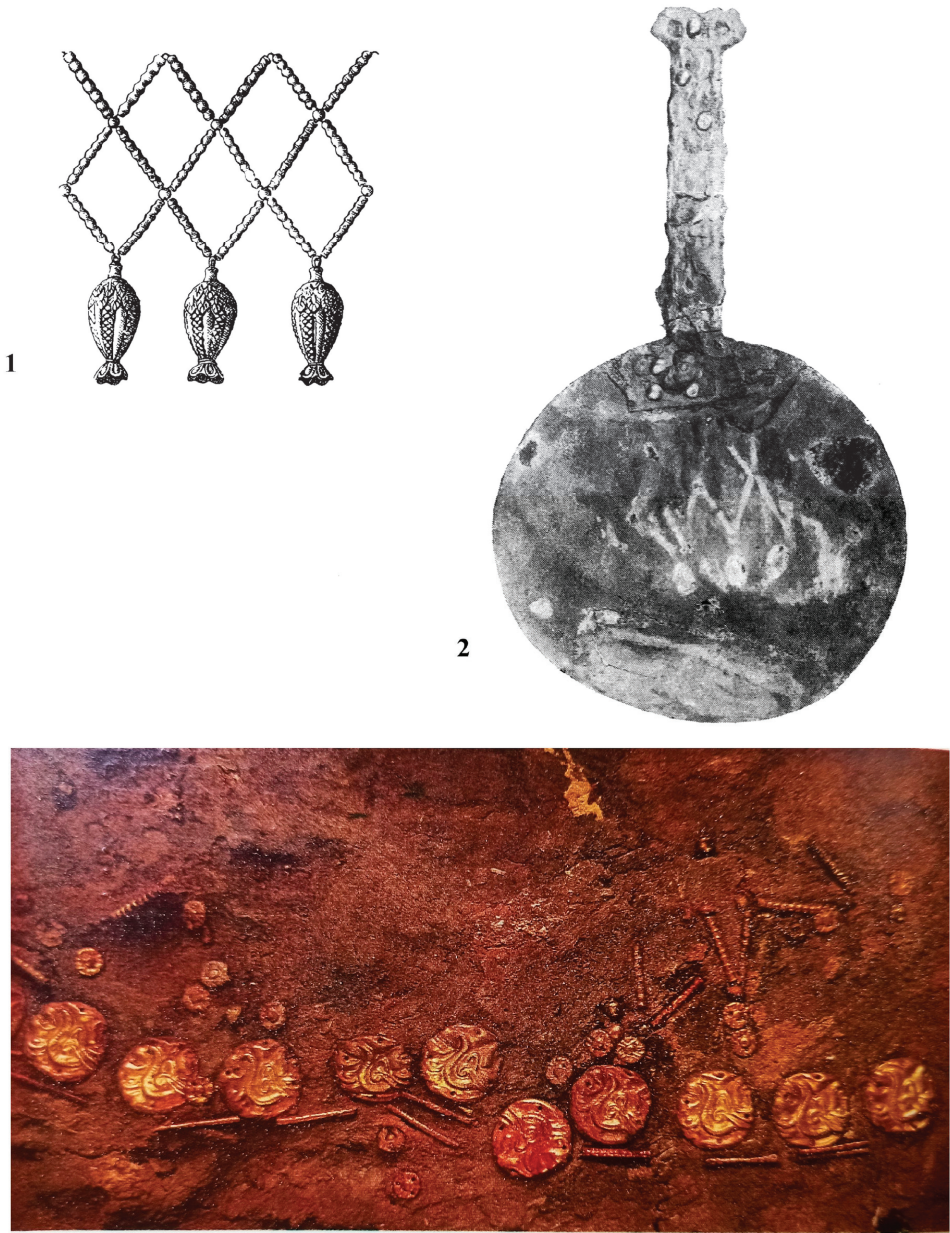
Table 1. Cont.

No	Monument	Shape of Element: Number of Items in the Grave	Sex, Age <sup>8</sup>	Place in the Grave	Excavation Date and Researcher of the Monument
9.	<b>Verkhni Rohachyk kurgan, "centrale grave"</b> (Verkhni Rohachyk urban-type settlement, Kherson Oblast, Ukraine)	beads: 171 tubes: 372 pendants: 7	F?	Unknown	1914, excavated by Nikolay Veselovskiy
10.	<b>Melitopol kurgan, grave No. 1</b> (Melitopol, Zaporizhzhia Oblast, Ukraine)	beads: 226 tubes: 719 pendants: 47	F, older age	At the place where the head of the deceased had to be. Certain parts remain untouched and formed in triangles of tubes with rosettes	1954, excavated by the expedition led by Oleksii Terenzhkin
11.	<b>Haimanova Mohyla south grave No. 4, burial 3</b> (Balky village, Zaporizhzhia Oblast, Ukraine)	buttons: 51 beads: 14 tubes: 123 pendants: 10	F?	In the soil filling of the entrance pit, dromos, and the chamber	1969–1970, excavated by an expedition led by Vasyl Bidzilia
12.	<b>Haimanova Mohyla north grave No. 1 burial 3</b> (Balky village, Zaporizhzhia Oblast, Ukraine)	beads: 21 tubes: 69 pendants: 16	F?	Mixed in the soil layer above burial No. 3 and in the dromos of entrance pit No. 1	1969–1970, excavated by an expedition led by Vasyl Bidzilia
13.	<b>Berdianskyi kurgan, central grave</b> (Novovasylivka urban-type settlement, Zaporizhzhia Oblast, Ukraine)	beads: 163 tubes: 350 pendants: 36	M	On the grave floor in a square 1.5 × 1 m in size (along with remains of clothes and headdress decorations)	1977–1978, excavated by the expedition led by Mykola Cherednychenko
14.	<b>Pisochyn barrow No. 2</b> (Pisochyn urban-type settlement, Kharkiv Oblast, Ukraine)	tubes: 70 pendants: 14 <sup>9</sup>	F?	Mixed in the filling of a looted grave	1978, excavated by the expedition led by Viacheslav Borodulin
15.	<b>Ohuz kurgan, north grave</b> (Nyzhni Sirohozy urban-type settlement, Kherson Oblast, Ukraine)	beads: 88 tubes: 206 pendants: 1	F?	In a mixed filling layer of a looted chamber	1979–1981, excavated by the expedition led by Yurii Boltryk
16.	<b>Mala Lepetykha, kurgan No. 9, grave No. 4</b> (Mala Lepetykha village, Kherson Oblast, Ukraine)	beads: 249 tubes: 444 pendants: 29	F, 30–35 y. o.	In niche No. 2	1992, excavated by the expedition led by Hennadii Yevdokymov

### 3. History of the Finds

This special type of Scythian ornament first came to the attention of scholarship during the excavations of Chortomyk kurgan in 1862–1863, thanks to a peculiar oxidation pattern on the bronze disk and iron handle of the mirror in the Scythian woman's grave (Figure 3: 2). In this instance, part of the mesh had been deposited on the mirror, leaving a rhomboid-shaped imprint on the object's corroded surface. The imprint had been formed by the small gold tubes, "buttons," and glass beads. In the excavation report, Zabelin referred to this jewelry as "net attire" (*Drevnosti Gerodotovoï Skifii* 1872, p. 97). Together with another, much later find recorded in situ in the Melitopol kurgan (Figure 3: 3), the Chortomyk imprint remains the strongest direct evidence of a jewelry type consisting of interconnected tubes arranged in a rhomboid or diamond-shaped arrangement.



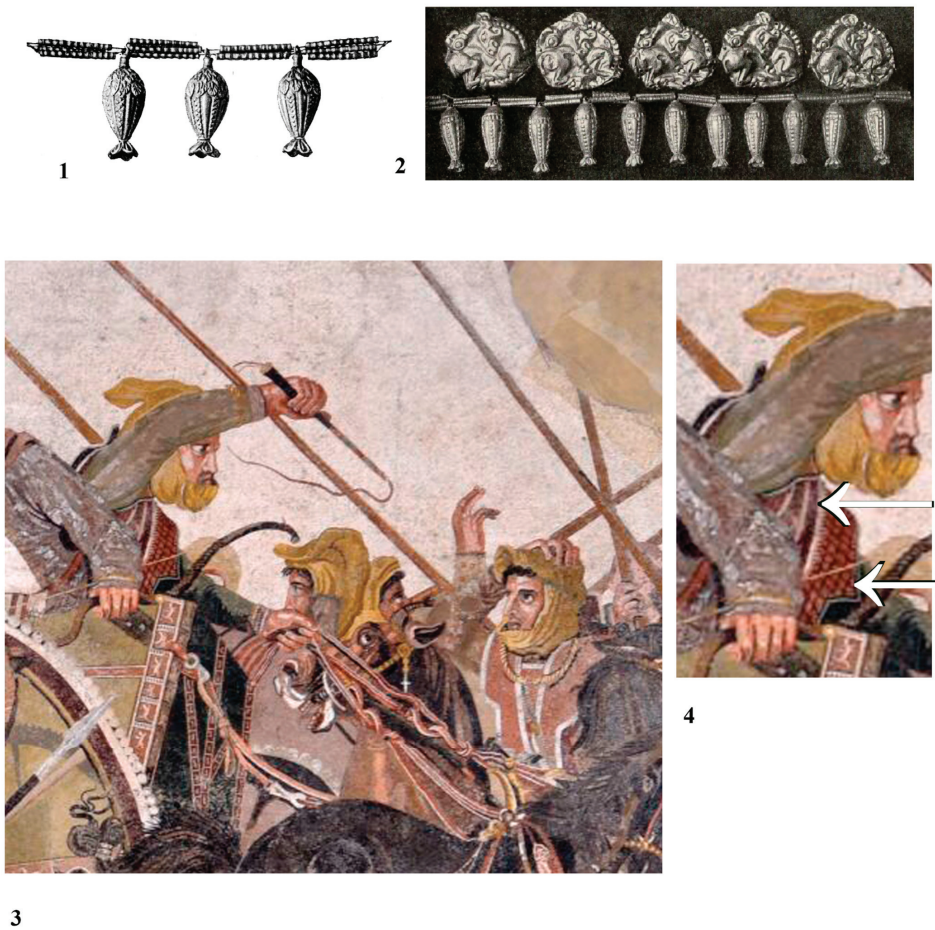


**Figure 3.** 1—reconstruction of mesh-like decoration made by Anastasia Mantsevich; 2—photo of mirror from Chortomlyk kurgan (after Mantsevich 1948); and 3—photo of the unearthed gold appliques in the partly looted grave of Melitopol kurgan (after Terenozhkin and Mozolevskiy 1988).

In Seven Brothers barrow No. 2, excavated in 1875, another type of decoration with similar elements was brought to light. Specifically, many gold tubes, beads, and pendants covered the remains of a skeleton on a burial platform. Based on these excavations, Vladimir Tiesenhausen believed that only the gold tubes belonged to the jewelry set, which he reconstructed as a single, long strand that could wind around the neck about ten times. He thought that the other appliques from the set were part of another necklace (Otchet 1879,

p. 120). As a result of Tiesenhausen’s misleading assumptions, many scholars and museum conservation experts mistakenly envisioned the item as a “necklace” (e.g., Goroncharovskiy 2014, pp. 556–57).

During his excavation of the Scythian grave in the Solokha kurgan in 1912–1913, Nikolay Veselovskiy found the remains of an ornament made of the same elements. In this case, the excavator traced a triple row of gold tubes with gold amphora-shaped pendants attached to their intersections (Otchet 1918, pp. 113–14). Not unlike Tiesenhausen, Veselovskiy thought that this element was part of a ribbon-shaped decoration that was combined with a row of appliques embossed with depictions of a “ram attacked by some beast.”<sup>10</sup> In a 1914 preliminary survey of the excavation, Boris Pharmakowsky (1914, p. 273) indicated that the same kind of jewelry from Solokha was depicted on the Alexander Mosaic from Pompeii (Figure 4: 4). Approximately ten years later, Mikhail Rostovtzeff (1925, p. 451) argued that the item from Solokha consisted only of tubes and pendants (excluding the appliques with the goats) sewn on a ribbon and wound across its owner’s chest.



**Figure 4.** 1—reconstruction of a cross-chest decoration from Verchnii Rohachik (after Mantsevich 1948); 2—reconstruction of a cross-chest decoration from Solokha (after Otchet 1879 and Pharmakowsky 1914); 3—detail of the Alexander Mosaic; and 4—arrows showing the jewelry and collar (inv. 10020, by <https://mann-napoli.it>, accessed on 8 April 2024).

Another undisturbed burial with a similar set of appliques—made of silver, this time—was excavated in 1856 (earlier than the previously described cases of finds in other barrows) from the side northeastern grave of Luhova Mohyla kurgan (*Drevnosti Gerodotovoi Skifii* 1866, p. 23; Polin and Alekseev 2018, pp. 136, 271). In this find, the silver set of tubes, beads, and pendants was found on fabric remains which are associated with the male burial chamber. Only much later was the discovery interpreted as a possible mesh-like decoration (Mantsevich 1948, p. 72). However, Serhii Polin expressed his doubts about the silver finds in Luhova Mohyla (Bidzilia and Polin 2012, p. 295, footnote 124), indicating that, in other kurgans of the period, such silver tubes were more commonly found in horse graves. In a more recent study, he added that no such silver finds had ever surfaced in the Luhova Mohyla (Polin and Alekseev 2018, p. 266, footnote 499). However, in the same book, Polin cites the first publication discussing the 19th-century excavation of this kurgan. In the work, the original excavator describes this silver jewelry set as having been found near the human skull of the inhumed body (Polin and Alekseev 2018, p. 86; see also Table 1: No. 1). Thus, despite conflicting opinions, it is plausible that the northeastern tomb of Luhova Mohyla yielded a mesh-like or cross-chest decoration.

In 1954, in the partly robbed side grave of the Melitopol kurgan, Oleksii Terenozhkin identified the remains of a comparable type of gold jewelry (consisting of 21 tubes, 15 rosettes, and 15 “buttons”), which was—according to the researchers—connected to a band with 11 appliques decorated with depictions of Athena (Terenozhkin and Mozolevskiy 1988, pp. 33–34, Figure 30). Lately, an attempt has been made to reconstruct this ornament, “with a significant hypothetical assumption”, as a “net-like attire” made of triangles that contain gold tubes; rosettes; and, probably, “buttons” (Klochko and Vasina 2017, p. 162, Figure 9).

Before the excavations at the Melitopol kurgan, Anastasia Mantsevich (1948) wrote an article dedicated to the type of personal adornment with which we are concerned. It remains the only thorough study on this subject. She collected all examples of relevant jewelry sets known to her and that she believed had originally belonged to such meshes. Her list included finds from ten Scythian and, possibly, Sauromatian kurgans. Mantsevich also made the first reconstruction drawings of the jewelry’s design (Figure 3: 1; Figure 4: 1), one of which was used as a basis for later reconstructions made by other specialists (Figure 5). However, she made several unfortunate mistakes during her research, which influenced most of the subsequent explorations of this jewelry type—a legacy that requires closer investigation in the context of the current discussion.

Firstly, Mantsevich (1948; 1987, p. 19) wrongly interpreted the depiction in the Alexander mosaic from Pompeii, believing that the mesh illustration was visible on the collar of King Darius’ charioteer. This statement gained popularity among scholars, but it is incorrect. Since Sergey Yatsenko highlighted the mistake only in passing, without any further explanation of its implications (Yatsenko 2006, p. 71, footnote 91), researchers continue to repeat it (Bidzilia and Polin 2012, pp. 294–95). Thus, I will propose my argument on this misinterpretation. On the mosaic, probably a 2nd-century CE Roman copy of an unknown Greek painting from the 4th century BCE, we can see many details of the clothes and jewelry designs of Greek and Persian warriors (Figure 4: 3). One of the Persians (King Darius’ charioteer) wears a long, sash-like decoration from the left shoulder across his chest (Figure 4: 4). It is made with white mosaic pieces and shown as a row of tubes (?) and pendants. At the same time, the man’s collar displays a net-like adornment, which reveals the structure of the fabric or embroidery. This construction detail is evident because its rhombic shape is incorporated into the collar that has triangular folds. It should also be noted that the exact same shape of collar folds can be seen on the dress of another mounted Persian to the right of the main scene (Figure 4: 3).

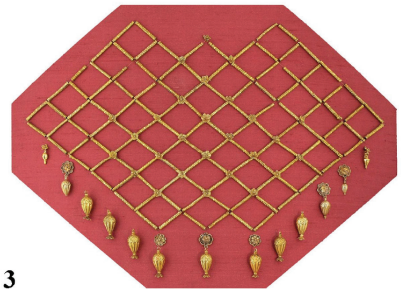




1



2



3

**Figure 5.** Reconstructions of mesh-like decorations: 1—from Berdianskyi kurgan (after Fialko 2014); 2—from Mala Lepetykha, kurgan No. 9 (after Klochko and Vasina 2002); and 3—from Haimanova Mohyla, made by L. Klochko (photograph by the Treasury of the National Museum of the History of Ukraine).

Thus, we can confidently argue that, while comparing the depiction from the so-called Alexander mosaic with this jewelry design, Pharmakowsky had in mind the long white row of tubes with pendants. He even illustrated it in his reconstruction (Pharmakowsky 1914, pp. 261–62, abb. 97; Figure 4: 2). However, Mantsevich thought that Pharmakowsky was referring to the collar of a Persian with a rhombic ornament and declared the representation the only known depiction of the jewelry type. Mantsevich (1948, p. 72) even indicated that, much to her confusion, she was unable to find matching decorations in the art of Persia in Darius’ age. As a result, Mantsevich (1948, p. 70) included in her list of mesh-like decorations practically all known cases of finds of gold or silver tubes from graves, even though the tubes are known to have been used in other types of jewelry, as she herself



emphasized with reference to, e.g., Syniavka barrow No. 100 (also known as Mohyla Ternivka).

Furthermore, Mantsevich (1948, p. 75) insisted on the Thracian origins of this type of adornment despite the complete absence of close analogies from Thracian sites. In lieu of close comparanda for the mesh jewelry, she cited eleven finds of “neck attires”<sup>11</sup> from Bulgaria, made from a gold sheet with punched designs of a geometric, theriomorphic, or phytomorphic nature. She even recognized net-like ornaments in the concentric rows of decorations on several breastplates from Thrace (Mantsevich 1948, p. 72, Figure 19). These analogies seem unconvincing because of their differences in shape, technology, and purpose.

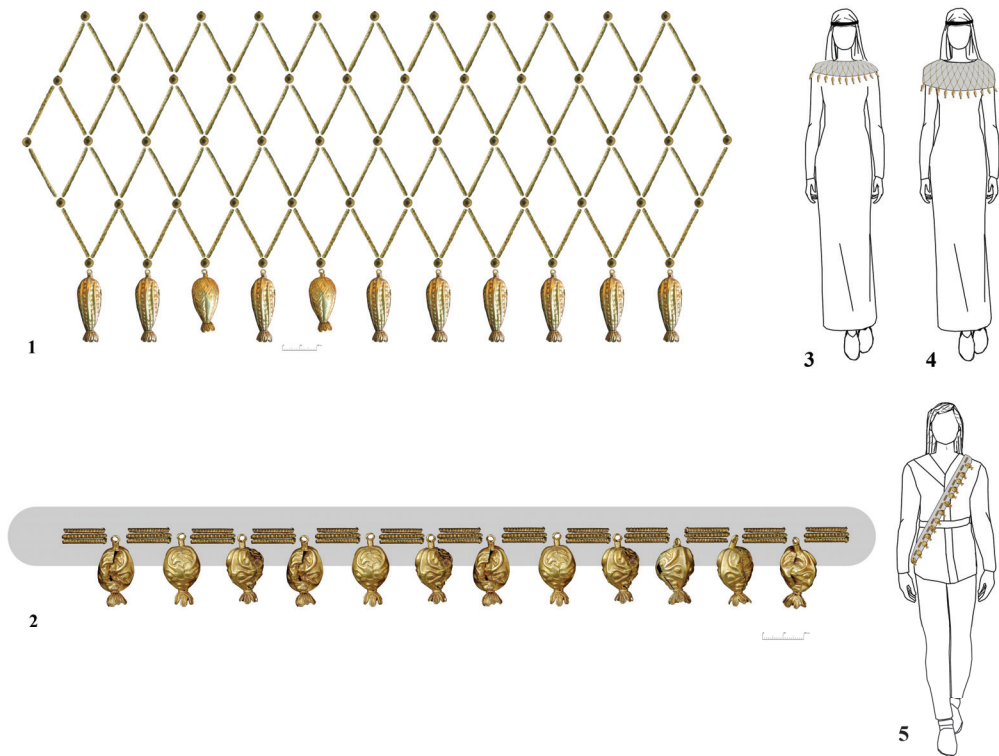
Later remarks that researchers have made on this type of jewelry are worth mentioning. Sergey Yatsenko (2006, p. 51, reference 31; p. 71) uses the term “shoulder meshes” or “nets” to describe the jewelry type found in the graves of the Scythian nobility and views the decoration as part of “classical” Scythian elite clothing. He believes that these garments followed Greco-Persian fashions, with plaques possibly sewn onto the fabric as a pelerine (Yatsenko 2006, p. 71). Liubov Klochko (1997, Table 12) refers to the meshes as “neck decorations,” and most of her reconstructions are based on Mantsevich’s first drawing (Klochko and Vasina 2002, Figure 2). She also believes that the ornament is an original element of Scythian costume, which resulted from the borrowing of ancient Greek aesthetic principles (Klochko 1997, p. 118). Boltryk and Fialko (2007, pp. 72–73) describe this type of ornament as “removable, complicated breast jewelry,” in other words, an elaborate necklace. Finally, Serhii Polin added several more finds, for instance, those from Khomyňa Mohyla, Volodymyrivka kurgan No. 1, Babyna Mohyla, etc., to Mantsevich’s list of meshes (Bidzilia and Polin 2012, p. 295). The scholar did not clarify the criteria of his selections. Apparently, the main reason was the presence of gold tubes, beads, and pendants, without consideration of the quantity of these components or the place where they were discovered in the grave. Polin (Bidzilia and Polin 2012, p. 295) believed that conclusive gold meshes were found in at least 19 Scythian kurgans.

#### 4. One or Several Types of Jewelry, and How Do They Look?

After carefully analyzing all relevant finds, we can conclude that, strictly speaking, the shoulder decoration with which we are concerned does not have the mesh shape that was widely accepted in specialist literature (Mantsevich 1948; 1973, p. 14–15; Yatsenko 2006, p. 71; Boltryk and Fialko 2007, pp. 72–73; Bidzilia and Polin 2012, pp. 294–95). Instead, we distinguish at least two shoulder decoration types made of roughly the same set of appliques: mesh-like and cross-chest. I prefer the general term “shoulder decoration” because it covers the shoulders. Also, the main weight of the jewelry rests on one shoulder in the case of the cross-chest type and on both shoulders in the case of the mesh-like type.

However, because of the scarce archaeological data, it is hard to reconstruct the exact shape and construction of these ornaments unless they are documented in an undisturbed grave. Whether they had a mesh-like shape (as in the Chortomylyk and Melitopol barrows) or were in the form of a sash made of a triple-layered long row of tubes alternated with pendants across the chest (as in Solokha and the Seven Brothers) is usually unclear. Of course, this type of jewelry may have additional forms, which we have not taken into consideration yet. We cannot rule out alternative reconstructions as long as there is not a single depiction of this shoulder decoration on any Scythian monument.

Since the ornament’s two variations formed part of a shoulder adornment that was worn along with a complete ceremonial outfit, the probability that they were originally attached to fabric is relatively high (Figure 6). While Sergey Yatsenko (2006, p. 71) previously expressed the idea of sewing meshes to a textile without further explanation, we propose the following arguments in favor of this hypothesis for cross-chest decorations as well as meshes.



**Figure 6.** The possible size of mesh-like and cross-chest decorations and how they were worn: 1, 3 and 4—mesh-like jewelry; 2 and 5—cross-chest jewelry (drawings by the author).

Firstly, we have cases of such applique sets found on the remains of fabric to which they were probably sewn, namely, in Luhova Mohyla, Melitopol, Mastugyno First barrow, and, perhaps, in Solokha kurgan (see Table 1).

Secondly, it is hard to imagine that such a long row of thin gold tubes and hollowed pendants can be worn loosely on the shoulder and across the torso without risking damage to the thread or the tubes and beads made of thin gold sheets. The same situation applies to the large shoulder meshes worn without being sewn to a fabric support.<sup>12</sup>

Even under the best of circumstances, the archaeological contexts in which the relevant sets of appliques are discovered always leave room for interpretation. For example, in the Try Braty group<sup>13</sup> barrow No. 1, an assemblage of gold tubes, pendants, and rosettes was found (Treister 2008, p. 113). However, it included several other appliques with loops on the backside, which, along with further rosettes with loops, allowed scholars to reconstruct a completely different type of jewelry. The necklace form that they propose is derived from the luxurious neck ornaments worn by members of the elite of the Bosporan kingdom (Treister 2008, p. 217, Table 60, p. 107).

Another doubtful case is a find in Vyshneva Mohyla's central grave, where, among other appliques, 57 gold tubes, 77 beads, and a small number of gold pendants (only 4) of non-characteristic shapes were found in a severely looted chamber (Boltryk and Fialko 2007, Table 4, p. 72). Thus, due to the uncertain character of this assemblage, I do not include this example in my list of probable mesh-like jewelry finds. The authors of the original publication of the find believe that it presented elements of "removable complicated breast jewelry," i.e., mesh-like ornaments (Boltryk and Fialko 2007, pp. 72–73). Agreeing with their interpretation, Polin included this monument in his list of gold meshes (Bidzilia and Polin 2012, p. 295).

As is evident in our discussion, finds of gold tubes with beads and, sometimes, pendants are not rare in Scythian barrows. However, not all of these finds can be securely regarded as the remains of mesh-like or cross-chest decorations. For this reason, I have excluded many more doubtful examples from my list. For instance, in Khomyňa Mohyla, only 18 tubes, three beads, and 94 buttons were found in different locations of the looted tomb (Mozolevskiy 1973, pp. 231–233, Figure 38).

Another large collection of gold tubes and beads was found in the Skorobir burial ground near Bilsk hillfort (Poltava Oblast, Ukraine). This recent find provides new insights into the versatile usage of such applique sets. During the excavation of a partly looted grave in kurgan No. 2/2019 of the Skorobir necropolis, a number of tubes were recorded in situ in two parallel rows, which the principal researcher eventually reconstructed as the decor of a headband (Shramko 2024, p. 20, Figures 8–10).

Are there additional criteria for defining the shape of an ornament solely from its components if their placement in the grave was not adequately recorded? Although scholars have made many confident assumptions about the form of jewelry items based only on numerous disconnected elements of a particular form, I cannot share the same confidence. All elements of these mesh decorations demonstrably formed parts of other jewelry types (e.g., kurgan No. 1 in Try Braty group, kurgan No. 2/2019 of Skorobir, and Mohyla Ternivka) or were used as decorations on headdresses (in the case of the amphora or seed-shaped pendants) and other types of garments (for instance, as beads and buttons).

### 5. Who Wore the Jewelry Type?

At first, scholars had different opinions on who wore such decorations. Mikhail Rostovtzeff (1925, p. 451) believed that all the relevant examples known at that time were wrapped around the chest like gold threads and were regular features of women's costumes in the Dnieper region. Nadezhda Onayko agreed with such a reconstruction of the shape, referring to these jewelry pieces as neck decorations and viewing them exclusively as parts of male costume (Onayko 1970, p. 43).

The collection of new data led to a consensus among scholars, according to which the cross-chest shape should be discounted as a plausible reconstruction. Most researchers believe that meshes were used as decoration by wealthy men and women (Mantsevich 1987, p. 62; Alekseev et al. 1991, p. 112; Yatsenko 2006, p. 71; Boltryk and Fialko 2007, p. 73; Bidzilia and Polin 2012, p. 295). Based on the find from grave No. 2 in barrow No. 21 in the Rohachik burial mound group, Boltryk and Fialko (2007, Table 5, p. 73) noted that children might also have worn meshes. However, interpreting a 16-year-old female from the Scythian period as a child seems unfounded. In addition, in the grave that Boltryk and Fialko studied, the small number of tubes and numerous pendants that were found indicate the presence of another type of decoration, distinct from the mesh, since the assemblage did not include enough tubes (only 18 items) to form even one row of four rhombuses (each consisting of at least four tubes) and contained too many pendants (11 items).

Analyzing the 16 cases described in this study (Table 1), we confirm this hypothesis, with additional clarification concerning the shape of the decoration. A new study of the finds has shown that, in five graves containing the jewelry type, the sets belonged to male individuals and, in nine graves, they belonged to females. Interestingly, the woman buried in one royal kurgan, Chortomlyk, possessed not one but three sets of mesh-like jewelry found in a special chamber where her other clothes were placed (Table 1: No. 2–4). A probable correlation seems to exist between the shape of the decoration and the owner's sex, which is clear from the two cases where the exact find spot of the appliques was recorded in two male graves (Solokha and Seven Brothers). In both instances, the sets were arranged in a row, characteristic of the cross-chest form, whereas in two female tombs (Chortomlyk and Meloitopol), the tubes were arranged in rhomboids and triangles, indicating that the item was of mesh-like shape.

## 6. When, Where, and Why Was This Jewelry Popular?

In discussing when the decorations were used, we should emphasize yet again that the numerous tubes, beads, and pendants can only sometimes be firmly associated with mesh-like or cross-chest ornaments. However, based on the number and combination of appliques of specific types, and the places where they were found in the graves, we can point to at least 16 recorded cases of these ornaments (Table 1).

The earliest graves with a recorded set of appliques date from the middle of the 5th to the beginning of the 4th century BCE (Seven Brothers kurgan No. 2, Solokha side grave, and PISOCHYN kurgan No. 2). In the first half of the 4th century, Berdianskyi, Haimanova Mohyla, and Mala Lepetykha kurgan No. 9 were erected. Most barrows, namely, Chortomlyk, Diiv, Melitopol, Ohuz, and Mastyginino First barrow, are dated to around the middle and second half of the 4th century BCE. The latest find of these appliques comes from the Luhova Mohyla barrow, built around the end of the third quarter or the beginning of the last quarter of the 4th century BCE.

Geographically, most of these finds belong to the steppe to the north of the Black Sea. Only two of the burials were located in kurgans of the Forest-Steppe (PISOCHYN and Mastyginino First barrow). However, strong evidence exists to associate the people buried in those two kurgans with representatives of the Scythian elite or their descendants (Babenko 2005, pp. 189, 197; Guliaev 2019). Interestingly, PISOCHYN kurgan No. 2 belonged to the early group, and Mastyginino First barrow is one of the latest kurgans with such jewelry.

Thus, members of the Scythian elite<sup>14</sup> of both sexes used at least two types of ornament for practically the entire 4th century BCE. Unfortunately, there is still insufficient data to explain why such shoulder jewelry sets became popular among Scythians, especially given that this “fashion statement” was not illustrated in iconographic sources.

## 7. Who Made This Jewelry?

Scholars have not reached a consensus on the question of goldsmithing craft in Scythian society (see an overview here: Lifantii 2023, pp. 1–2). Only the metalwork commonly referred to as Greco-Scythian is widely accepted to have been produced by Greek artisans. In other cases where simple techniques are applied to the goldwork and where the style is not strictly “Greek,” we should consider the real possibility of local Scythian production (for further arguments in favor of local Scythian goldsmithing, see Lifantii 2023, pp. 3–11).

One can note that mesh-like and cross-chest jewelry is a type of adornment known only from Scythian kurgans. In addition, the technical level of the jewelry is quite average, featuring a range of techniques that include hammering, embossing, chasing, and bending the gold leaf; twisting gold strips into a wire; and the final assembling of the product by way of soldering—all of which were used to create the tubes, pendants, and beads of the jewelry under consideration. Regarding the sets from Berdianskyi and Mala Lepetykha kurgans (Figure 2: 4) that the author has studied *de visu*, the manner of their execution is not very neat. There are many negligent details, such as poorly polished joints in the wire chains and at the edges of folded plaques. Many pendants from the Berdianskyi kurgan were made by reshaping lion mask appliques (Figure 2: 5), as is evident from the many wrinkles at the plaques’ seams. The reuse of the appliques is also demonstrated by the fact that no other pendants with a zoomorphic ornament of this type are known to me in the corpus of Scythian and Greco-Scythian metalwork of the northern Black Sea area. In certain instances, the pendants were decorated with filigree, a feature that, with the present evidence, does not appear to have been familiar to contemporary Scythian jewelers in the region. This detail suggests that Scythian jewelers might have reused pendants initially made by Greek artisans.

## 8. Conclusions

Based on the available evidence from materials recorded *in situ* and a comparative analysis of the jewelry’s design components, we can draw the following conclusions. Firstly,



there was not a single mesh-like attire type that contained similar sets of elements, but there were at least two or more: the mesh-like (Figures 3 and 5; Figure 6: 1, 3–4) and the cross-chest variant (Figure 4: 1–2; Figure 6: 2, 5). However, the reconstruction of the actual shape of these ornaments on the basis of the aforementioned data is complicated. Secondly, we can conclude that the decorations were probably sewn on a firm support made of fabric. Lastly, the previously proposed hypothesis, according to which these two types of complex ornaments were worn by both women and men, is undoubtedly correct even if the presence of the adornments in women's graves is numerically preponderant. In five cases, cross-chest ornaments were probably found buried with male remains (Solokha, Berdianskyi, Mastugino First barrow, Seven Brothers kurgan No. 2, and a Luhova Mohyla side northeastern grave). However, to date, we have no reliable anthropological analysis of the skeletal remains in three of the six named cases.

As for the production of this type of jewelry, considering all the above technical observations, we emphasize the high probability of local Scythian production.

In most cases, the specific configurations into which the sets of appliques were arranged cannot be reconstructed with complete certainty. The two instances where rhomboid (Chortomlyk) and triangular (Melitopol) rows of gold tubes and beads seemed to derive from large meshes do not provide sufficient evidence for the reconstructions that have previously circulated in the literature. In any case, such reconstructions amount, in most instances, to little more than “a significant hypothetical assumption” (Klochko and Vasina 2017, 162) that may further confuse our view of a Scythian ceremonial costume and Scythian material culture in general.

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## Notes

<sup>1</sup> Сітка or сітчаста прикраса in Ukrainian and сетка or сетчатое украшение in Russian languages.

<sup>2</sup> Widespread garment appliques in the form of a small hemisphere with an even smaller loop on the backside gained this name in Scythian archaeology.

<sup>3</sup> Also known as Alexandropol kurgan.

<sup>4</sup> In most cases, there were no anthropological studies on skeletons. When assumptions on sex were made based on the burial inventory or when there were no clear indications in favor of a male or female in the anthropological study, I added the “?” symbol. When the anthropologist calculated the age, I added it to this column.

<sup>5</sup> According to Ivan Zabelin's excavation records, there were initially 102 such buttons. However, only 99 of them are now accounted for in the Hermitage collection (see Alekseev et al. 1991, pp. 208–9).

<sup>6</sup> Originally, 205 such buttons were recorded (see Alekseev et al. 1991, p. 198).

<sup>7</sup> Originally, 100 items were recorded (see Alekseev et al. 1991, p. 198).

<sup>8</sup> In most cases, there were no anthropological studies on skeletons. When assumptions on sex were made based on the burial inventory or when there were no clear indications in favor of a male or female in the anthropological study, I added the “?” symbol. When the anthropologist calculated the age, I added it to this column.

<sup>9</sup> According to the excavation report, the find should consist of 17 items. However, only 14 items are now preserved in the M. F. Sumtsov Kharkiv Historical Museum (see Babenko 2005, p. 140).

<sup>10</sup> However, on Figure 186 by Otchet (1918) (see Figure 4: 2), which Veselovskiy addressed, we can clearly see a depiction of the so-called moose-ram and not two animals. According to Rostovtzeff (1925, p. 420), the depiction was of a mountain goat.

<sup>11</sup> She used the terms neck or breast attire while describing Thracian breastplates (Mantsevich 1948, pp. 72–75).

<sup>12</sup> There are known cases of ancient Egyptian bead-net dresses dating to the 3rd millennium BCE in the Museum of Fine Arts in Boston (No. 27.1548.1; 33.1020.1) and in the Petrie Museum of Egyptian Archaeology in London (No. UC17743-1), but they were made with faience and, therefore, cannot be relevant examples of such nets that were used without being sewn onto the fabric. Even in the case of Egyptian bead-net dresses, there is, in fact, a discussion on whether the bead nets were sewn onto the fabric.

<sup>13</sup> Also sometimes translated as the Three Brothers group.

- <sup>14</sup> Although I should note that Seven Brothers barrow No. 2 is widely accepted as a burial representative of the local Sindi population (Goroncharovskiy 2014, p. 553), it still has a solid connection to Scythian culture, as is clear from its costume decorations, jewelry, and other grave goods. Thus, in light of the absence of cross-chest ornaments in other Sindi kurgans, we can infer that this decoration, for some reason, gained popularity only among Scythian populations.

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Article

# Axes in the Funerary Ceremonies of the Northern Pontic Scythians

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**Abstract:** Axes were rare among the Scythians but are occasionally found in Scythian kurgans. Like other weapons, axes had practical as well as social and religious roles. The Scythians not only placed axes in burials as burial gifts, but also used them at various stages of the funeral ritual. This article considers several hitherto unknown, highly unusual archaeological contexts featuring axes. These contexts show that axes were used in the ritual preceding the excavation of the grave; they completed the ritual before the filling of the grave; and they were included in the final sealing of the burial. In addition to the ritual implications of Scythian axes found in kurgan burials, this article considers the meaning of the representations of related artifacts on Scythian metalwork, as well as on the coins of Kerkinitis and Olbia. A bronze votive axe similar to the one from L'vovo Kurgan 18, Burial 2 is shown on Olbian Borysthene coins, indicating a permanent relationship between the city and the Scythians, perhaps in the form of paying tribute (“gifts”) to the Scythians. The dating of Olbian Borysthene coinage is also discussed.

**Keywords:** Scythians; weapons; axes; funerary rites; votives; coins; Olbia; protectorate

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## 1. Introduction

A major feature of any Scythian burial ceremony is the repertoire of distinctive ritualistic actions performed during the preparation of the burial place at the different stages of the interment of the deceased and during the subsequent memorial service. These actions were carried out using various weapons and household items. Some of these objects stand out in the archaeological record due to their unusual placement in the burial or their presence in some specific manner in the soil below or near a kurgan. The systematization of such archaeological depositions and the examination of the semantic status of the different categories of objects found in them are some of the main goals of archeological research.

Among the best-known discoveries of this kind are the bridles and metal attachments of funeral carts found near the heaps of subsoil brought to the surface during the construction of the subterranean tomb, which was later covered by the tumulus (Bidzilya and Polin 2012, pp. 285–93), and horse burials in the entrance pits or dromoi of the catacombs and in niches in the walls of the entrance pits (Daragan and Polin 2020), as well as objects put in caches (Bidzilya and Polin 2012, pp. 101–5, footnote 46).<sup>1</sup> One particular type of object in this category is axes.

During Scythian times, axes were used in rituals as well as in battle. Even though the use of battle axes as weapons was relatively rare and axes are seldom found in kurgans, they apparently played an important role in social and religious practices (Nikonorov 2015, p. 396). Herodotus directly mentions this in his retelling of a Scythian genealogical legend, where the Scythians received (among other sacred items) a gold double-sided axe from the sky gods. Possession of these gifts legitimized the royal prerogatives of Colaxaïs, the youngest of the mythical ancestor-brothers. The Scythian rulers cherished this sacred gold and made sacrifices in its honor every year (Herodotus IV. 5. 3 and IV 7. 1). A double-sided



axe was, according to Herodotus, also indispensable when making sworn agreements: a sword, arrows, a dart, and an axe were dipped into a cup of wine mixed with the blood of the participants in the agreement.<sup>2</sup> After this procedure, the wine was drunk by the participants and witnesses of the ritual (Herodotus 4. 70) to seal the agreement in the most secure way, making it sacred and inviolable. The sacred functions of the sky gifts were seemingly transferred to the oath.

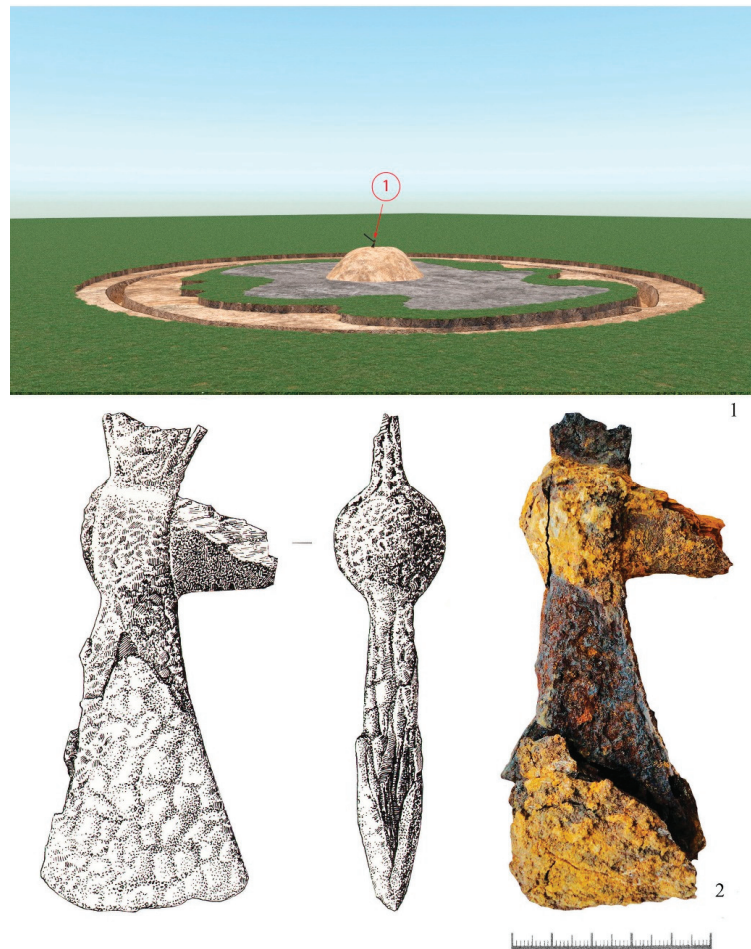
It is known that the Scythians of the northern Pontic region had iron battle and work axes; bronze, iron, and bi-metallic klevetses; and bronze ritual hatchets, all of which occasionally accompanied buried people to the afterlife. In previous scholarship, Scythian axes have mostly been researched from typological and symbolic points of view (Íllins'ka 1961; Melyukova 1964, pp. 65–68; Perevodchikova 1979; Kisel 2008; Nikonorov 2015).

While we were preparing the materials from the burial mound of Vodoslavka in the North Sivash region for publication and carrying out comparative studies of the materials from other burial grounds of steppe Scythia, it became clear to us that the Scythians not only put axes in burials as a part of the set accompanying the deceased, but also used axes at different stages of the burial ritual. This article is dedicated to the description and analysis of such previously unknown and quite extraordinary archeological situations involving axes.

## 2. Vodoslavka Kurgan 1, Burials 1–2<sup>3</sup>

Kurgan 1 is one of the largest kurgans on this burial ground. At the time of excavation, its height was 2.6 m and its diameter, 50 m. The kurgan had been ploughed over for many years. To judge from the diameter of the ditch (44 m), the kurgan was as tall as 5 m in ancient times. These dimensions are quite impressive for the Azov Sea region, where even the kurgans of the Scythian nobility were comparatively small.<sup>4</sup> The size, as well as the complexity of the burial ritual and level of expenditure signaled by the finds, suggests that this kurgan belonged to members of the lower-level Scythian nobility (Daragan and Polin 2022). The single preserved catacomb beneath the tumulus is accessed through two entrance pits made at different times. In the initial construction of the kurgan (Burial 1), the vertical shaft of the catacomb was encircled by an earth mound formed of upcast subsoil. This earth mound measures 9.3 m in diameter, 3.0–5.6 m in width, and up to 0.7 m in height. After the initial burial process was finished, the entrance to the dromos was covered with a clapboard shield. The entrance pit and the funnel-shaped opening at the top of the mound of upcast soil were then covered with large slabs of chernozem turf. On top of this turf, a layer of clean loess was placed—up to 0.7 m thick. As a result, a hemispherical construction of chernozem and loess, 1.7 m tall and about 9 m in diameter, appeared on top of the entrance pit of Burial 1.

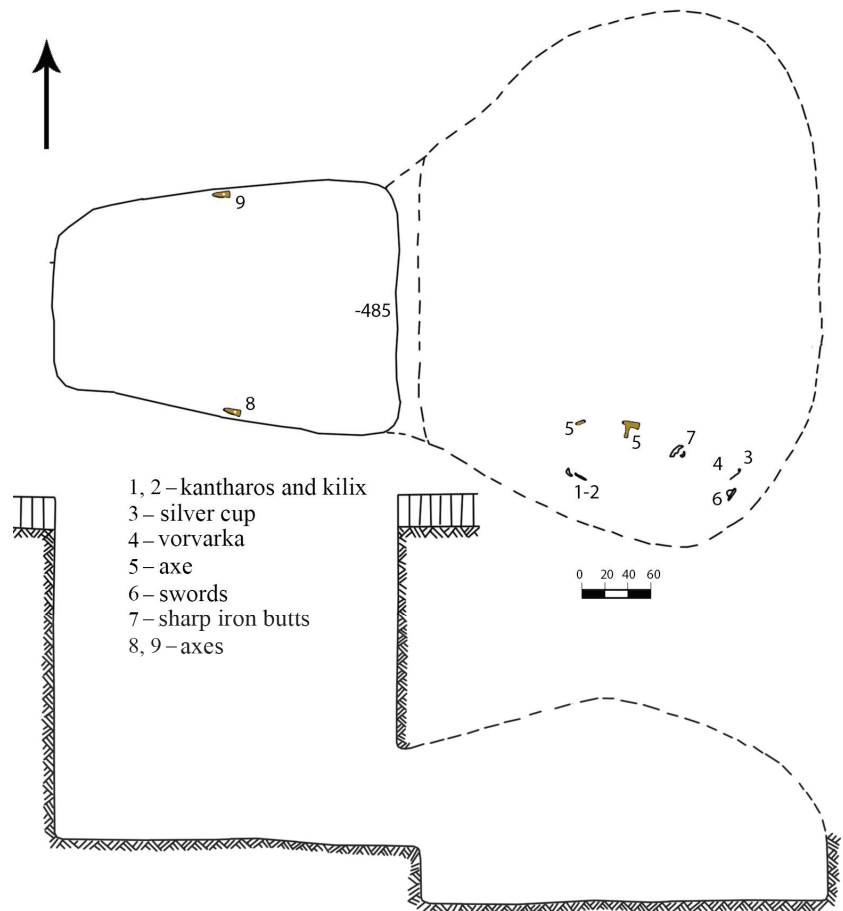
After the construction of the hemisphere was finished, a ritual of unknown nature was performed that involved an iron axe being driven through the top of the construction, directly above the entrance pit, with the handle pointing west (see Figure 1; for a description of the axe, see Table 1: no. 1). The excavation of the catacomb revealed the remains of three skeletons: two males of adult and mature age and one female of mature age.<sup>5</sup> Despite the disturbance, stratigraphic analysis allowed for the reconstruction of the sequence in which the individuals were interred. Critical evidence for the phasing comes from the horse burials in the second entrance pit belonging to Burial 2 (Daragan and Polin 2020; Table 1: no. 1). Since the horses must be associated with the remains of one of the male inhumations, it is clear that the initial Burial 1 was of a woman of mature age who belonged to the local nobility, as is indicated by the elaborate nature of the objects that accompanied her and the complexity of the burial ritual. The second male (of adult age) apparently accompanied one of the individuals buried as a married couple.



**Figure 1.** Vodoslavka Kurgan 1: (1) An axe hammered into the subsoil fill. Reconstruction: M. Daragan. Image: Aleksandr Menchinsky; (2) An axe from Vodoslavka. Photograph: M. Daragan.

### 3. Novomihailovka Kurgan 5, Burial 1<sup>6</sup>

This ploughed-over kurgan, 1.4 m tall, had a diameter of 26 m at the time of excavation. The main burial of the kurgan—Burial 1—was at the center. It was categorized as a Type III catacomb, according to Grakov’s typology (Grakov 1962). The entrance pit, trapezoid-shaped in cross-section, with dimensions measuring  $3.2 \times 1.6$ – $2.4$  m, was oriented east–west. The bottom reached a maximal depth of 2.85–3.0 m from the original surface. On the floor of the entrance pit, two axes were placed opposite each other in the middle at the base of the lateral walls (see Figure 2, Table 1: 4–5, and 1-a and 1-b in the description of the finds from the kurgan in the section below).



**Figure 2.** Novomikhaylovka Kurgan 5, Burial 1: General plan and sections (image from the report).

The entrance to the chamber was cut into the wall of the pit, and it descended into the chamber with a 0.5 m high step. The chamber, oval in cross-section and with dimensions of  $4.5 \times 3.3$  m, was oriented north–south; that is, perpendicular to the entrance pit. The bottom was at a depth of 3.6 m from the ancient surface. While the vault of the chamber had collapsed, its estimated height does not appear to have exceeded 1.8 m (Figure 2). The contents of the burial were heavily damaged during looting operations that took place in antiquity. The fill yielded fragments of bones from two skeletons (one male, the other female), arrowheads (see 2 in the description of finds below), a vorvarka (a conical object with a pierced hole) (3), beads (4), fragments of two swords (5), and sharp iron butts (weights fitted onto the bottom end of spear shafts for balance, or attachments for the handles of spears and javelins) (6). On the floor of the chamber, the following objects were lying in different places: bridles with cheekpieces (7), one more axe (1-c), two black slip kantharoi (8,9), a silver vessel with a golden handle (10), a spindle whorl (11), pieces of graphite (12), knives (13), and fragments of bronze and iron objects (14–16).

#### List of Finds

1-a. Iron axe. For a description, see Table 1: no. 4 (Figure 3: 1).

1-b. Iron axe. For a description, see Table 1: no. 5 (Figure 3: 2, 3).



**Figure 3.** Novomikhaylovka Kurgan 5, Burial 1: (1) and (2) Axes from the entrance pit of the catacomb; (3) Wedge in an axe handle; (4)–(7) Butts (weights fitted onto a shaft for balance) from spears and javelins. Photographs and reconstruction: M. Daragan.

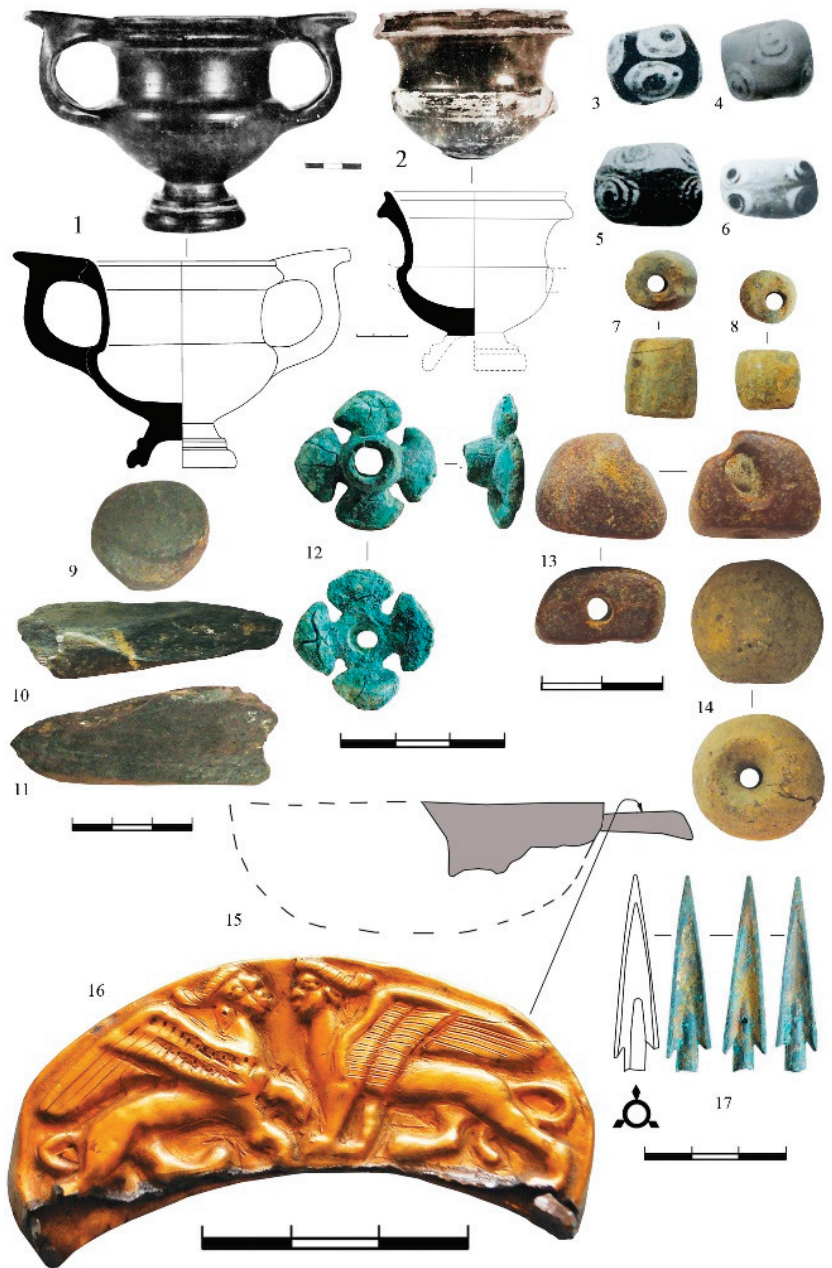
1-c. Iron axe with a spike at the base of the handle. For a description, see Table 1: no. 6 (Figure 4).





**Figure 4.** Novomikhaylovka Kurgan 5, Burial 1: (1)–(4) An axe from the chamber of the catacomb; (5) Reconstruction of the axe from the chamber of the catacomb. Photograph and reconstruction: M. Daragan; (6) Coin of Kerkinitis, 300–290 BC (Nikonorov 2015, Figure 5: 13; Anohin 1989, nos. 413–17, pls. XXIV: 4132–416; XXV: 417).

2. Two trilobate socketed bronze arrowheads. One arrowhead was intact; only half of the other remains. Length: 4.0 cm (Figure 5: 17). Type 2 from the typology of arrowheads of the 2nd to 3rd quarter of the 4th century BC (Daragan 2020; from Table 1).



**Figure 5.** Novomikhaylovka Kurgan 5, Burial 1: Finds from Burial 1. (1)–(2)—after Polin (2014); (3)–(6)—Photographs from the report; (7)–(17)—Photographs and reconstruction: M. Daragan.

3. Bronze vorvarka (a conical pendant with a piercing for fixing knots) with a protruding cylindrical sleeve in the middle and four expanding flat, segmented blades in the shape of a cross. Diameter, 2.5 cm; sleeve height, 0.5 cm (Figure 5: 12). This type of vorvarka was used in the 2nd to 3rd quarter of the 4th century BC (Polin and Daragan 2019b, p. 165).

4. Glass beads, which are no longer extant and are only known through their description and the photograph in the excavation report. Among them (Figure 5: 3–6) are a yellow cylindrical bead with white and brown “eyes” (diameter, 1.5 cm; height, 1 cm); a dark-blue cylindrical bead with white, brown, and dark-blue “eyes” (diameter, 1.5 cm; height, 1 cm); a green cylindrical bead with white, brown, and dark-blue “eyes” and a white band at the bottom (diameter, 1.8 cm; height, 1.5 cm); a yellow cylindrical bead with white and dark-blue “eyes” (diameter, 1.7 cm; height, 1 cm). There was also a fragment of a cylindrical bone bead (also not preserved), two brown barrel-shaped stone (pyrite) beads (0.8 cm in diameter; 1.2 and 0.9 cm in height; Figure 5: 7, 8), and an irregularly shaped amber bead. The latter was made from a piece of amber with a natural hole that passed through the bead horizontally (Figure 5: 13).

5. Fragments of two iron swords:

- Two fragments of a sword with a one-sided blade, wedge-shaped in cross-section, with traces of a wooden sheath on the surface. Length of the fragments: 14.5 and 10 cm (Figure 6: 1).
- The lower part of a double-edged sword with a triangular blade, lens-shaped in cross-section, with a broken off tip. Traces of a wooden sheath survive on its surface. Remaining length: 20 cm; width: 2.4 cm (Figure 6: 2).

6. Four sharp iron butts (i.e., weights fitted onto the spear shaft for balance or attachments for the handles of spears and darts): two cylindrical ones; one conical one, expanding upward, with a blunt base; and one biconical one with a narrower middle section and a dull base. Traces of wood are preserved inside the butts. Length: 9, 11, 12, 5, and 14 cm (Figure 3: 4–7).

7. Fragments of a two-piece iron bit with a straight cheekpiece with two holes and nail-shaped heads at the tips. The cheekpiece was inserted through the loops at the ends of the bit. An iron ring for a rein, 3 cm in diameter, was attached through the same loop. The length of the cheekpiece was 13.5 cm, the ring diameter, 4 cm, and the length of one link of the bit chain, 11 cm (Figure 6: 4, 6, 8).

8. Black-glazed Attic kantharos with a molded rim. The slip coating is high quality and glossy in appearance. There is no stamped decoration on the interior. The diameter of the rim is 11 cm; the height of the vessel, 10 cm (Figure 5: 1).

9. A large fragment of a black-glazed Attic kantharos of regular proportions with the same type of rim and fine slip as item no. 8. The interior tondo of the cup is decorated with a stamped rosette. The diameter of the rim is 10 cm; its height, 6 cm (Figure 5: 2).

10. A semi-spherical silver cup, heavily damaged when the tomb was looted, with one flat, horizontal handle with a gold sheet overlay (Figure 5: 15). The corroded overlay is constructed of two pieces—a smooth lower one and an ornamented upper one—joined over a narrow strip along the edge. A stamped relief with two fighting sphinxes appears on the upper side. In the relief image, the lines of the wing feathers and the notches on the headdresses are incised or engraved with a sharp tool. The diameter of the cup is about 10 cm; the dimensions of the gold overlay on the handle are 7 × 2.7 cm (Figure 5: 15, 16).

11. A spherical spindle whorl with a funnel-like notch on one side of the piercing and a flat surface on the other side. Diameter, 3 cm; height, 2.7 cm (Figure 5: 14).

12. Trimmed and filed pieces of graphite slate, two flattened and one rounded. Dimensions: 2.9–6.3 × 1.7–2.0 cm (Figure 5: 9–11).

13. Fragments of two iron knives:

- A knife with two rivets and traces of wood from the handle still attached to it. Remaining length, 3.5 cm; width, 1.8 cm.
- A humpback knife with a straight blade and a large rectangular shaft. A bone handle (now lost) had been attached to the shaft with three rivets covered with a strip of iron at the bolster. The length of the blade is 9.5 cm; the width, 1.8 cm; and the length of the shaft, 3 cm (Figure 6: 3).

14. A bronze ring of unknown purpose. The width is variable and the cross-section is flat and of uneven thickness. Diameter, 2.5 cm (Figure 6: 7).

15. An iron umbo-shaped object, with traces of wood on the reverse. Diameter, 3 cm (Figure 6: 5). This plaque could have covered the opening from which the wooden handle of the axe from the chamber protruded.

16. Fragments of iron hooks, now lost. Large iron hooks of this type were used in burials to suspend the deceased's personal belongings from the walls of the chamber (Polin 2014, pp. 124–27, Figure 71).



**Figure 6.** Novomikhaylovka Kurgan 5, Burial 1: (1), Finds from Burial 1. (2)–(4)—Photographs and reconstruction: M. Daragan; (3)–(8)—Photographs from the report.

#### 4. L'vovo Kurgan 11, Burials 5–6<sup>7</sup>

Inserted into a 2.3 m high, ploughed-over Scythian kurgan, Burials 5–6 consisted of a long catacomb, oriented east–west, which was accessed by two entrance pits made at different times. The square entrance pit (no. 1, eastern) with dimensions of 1.6 × 1.6 m and



a depth of 4.0 m, led to the catacomb via two steps through an entrance in the western wall. The first burial in this catacomb was made through entrance pit no. 1, and the looting of the burials was also carried out through this pit.

The rectangular entrance pit (no. 2), with dimensions of 1.3 × 1.1 m, had a step along the western wall at a depth of 3.4 m. The fill of the pit was reinforced with unworked stones. The bottom, at a depth of 4.5–4.7 m, descended diagonally to the entrance of the catacomb in the eastern wall. The entrance was covered with a layer of flat limestone rocks, placed horizontally. The height of the entrance was 0.9 m; the width, 1–1.2 m. After some time, an additional burial was inserted into the tomb through entrance pit no. 2.

The rectangular catacomb had dimensions of 3.4 × 1.8 m. The bottom was at a depth of 5 m. The central part of the chamber yielded the remains of a wooden coffin consisting of thin (2 cm thick) longitudinal boards and short transverse boards (14 cm wide) positioned 4–5 cm apart. Near the south-eastern corner, the coffin contained two pointed attachments for spear handles (1). Between the coffin and the northern wall, the shin and foot of the left leg of the buried man were found, and in the western half of the chamber, several arrowheads were found (2).

In the north-eastern corner of the chamber, a small niche (1.0 m long and 0.6 m deep) was cut into the wall, with the bottom of the niche being 0.2 m higher than the bottom of the chamber. The burial had been robbed in antiquity, but the niche remained intact. Found inside the niche were a bronze cup (3) with a bracelet (4) and an arrowhead (5) inside it, an amphora (6), a spearhead (7), two dart heads (8), an axe (9), and animal bones from a food offering.

Burial 5 in the same catacomb (also robbed in antiquity) was covered with a thin layer of chernozem soil (7–10 cm thick), which was in turn covered with a thin layer of bark. A buried man was lying stretched out on his back, with his head pointing west. The skull and thorax had been destroyed by robbers. To the north of the remaining leg bones, a bone from a large animal and a piece of an iron knife were found, and near the left half of the thorax, a vorvarka.

#### *Descriptions of the Objects*

1. Two cylindrical iron attachments for spear handles. Length, 16.0 cm and 12.5 cm; diameter, 1.8 cm for both objects (Figure 7: 1, 2).

2. Four bronze socketed arrowheads: two, three-bladed and two, trilobate, with hidden sleeves. Length, 3.0–3.5 cm (Figure 7: 3–6).

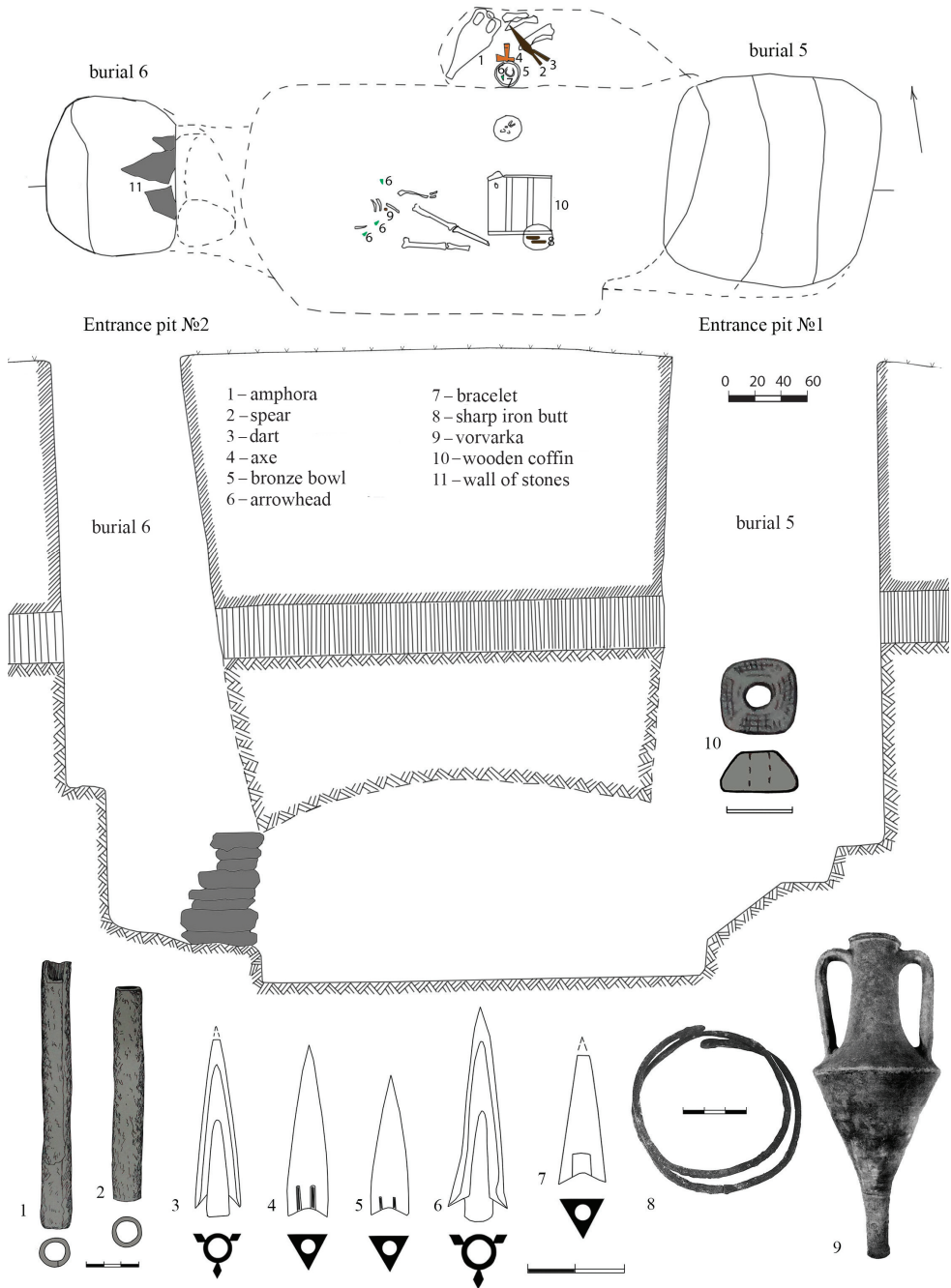
3. A bronze cup with slightly convex sides. The base is decorated with a pattern of semi-ovals. Diameter, 20 cm; diameter of the base, 15 cm; height, 7 cm. The cup had previously broken into small pieces. Another cup of identical shape and dimensions, and with the same decoration at the base, was found in Burial 2 of the same kurgan, providing insight into the original appearance of this one (Terenozhkin et al. 1973a, p. 65; Fialko et al. 2018, p. 112).<sup>8</sup>

4. A spiral bronze wire bracelet with two coils. One end is sharpened, the other has a snake-shaped finial. Diameter, 8 cm; diameter of the cross-section, 0.5 cm (Figure 7: 8). The piece belongs to Type IX of Scythian bracelets, according to V.G. Petrenko's classification. It is a rare type that first appeared in the 5th century and was used during the 4th century BC (Petrenko 1978, p. 55).

5. A triangular-shaped bronze arrowhead with a hidden midrib and with a small II-shaped socket at its base. Length, 3 cm (Figure 7: 7).

6. Heracleian biconical amphora (now lost) of Type II-A-2, III-2, or III-3, according to Monahov's classification, dating from the 380s to the end of the 4th century BC (Monahov 2003, pp. 136–38, 141–42, pl. 96: 5–7; 98; 99; 2016, pp. 357–70; Polin and Alekseev 2018, pp. 348–49). A type of amphora similar to the one found in Burials 5–6 is shown in Figure 7: 9.

7. An iron arrowhead in the form of a sharpened leaf with a long narrow blade, a conical sleeve, and a rhombic cross-section. Length 48 cm; length of the blade, 34 cm; width of the blade at its base, 3.5 cm; diameter of the sleeve, 2.5–3.5 cm (Figure 8: 6).

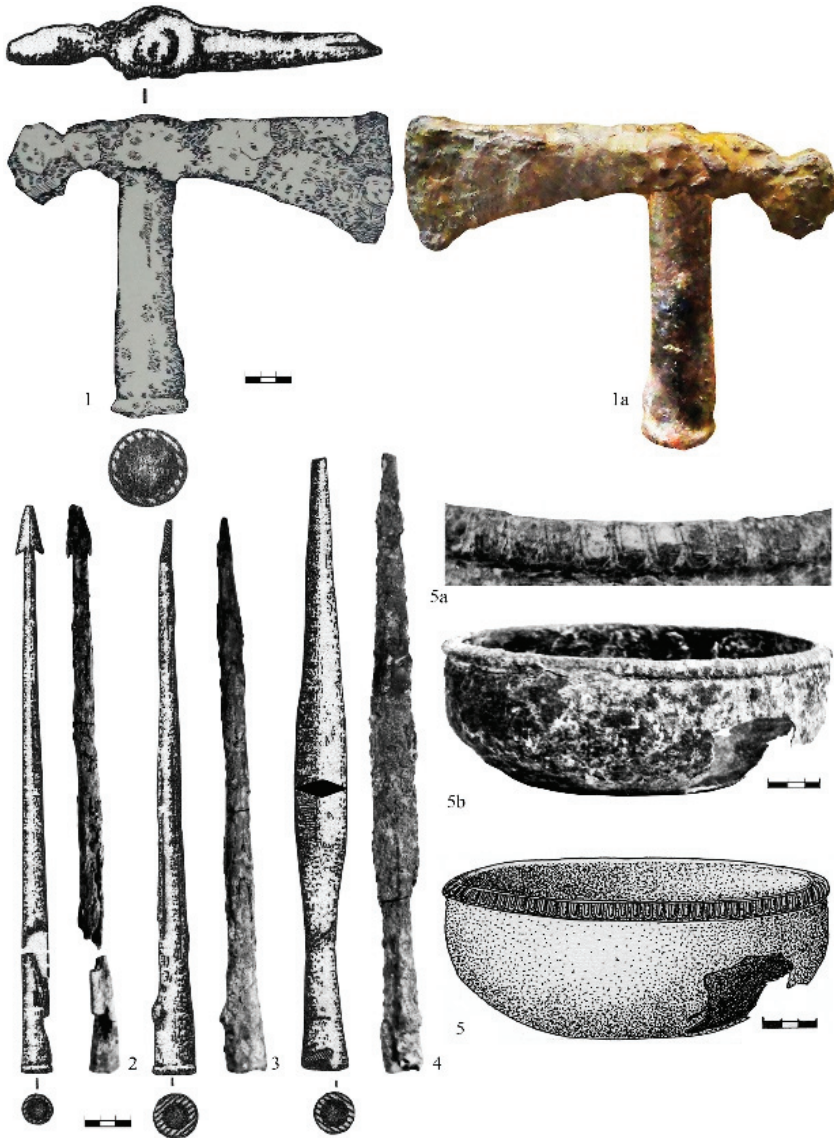


**Figure 7.** L'vovo Kurgan 11, Burials 5–6: General plan and sections of Burials 5–6 and their finds. (1), (2), and (8) Photographs from the report; (3)–(7) and (10) M. Daragan.

8. Triangular dart heads with expanding stingers, a long conical rod, and a conical sleeve with a clutch along its base. Length, 49 and 45 cm; diameter of the sleeves at the base, 3 and 4 cm (Figure 8: 4, 5).

9. An iron axe. For a description, see Table 1: no. 2 (Figure 8: 1, 2).

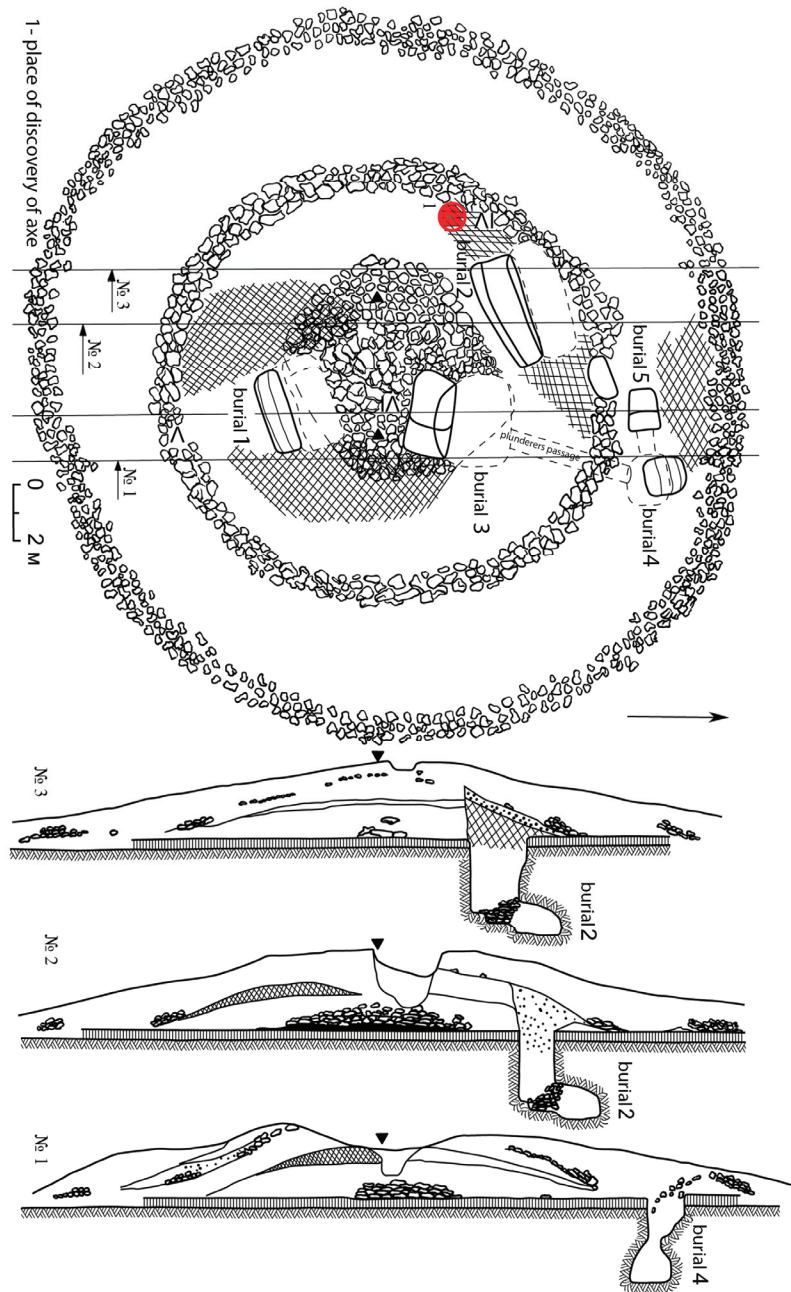
10. A truncated conical vorvarka with a central piercing and a square base. Dimensions, 1.2 × 1.2 cm; height, 0.6 cm; diameter of the hole, 0.4 cm (Figure 7: 10).



**Figure 8.** L'ovo, Kurgan 11, Burials 5–6: Finds from Burials 5–6. (1), (2)–(5) Photographs from the report; (1a) M. Daragan.

### 5. L'ovo Kurgan 18, Burial 2<sup>9</sup>

Burial 2 was the second one added to this Scythian-period kurgan. With a preserved height of 3 m and diameter of 28 m, the burial most likely belonged to members of the Scythian nobility. After Burial 2 was made, the original kurgan was raised by 2.5 m and reinforced along the base with a stone krepis measuring 17 m in diameter. The surface of the new kurgan was covered with a layer of unworked limestone rocks (Figure 9).



**Figure 9.** L'ovo Kurgan 18: General plan and sections of the kurgan (after: Kubyshev et al. 1982).

Burial 2 was made in a vault cut into the north wall of the vertical pit, forming a deep undercut. At a distance of 2.5 m to the south-west of the entrance pit of Burial 2, under the upcast subsoil fill from the catacomb, a small bronze votive axe was deposited (Figure 10). This axe was formed using the lost-wax casting technique. The thin blade, converging at a point that is wedge-shaped in cross-section, ends in a wide semi-circular bit with an upturned toe and a scalloped beard. The central point at the beard might be the remainder

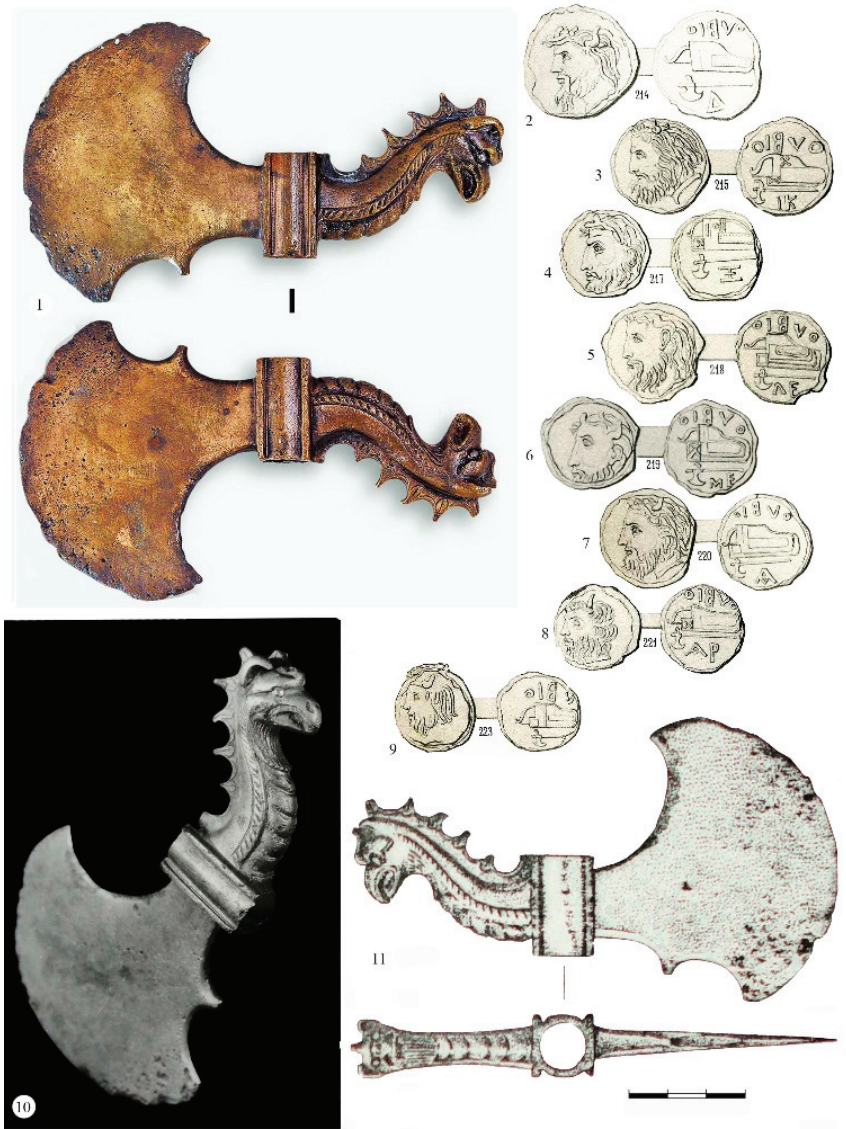


of a casting sprue filed into shape. The tall cylindrical eye of the axe has a conical hole expanding toward the top and is decorated with four faceted protrusions along the edges. The small poll ends in a griffin protome with a long, curved neck. The creature's ears are pricked up and bent forward, and a spiked crest runs from the forehead along the top of the spine. The crest and the front of the neck feature lines chased into the surface of the bronze to suggest anatomical detail. The prominent eagle beak of the griffin has characteristic bird nostrils and is tightly shut. The deep-seated eyes are made from small balls of electrum that had been soldered to the head. The entire front of the neck is covered in wide transverse scales, bordered on the sides with parallel stripes of diagonal cutting. The length of the axe is 12.4 cm; the length of the blade is 6.3 cm; the width, 7.3 cm; the height of the eye of the axe, 2.6 cm; and the diameter of the hole is  $1.2 \times 1.7$  cm at the top and  $1.1 \times 1.2$  cm at the bottom (Figure 11: 1; Table 1: no. 3).

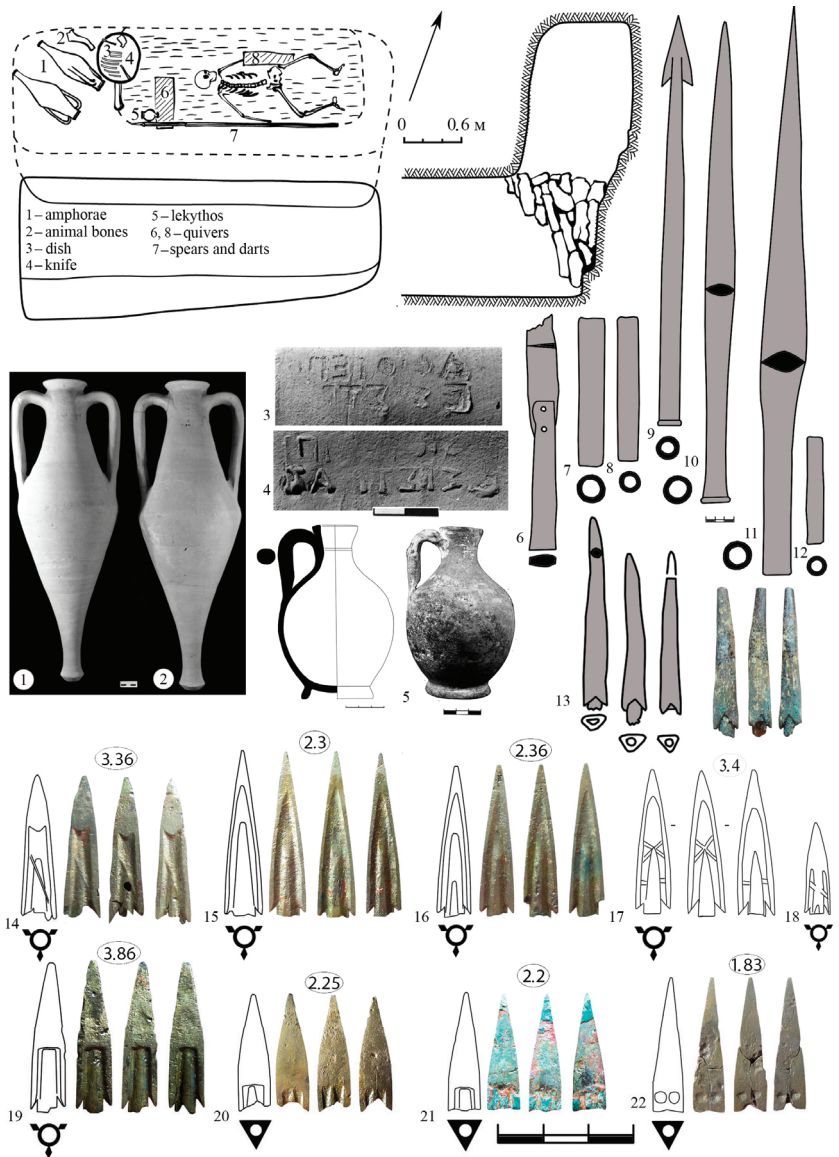


**Figure 10.** L'vovo Kurgan 18, Burial 2. Location of Burial 2 and the votive axe from under the subsoil fill from Burial 2. Reconstruction: Aleksandr Menchinskyi.

The entrance pit, measuring  $4.2 \times 1.5$  m, is oriented north-east-east-south-west-west. At a depth of 2.7 m, the bottom descends obliquely in ledges from the original floor to the entrance of the niche at a depth of 3.2 m in the north-western wall. The entrance to the niche was covered with a screen of horizontally positioned limestone slabs measuring up to 0.7 m in cross-section. In the rectangular undercut along the northern wall (with dimensions of  $4.45 \times 1.7$  m), a skeleton of a man was lying supine on a wooden platform with dimensions of  $2.9 \times 1.15$  m. The man was 30–40 years old according to Krutz's definition. The arms were outstretched, and the legs, which were bent at the knee, formed a rhombus. It is possible that the knees were originally propped up vertically. Behind the head, in the north-western corner of the niche, were two Heracleian amphorae in a pseudo-Thasian style with stamped handles (Figure 12: 1–4). Above the head, on the edge of the wooden platform, was a wooden plate held together with iron braces, with the animal bones of a food offering and an iron knife with a bone handle (Figure 12: 6). The same area of the platform also yielded a quiver made of tree bark containing 3 wooden and 48 bronze arrowheads (Figure 12: 13–18), as well as a gray ceramic lekythos. On the left side of the platform were two spears and a 2.3–2.4 m long dart. On the elbow bone of the left arm rested a second quiver (of similar construction to the first one) which contained 84 bronze arrowheads (Figure 12: 19–22).<sup>10</sup>



**Figure 11.** L'vovo Kurgan 18, Burial 2: The votive axe excavated under the subsoil fill from Burial 2. (1) Photograph: M. Daragan; (2)–(9) Olbian Borysthene bronze coins (after Burachkov 1884, pp. 43–45, pl. IX:214–23); (10) and (11) after Kubyshev, Nikolova, and Polin (Kubyshev et al. 1982, Figures 10 and 11).



**Figure 12.** L'vovo Kurgan 18, Burial 2: Finds from Burial 2. (1)–(5) after Polin (2014, Figure 218); (6)–(13) after Kubyshev, Nikolova and Polin (Kubyshev et al. 1982, Figure 13); (14)–(22) M. Daragan.

**6. Discussion**

*The Types of Axes*

In the study of Scythian weaponry, the term “axes” is used to describe a group of tools for chopping and cutting made of iron or bronze, or a combination of the two. In addition to axes and poleaxes (further subdivided into battle and working axes), this group includes klevetses (used exclusively for battle) and small bronze decorative axes (Illins'ka 1961, p. 29; Melyukova 1964, p. 65; Shramko 1969, p. 56; Kisel 2008; Shelehan 2012, pp. 3–13; Nikonorov 2015; Telnov et al. 2016, pp. 781–82). Axes are classified based on the diverse relationships between the form and size of the hacking or hitting part and the poll, as well

as the placement and the size of the eye, according to the suggested typologies (compare the ones proposed by Íllins'ka 1961; Melyukova 1964; Shelehan 2012).

Axes constitute a characteristic category of burial items in warrior burials from the Scythian archaic period in the Ukrainian forest-steppe, the North Caucasus, and the Carpathian region near the Danube, while finds of axes are quite rare in the burials of steppe Scythia dating from the 2nd or 3rd quarter of the 5th century to the 4th century BC.<sup>11</sup> A reliable connection between axes and men's burials has been established (Bunyatyan 1985, pp. 67, 69).<sup>12</sup>

Over the last few decades, the number of relevant finds has grown significantly. Ilinskaya knew of 48 battle and working axes, only 9 of which were found in steppe Scythia, as well as 11 bronze votive axes, which were also found mainly in the forest-steppe region (Íllins'ka 1961, pp. 43–44, 51, Figure 11; 13:1). Melyukova had the same information about axes, but excluded from consideration the small bronze axes, which, in her opinion, were not weapons (Melyukova 1964, pp. 65–68). According to Sinika's data, 46 axes were found in 38 Scythian burials of the 5th to 4th century BC in the steppe of the Pontic region and in Crimea; however, the same author added several arbitrary items to the list: a large, heavily corroded iron fragment of an unidentified object from Kurgan 2, Burial 1, from the grave Kovalevka-V (Kovpanenko et al. 1978, pp. 113, 116); a bar-shaped corroded iron object from Kurgan 15, Burial 1, from the grave Shirokoe-III (Chernenko and Simonenko 1977, p. 25, pl. VI); a "dagger-shaped, completely disintegrated object" from Kurgan 2, Burial 1, in the Nosaki tract (Bidzilya et al. 1977, p. 70); and a "damaged iron object" from Kurgan 1, Burial 4, near the village of Vladimirovka (Kolotuhin 2000, p. 14). Also included on the list of finds from the 5th and 4th centuries BC were an axe from the mausoleum in the Scythian Neapolis of the 2nd century BC, the finds from the burial ground near the villages of Falshiviyi Genedzhik and Tsukur-liman in the Kransodar region, and two axes from the Chastye kurgans in the forest-steppe of the middle Don region. Therefore, only 36 axes from 29 burials in this list are actually connected to the Pontic region and Crimea of the 5th and 4th centuries BC.

By 2018, we realized that the number of relevant axes found in 5th and 4th century BC burials in steppe Scythia was much greater than we had assumed, and we gathered all available information about them. This information is laid out in Table 1. The collected data provide a comprehensive view of all recorded axes, including information about their placement in the burials and their dates (Table 1).<sup>13</sup> At least for the 4th century BC, the list clearly demonstrates regional differences in the types of axes used in the Kuban valley and the middle Don region. Especially distinctive for the middle Don are the axes with a massive poll, which are virtually unknown elsewhere in the northern Black Sea region.<sup>14</sup> We currently possess information about 54 finds from the northern Pontic steppe of the 5th and 4th centuries BC: 41 iron axes of different kinds, 6 small bronze votive axes (Table 1: nos. 3, 30, and 49–52), and 2 model amulets (Table 1: nos. 53 and 54).

The new materials require additional types to be added to Ilinskaya's typology of axes. The first type is represented by small, elegant iron axes that combine the features and functions of axes and pickaxes. The best-preserved example of this type was found in a kurgan near the village of Krasnyi Podol. It is curved like a bow along its length and has an eye in the middle; a long narrow face that ends with a 2 cm long blade; and a long poll measuring 2.0 × 2.2 cm at its knob (Table 1: no. 21; Polin 1984, p. 112, Figure 13: 3). It turned out that there were a surprisingly large number of such pickaxes: 13 recorded examples overall (Table 1: nos. 11 and 16–27), which all date between the end of the 5th century BC and the first half of the 4th century BC.

A confusing find in this group of axes, one from Kurgan 2, Burial 1 of the Ostraya Mogila grave, was described as "an iron hammer" by the excavators (Table 1: no. 27; Olgovskiy and Polin 1977, p. 35). No drawing of this item was published, but one drawing was included in an earlier excavation report, which showed an object with a slightly curved edge along its length and two blunt rectangular ends (Chernenko and Korpusova 1968, pl. XII:1). The distinctive shape is similar to that of the pickaxes found at Krasnyi Podol, the



only difference being the shape of the ends. Of course, this object may have been used as a hammer; however, it is also more than suitable for battle.

Furthermore, a previously unknown group of double-sided axes has been found, of which three are made of iron (Table 1: nos. 28, 29, and 31) and one is a small double-bitted bronze votive axe of labrys shape (Table 1: no. 30).

Another previously unknown type is represented by the axes found in Vodoslavka, Kurgan 11, near the village of L'vovo and in the catacomb of Novomihailovka (Table 1: nos. 1, 2, and 6). These axes have a long wedge-like hacking part, an eye positioned closer to the short hammer-like poll, and an iron conical sleeve inserted into the eye for attaching the handle (Figure 1, Figure 4, and Figure 8: 1, 2). According to Ilinskaya's typology, they should be classified as a variety of axe-hammers.<sup>15</sup> However, the examples analyzed differed from those examined by Ilinskaya in the size ratio between the hacking part and the poll. Apart from their shape, a peculiarity of axes of this type is the presence of an iron sleeve inserted into the eye, which was previously considered a feature of pickaxes (according to Melyukova's typology) or poleaxes (according to Ilinskaya's typology). In the burials from the 5th and 4th centuries BC from the northern Pontic region, not only pickaxes, but also one axe from Burial 2, Kurgan 6, near the town of Dnepropudnyi, had an iron sleeve (Table 1: no. 26; Kuznetsova et al. 2020, pp. 27–28, 14, Figure 9a). Very surprisingly, such a sleeve was also recorded in an axe from the 2nd century BC from Burial 2 of the mausoleum of Scythian Neapolis (Schultz 1953, pp. 31, 33, pl. XI:3).

The types of axes found in Vodoslavka, Kurgan 11, near the village of L'vovo, and in the burial chamber of Novomihailovka, as well as the axe connected to Burial 2, Kurgan 18, near the village of L'vovo, are in agreement with the depictions of such objects in figure-decorated metalwork of the Classical period from the northern Black Sea region (i.e., the silver cup from the Chastye kurgans, the gold gorytos overlay from Soloha, and a medallion from Chersonesus), on coins from Kerkinits (Figure 4: 6), and on the Borysthenes coins of Olbia (Schultz 1953, pp. 31, 33, pl. XI:3). The axes from the entrance pit of the Novomihailovskiy burial are similar to those from Kurgan 10 of Kislichevskaya-I and the central tomb of Zheltokamenskaya Tovsta Mohyla (Table 1: nos. 7–8).

Two more amazing objects—from Kurgan 2 near the village of Ryleevka and from Kurgan 18 near L'vovo—have been added to the group of small bronze votive axes from steppe Scythia. A small bronze double-bitted axe of labrys shape—measuring 12 cm in length, with a 27 cm long handle—has been found in Kurgan 2, Burial 1, near the Crimean village of Ryleevka (Table 1: no. 30). Koltuhov convincingly identified it as an axe-scepter (Koltuhov 2012, p. 73, Figure 60: 2), comparable to the bronze votive axe with a 45 cm long handle from the kurgan of Posulie. The thinness of the handle and its length indicate that it was used as a non-functional staff or scepter. The small double-bitted axe from Ryleevka evokes Herodotus' description of a double-sided poleaxe used in the ritual oath (Herodotus 4. 70). The dating of the find to the 2nd to 3rd quarter of the 5th century BC also places it chronologically close to the Scythian customs he described (Koltuhov 2012, p. 73, Figure 60: 2).

The small bronze axe from L'vovo is especially notable (Table 1: no. 3). This unassuming object has great importance for Scythian history. The figure shape of the hacking part, the decoration of the poll and eye, and its size confirm that it was a votive axe rather than a weapon. Only Illins'ka (1961, pp. 43–47, Figure 11: 1–9) and Nikonorov (2015, pp. 406–9, Figure 4: 1–11) have examined Scythian bronze decorative axes in detail; the other researchers have confined themselves to short observations.

Ilinskaya has noted the absence of the shapes characteristic of small bronze decorative axes from the 7th to 5th century BC among the Scythian examples made of iron. She has argued that small bronze axes were not used as weapons and suggested their importance in other, non-functional contexts, as they continued to be deposited in Scythian burials and were depicted on the civic coinages of ancient cities on the Black Sea shore, as well as on the figure-decorated metalwork of the region. Ilinskaya saw the depictions of Scythian gorytoi, bows, and axes on the coins of Olbia as celebrations of Scythian weapons and suggested that these depictions may constitute evidence of the city's history of political relations

with the Scythians. She refuted Rostovtsev's and Grakov's claim that small bronze axes were symbols of power and royal status, as such axes have never been found in the elite kurgans of Scythian rulers. To the contrary, in all reliably recorded archeological contexts featuring small bronze axes, the items were found in middling burials of the warrior class of Scythian society. These burials did not stand out in terms of the wealth or opulence of the burial ritual. She considered the owners of these axes to be the scepter-carriers (scēptūchus) mentioned in the decree in honor of Protogenes, who, in real life, were not tribal chiefs but the leaders of relatively small warrior clans (Íllins'ka 1961, pp. 43–47; Il'inskaya 1965, pp. 208–11; Rostovtsev 1913, pp. 8–9; Rostovtzeff 2011, pp. 99–100; Grakov 1971, p. 94).<sup>16</sup> Hazanov came to the same conclusion: he saw scepter-carriers as the members of the lower-level Scythian nobility—elders and heads of clans who led clan divisions in war (Hasanov 1975, pp. 182–83).

Only Nikonorov has discussed the subject of Scythian bronze axes in later periods, specifically the 6th to 4th century BC. Despite Ilinskaya's conclusion—justified by the available sources—that such small axes belonged to minor Scythian gentry (elders and clan leaders), Nikonorov saw these scepters (staves) as prestigious artifacts of the higher Scythian aristocracy (rulers, tribal chiefs, and leaders of tribal unions), as well as of the middle nobility. According to Nikonorov, the small axe from Kurgan 18 near the village of L'vovo “obviously copies the Scythian battle axe, depicted on the Borysthenes coins from Olbia.”<sup>17</sup> Nikonorov also believed that “starting from the 4th century BC, battle axes became the symbols of their owners' high rank, which is substantiated by their depiction on some items of Greco-Scythian metalwork with figure decoration of that time, clearly demonstrating the important role this kind of weaponry played in the concept of royal power among Scythians.” However, all these statements were presented without supporting evidence. The researcher saw the depictions of Scythian weapons on the Borysthenes coins from Olbia as a reflection of the deep political influence of the Scythians on the polis, especially after the Scythians helped it to fight off the invasion of Zopyrion of Macedon (Nikonorov 2015, pp. 406–9, 414–15).

Based on the finding of the small bronze axe in Kurgan 18 near the village of L'vovo, the Scythian axe depicted on Borysthenes coins from Olbia obviously cannot be considered a battle axe (Alekseev 2008a, pp. 49, 52, note 1), as had been previously assumed (Íllins'ka 1961, p. 46; Melyukova 1964, p. 65; Nikonorov 2015). Clearly, the coins depict a votive, decorative axe, which was well known to the citizens of Olbia. For them, it had a very specific meaning and was of great importance. Anohin was the first to notice the similarities between the small axe from L'vovo and the depictions on the Borysthenes coins from Olbia (Anohin 1989, p. 39); this interpretation was subsequently adopted by Stolba (2007, p. 91; 2019, p. 528). Much later, Alekseev argued the same point without mentioning Anohin—although he was clearly familiar with all of Anohin's works (Alekseev 2008a, p. 47, Figure II: 1, 2, 4).

## 7. Scythian Votive Axes on the Borysthenes Coins from Olbia

With regard to the small bronze axe from L'vovo, we would like to note one further aspect. The dating of the Olbian Borysthenes coins has been conducted differently by different researchers. According to Zograf, the coins were minted from 290 to 225 BC (Zograf 1951, p. 131), while Karyshkovskiy dated them to 325–230 or 325–240 BC (Karyshkovskiy 1988, p. 82; 2003, p. 174). Anohin dated the same series to 300–289 or 310–280 BC (Anohin 1989, pp. 39–41, 107–9, nos. 127–215; 2011, nos. 295–386) and Stolba, between 330/325 and 275 BC (Stolba 2019, pp. 525, 529–30). Recently, Nikolaev attempted to refine Karyshkovskiy's dating to the period between 330 and 220/218 BC (Nikolaev 2021, p. 292).

It is therefore generally agreed that the Borysthenes coins were minted within a period of 55–118 years. In 1984, Anohin published a description of a coin hoard found during the excavations at Olbia in 1978. The hoard consisted of 2 silver staters and 232 bronze Borysthenes. While researching the composition of the hoard, Anohin made a number of very curious observations, on which quite surprising and extremely important conclusions were later based. The silver staters from the assemblage had Demeter's head on the

obverse and an eagle on a dolphin on the reverse and belonged to the series of 330–300 BC (Anohin 1989, p. 106, nos. 80–86, pl. IX: 80–86).<sup>18</sup> On the other hand, Borysthene coins of all known groups (except the first one) were present and featured 55 out of the 79 monograms known from Karyshkovskiy's data (55 out of 88 if we include their sub-variations) (Karyshkovskiy 1968, p. 63; 2003, p. 238). In earlier literature, the duration of a coin issue was defined by a simple equation—control monogram of the coin = one official responsible for the minting of Borysthene coins = one year of minting—according to which the Borysthene coins were minted over a century or more. However, the finds from the hoard of 1978 showed a completely different picture. Only nine monograms turned out to be combined with otherwise unknown obverse types. All others were connected with each other multiple times through shared obverse types, with as many as five shared stamps for some monograms. The use of one common obverse die is possible for a year or two, but the use of the same type for three or four years is highly unlikely. All known data about Greek coin stamps attest to their transience as a result of their rapid wear and the practice of discarding them upon disuse (Markov 1901, pp. 50–51). This seems to have applied to the Borysthene coins, based on the number of variations in the design of the obverse dies for each issue and the fact that identical obverse types are rarely encountered, even in a large hoard. Since there were from two to six matching obverse dies and monograms per year in the groups featured in the hoard, Anohin suggested that the service of the officials represented by these monograms was collegial. He concluded that the abundance of shared obverse types and identical controls on the Borysthene coins from the Olbian hoard of 1978 indicated that the assemblage was formed within a shorter period of time, certainly much shorter than the previously assumed century. Anohin determined that all the Borysthene coins from the hoard fit into 16 yearly editions and that the whole period of production (with possible pauses included) lasted no longer than 2 to 3 decades (Anohin 1984, pp. 18–26, 31–36).

In relation to the small axe from L'vovo, it is necessary to go back to defining the date when the Borysthene series was initiated. According to Alekseev (and later, Nikonorov), the beginning of the production of the issues was connected to the Scythian aid in fighting off Zopyrion's invasion in 331 or 325 BC, after which the Olbian Borysthene appeared as a symbol of the citizens' gratitude for the help they received in warding off the mortal threat (Alekseev 2008a, p. 47; 2008b, p. 53; Nikonorov 2015; Stolba 2019, pp. 525, 529–30). However, the small axe from L'vovo, found near Burial 2, which has been dated to no later than the beginning of the 3rd quarter of the 4th century BC (Polin 2014, pp. 285–87, Figure 218), was of the same type as the one depicted on the coin issues. Consequently, the axe itself was likely made in the first half of the 4th century BC, while the minting of the coins began in the second half of the 4th century, as originally suggested by Berthier-Delgarde (Berthier-Delgarde 1909, p. 91; Zograf 1951, p. 131) but later rejected as being somewhat too early, or perhaps we should place the beginning of the series even earlier—within the first half of the 4th century BC. In addition, the Borysthene coins were separated into three weight groups: 10–11 g, about 9 g, and about 5–6 g (Karyshkovskiy 1968, pp. 63–64). With such a short common period of minting, these coins may constitute a series of fractional denominations, the absence of which has always puzzled researchers.

Alekseev and Loboda have recently published new finds of Olbian bronze coins from the OI EIITA series. According to a long-established view, the inscription OI EIITA, found on the reverse of some Borysthene coins, unequivocally connects them with the activity of the so-called "Collegium of the Seven" that existed in Olbia from 230–225 BC (Karyshkovskiy 1976, p. 109; Alekseev and Loboda 2013, pp. 94–96, nos. 7–12). In addition to the rare inscription OI EIITA, the reverse always features the toponym OABIO with a set of Scythian weapons on top (i.e., a gorytos with a bow and an axe like the one from L'vovo) identical both in composition and in the placement of elements to the set of weapons pictured on the other Borysthene coins. On the front of the coin, a right-turned head of Zeus with a beard and diadem is depicted. There are three denominations of different weights and sizes in this series. Thanks to the good preservation of the coins described by

Alekseev and Loboda, the rendering of Zeus' head allows for close comparison with the god's head on the tetradrachms of Philip II of Macedon. Certain characteristic details such as the fall of the hair in large strands expanding from the top of the head, as well as the characteristic wreath, accurately convey the visual conventions of the Macedonian coins. The same applies to the details of the face, down to the distinctive shape of the moustache.

While the golden and silver coins of Alexander of Macedon continued to be minted in many parts of the Hellenistic world even several centuries after his death, the same cannot be said of the coins of Philip of Macedon. In general, the coins from the series OI EIITA can be considered a variant of the Borysthenes coins with a different image on the front. It is hard to judge the reliability of the existing reading of the inscription. The similarity of the axe on the reverse of the OI EIITA coins to that on coins excavated at L'vovo, as well as the similarity of the head of Zeus on the obverse to that of the tetradrachms of Philip, constitutes valuable evidence for dating the series. Both stylistic links place the OI EIITA coins considerably earlier than the attested Collegium of the Seven. A much earlier date for this series may suggest additional interpretations of the coin legend and the series' place in the numismatics and history of Olbia.

As mentioned above, many researchers have assumed that the decision to depict Scythian weapons on the Olbian Borysthenes coins resulted from the political dependence of the city on the surrounding Scythians, and that the change in iconography was related to the tribute that the citizenry was required to pay in the form of gifts. The fact that the small axe from L'vovo closely matches its counterparts on Olbian coins allows for more precise dating. The hypothesis of a Scythian protectorate over Olbia going back to the 2nd quarter (certainly no later than the middle) of the 5th century BC has already been vigorously promoted by Yuri G. Vinogradov, even in the absence of any serious evidence (Vinogradov 1989, pp. 90–109). As Yaylenko has correctly pointed out, the fact that the Scythian rulers were given gifts does not necessarily mean that they had established political hegemony over the gift-giving cities. The gifts may equally likely have been a payment for non-aggression and peaceful coexistence without political dependence (Yaylenko 2017, pp. 269–71). Scythian rulers certainly did not need to establish dominance over the city through violent means to receive gifts from Olbia. It would have been enough if a small group of riders, minimally armed, had appeared near the city walls at wheat harvest time and given the citizens a simple choice—to have their fields burned or to hand over a small portion of the harvest's value as a gift. Of course, the legendary ruler Skiluros, whose dealings with the city can be dated to the middle of the 5th century BC (Herodotus 4. 78–80), was not the originator of this foolproof tactic. Relationships of this kind often occurred between nomadic pastoralists and sedentary farmers in disparate areas of the Eurasian steppe, and—to judge from a decree in honor of Protogenes from the end of the 2nd to the beginning of the 1st century BC—this method of “forced friendship” worked flawlessly in Olbia for centuries. Skiluros' intervention was exemplary only in the sense that it implemented this tactic with minimal effort to maximal effect. According to Herodotus, he bought himself a house in Olbia, where he would stay “for a month or more,” and married a local woman. He gladly took part in the city's festivities, and then, sated with feasts, left the town with lots of gifts in tow. Such cordial relations did not prevail for long, however, as Skiluros' followers had to wait for the gifts under rather less hospitable conditions outside the city walls, and that eventually led them to rise against their leader. Nevertheless, the effectiveness of the transactional principle is beyond doubt. Most likely, a large proportion of the gold discovered in Scythian kurgans (representing probably less than 1% of the precious metal originally deposited in these tombs) was obtained through these simple but effective exchange arrangements, rather than through Scythian–Greek trade or through long-distance trade exchanges with the inhabitants of the Urals, Kazakhstan, or Altai. It is difficult to see how the Scythians could have offered an appropriate trade equivalent to the exorbitant amount of gold they received from the Greeks. The Scythians' mobile economy simply did not generate enough products that could interest the Greeks.



All the Scythian burials that yielded iron axes belonged to warriors of relatively low social classes. To this day, nothing unequivocally ties these axes to royal status. Only the bronze votive axes—also found in burials of less wealthy warriors—indicate that the tomb's incumbents were of higher status than ordinary warriors. The new finds of bronze votive axes in Ryleevka and L'vovo greatly strengthen the arguments of Ilinskaya and Hazanov, who saw the owners of small bronze axes from Scythian burials as members of the minor clan or tribal nobility; that is, elders, leaders who would take charge of clan divisions in war (Íllins'ka 1961, pp. 43–47; Il'inskaya 1965, pp. 208–11; Hasanov 1975, pp. 182–83). The fact that these groups of warriors were, according to the archaeological record, quite small does not weaken their arguments. Little time and few men were needed to destroy a field full of crops and deprive the city of its harvest. The minor clan leader who was buried in L'vovo—some 109 km from Olbia in a straight line—could certainly present a serious threat to the peace and prosperity of the city's inhabitants. As the city was unable to get rid of such raiders through military force, all they could do was to pay them off.

## 8. Chronology

To judge from the multiple finds from this grave and a funeral feast connected to it, Burial 1 in Kurgan 1 near Vodoslavka dates to no later than the beginning of the 3rd quarter of the 4th century BC (Daragan and Polin 2020, p. 51; 2022, p. 100).

Burials 5–6 from Kurgan 11 near the village of L'vovo have been dated to between the 380s and the end of the 4th century BC using a biconical amphora from Heraclea Pontica of Monahov's Variants II-A-2, III-2, or III-3 (Monahov 2003, pp. 136–38, 141–42, pls. 96:5–7; 98; 99; 2016, pp. 357–70; cf. Polin and Alekseev 2018, arguing for c. 348–349 BC). Burial 2, also in Kurgan 11, where a bronze cup similar to the one in Burials 5–6 was found, can be dated to the beginning of the 3rd quarter of the 4th century BC thanks to the inclusion in the burial assemblage of a Sinopean amphora with a stamped handle and a black slip cup (Polin 2014, pp. 559–60). These finds allow us, in turn, to narrow the dates of Burials 5–6 in the same kurgan to between the 2nd quarter and the beginning of the 3rd quarter of the 4th century BC.

Similarly, Burial 2 in Kurgan 18 near the village of L'vovo has been dated to between the 2nd and the beginning of the 3rd quarter of the 4th century BC, using stamped amphorae and a lekythos of gray fabric (Polin 2014, pp. 285–87, Figure 218).

Burial 1 in Kurgan 5 near the village of Novomihailovka has been dated using black slip ceramics to the middle to the 3rd quarter of the 4th century BC (Polin 2014, p. 567).

Therefore, the entire series of axes discussed in this article can be dated to the 2nd to the beginning of the 3rd quarter of the 4th century BC.

## 9. Axes of Different Depositional Types in Funeral Rituals

### 9.1. Depositional Type 1: The Axe on Top of the Upcast Soil from Kurgan 1 near the Village of Vodoslavka

In this instance, an iron axe, driven into the top of a hemispherical mound of the upcast soil that sealed the entrance to Burial 1, marks the end of the funeral ceremony for the deceased in Burial 1. The axe was driven through the top of the soil construction over entrance pit no. 1 of the catacomb, which contained the kurgan's initial burial of a woman of mature age, possibly in the company of a male servant of adult age (Figure 1). Later, a man of mature age was buried in the same catacomb through entrance pit no. 2. To judge from the reconstructed original height of Kurgan 1 (5 m), the complexity of the burial ritual, and the wealth of the inventory that survived the looting, the deceased in Kurgan 1 likely belonged to clan-level nobility. Perhaps the axe was driven through the soil mound on top of the women's burial as an offering from her husband, who was also buried there after his passing.

### 9.2. Depositional Type 2: The Axe under the Upcast Soil in Kurgan 18, Burial 2, near the Village of L'vovo

In this example, the burial ritual proceeded in reverse order from that recorded at Vodoslavka. The axe was placed on the embankment of the second kurgan before excavation

work for the catacomb of Burial 2 began. It should be noted that the axe was buried under the clay from the subsoil under the kurgan. To reach the clay level under the kurgan, the excavation of the entrance shaft had to cross the chernozem mound of the kurgan, as well as the layer (2 m thick) of buried chernozem under it. While the upcast chernozem from the shaft was deposited somewhere nearby, the excavators were unable to distinguish it precisely from the rest of the topsoil of the successive mounds and the fill of the entrance shafts. The subsoil that covered the axe was, however, clearly identifiable thanks to its clayey composition. A large amount of this clay also filled the upper half of the entrance shaft of Kurgan 2 (Figure 9: cut nos. 2 and 3).

Burial 2 was accompanied by ample enlargement of the kurgan's mound and the stone krepis (Figure 9). The construction of Burial 2—a pit with a niche in its wall—stood out because of its rather large size compared to most ordinary Scythian burials. The burial contained the remains of a man of 30–40 years (according to Krutz's definition), accompanied by a diverse set of objects, including a plate with a food offering, a set of weapons (two spears, a dart, and two quivers with 135 arrows), two wine amphorae, and a lekythos of gray ceramic fabric. According to Bunyatyan's classification—the fifth model of social stratification of the common Scythian populace—the man belonged to the lower level of the aristocracy (Bunyatyan 1985, pp. 96–97). In general, Kurgan 18 contains the burials of the local Scythian clan leaders. In fact, only the small bronze axe indicates the fairly high status of the buried, who was probably a clan head. All in all, the finds confirm Ilinskaya's and Hazanov's conclusion that the owners of small bronze axes were minor nobles, specifically, clan leaders, whose burials did not otherwise stand out in terms of their luxury.

Axes were not the only category of objects deposited by the Scythians during the initial stages of the burial ritual *either under or on top of the upcast subsoil*. Other objects were also used for this purpose. For instance, in Kurgan 7 near the village of Segreevka, clusters of spheroid stones (eight in all) were placed *on top of the upcast subsoil* in a small channel (Kubyshev et al. 1976, p. 147). Two spheroid stones measuring 0.5 m in diameter were likewise placed on a mound of the upcast subsoil in the central tomb of Tovsta Mohyla. The surface of the upcast soil from entrance pit no. 1 of the side tomb of Tovsta Mohyla revealed a set of decorations for the funeral cart, consisting of 6 bronze endings, about 100 round bronze plaques, cheekpieces, nosebands, vorvarkas, cylindrical beads in the form of short tubes, and bells, as well as no less than four sets of iron bits with cheekpieces (Mozolevskiy 1979, pp. 46, 94).

*Under the upcast subsoil* from side Burial 2 of Babina Mogila, a shoulder of a large animal was found, which was likely used as a shovel for removing loosened soil. Two more such spatulas were found under the upcast soil of the main Burial 1 of Kal'kova Mogila (Mozolevskiy and Polin 2005, p. 256). On either side of the passage, between the piles of mainland upcast subsoil from the central grave of the Krasnokutskiy kurgan, the following objects were recorded: 2 large clusters (0.9 × 0.55 m) of iron fittings from dismantled carts and wheels; 4 bronze pole tops; over 100 iron bits with cheekpieces; and bronze appliques from the bridles and the funeral cart (ДГК-I 1866, pp. 44–47).

*Under the upcast subsoil* from Burial 1, Kurgan 1, near the village of Vladimirovka, the excavators discovered a bridle buckle, a piece of orange-red mineral measuring 4 × 5 cm, and fragments of a set of spring pliers, all of which had been deposited over a layer of eelgrass (Polin and Kubyshev 1997, p. 23). On top of Burial 2, Kurgan 3, near the same village, a spheroid stone (3.5 cm in diameter) had been placed over an eelgrass layer under the upcast subsoil (Polin and Kubyshev 1997, p. 27). In Kurgan 32 near Katerinovka (the town Ordzhonikidze), under the upcast soil from the main Burial 3, fragments of amphorae were found. Subsequent refitting showed that the fragments matched amphora sherds from the bottom of the ditch that enclosed the kurgan, providing evidence of a funeral feast that took place before the catacomb of the initial burial in the kurgan (i.e., Burial 3) was dug out and the tumulus of the kurgan was built (Polin 2011, pp. 240–41).

On the ancient ground surface under Kurgan 8 near the village of Sheluga—a construction 2.3 m tall built around the middle of the 5th century BC—a layer of eelgrass covered the following objects: two bronze vorvarkas and arrowheads, iron spearheads, and several golden objects, including a neck ring and a large vorvarka (Kubýshev and Kupriy 1992).

In the sole burial of Kurgan 10 near the village of Bubnovaya Slobodka, the excavators found a bronze cauldron that had been placed in a special pit dug into the ancient ground surface before it was covered by a 1.2 m tall tumulus (Belyaev 1983). *Near the perimeter of the upcast subsoil* from Burial 4 of Kurgan 5 near the village of Nagornoe, another bronze cauldron was found standing in a similar arrangement (Mozolevskiy 1973, p. 194). Finally, during the removal of the upcast subsoil from the main Burial 4 of Kurgan 13 near the village of L'vovo, bridles and cheekpieces were discovered (Evdokimov 1992, p. 147).

### 9.3. Depositional Type No. 3: *The Axe in a Niche at L'vovo Kurgan 11, Burials 5–6*

In the heavily ploughed-over Kurgan 11 at L'vovo (preserved height 2.3 m), two members of the local clan nobility were interred in consecutive rituals: the first one (Burial 5) through entrance pit no. 1; the second (Burial 6), through entrance no. 2. To judge from the objects that survived the tomb's looting, Burial 5 belonged to a man; the secondary Burial 6, to a woman, perhaps the wife of the tomb's initial occupant, for whom the construction had been designed. Few of the items from the grave inventories remained intact; among them, parts of a wooden burial platform and two skeletons; attachments from spear handles and arrowheads; animal bones from the food offering; and a knife. Much more informative are the contents of the niche connected to Burial 5, which escaped the attention of the grave robbers. The niche contained an amphora, a spearhead, two dart heads, an axe, animal bones from a food offering, and a bronze cup with a bracelet with an arrowhead inside. Irrespective of the tomb's previous disturbance, it appears that neither Burial 5 nor Burial 6 was exceptionally rich, indicating that the occupants of the tomb were of middling status.

The set of objects from the niche of Burials 5 and 6 matches the implements used in the famous Scythian ritual oath described by Herodotus: a wine cup, an arrow, an amphora with wine, spearheads, two dart heads, and an axe (Herodotus 4, 70). It is difficult to say whether this correspondence corroborates the practice of the oath or whether the similarity is coincidental.

The niches in the walls of Scythian catacombs typically contain household items (i.e., of everyday use, such as for cooking and storing food) as well as the burials of accompanying people. However, in a number of cases—as in the niches of Burials 5 and 6 of Kurgan 11—the niches contained weapons alongside the household items, or, indeed, contained only weapons. In the northern Grave no. 1 at Gaimanova Mogila, a burial of a guard (Burial 1) with a military belt, a quiver of arrows, spears, and darts was placed in the northern niche along with an exceptionally rich set of metal tableware and wine amphorae. In the southern niche, the disturbed remains of an accompanying burial of a woman were discovered (Burial 2) (Bidzilya and Polin 2012, pp. 87–96, Figure 113–123). In Burial 4, Kurgan 9, near Velikaya Lepetiha, a bow and a quiver were placed in one of the niches of a woman's burial (Evdokimov et al. 1992, p. 17). In the southern niche of Chamber V at Chertomlyk, a gorytos, swords, belts, a whetstone, and a whip were found (Alekseev et al. 1991). In Niche D in the northern wall of the side tomb at Soloha, a cache revealed a gorytos with a silver overlay and a gold phiale (Mantsevich 1987, p. 22). In the central tombs of the Alexandropol kurgan, one niche yielded an oversized bronze cauldron, while a second one contained wine amphorae. The purpose of the third, looted niche remains unknown, owing to its poor state of preservation (Polin and Alekseev 2018, p. 259). In the 1909 excavations at Chmyreva Mogila, Veselovskiy opened a niche with 11 silver vessels in the wall of the central catacomb, which had been sealed with clayey subsoil (Veselovskiy 1910, p. 307). As the examples show, the niches in Scythian burials performed a variety of functions that were practical as well as ritualistic.

#### 9.4. *Depositional Type No. 4: Weapons, Including Axes, in the Entrance Pit and Dromos of Novomihailovka Kurgan 5, Burial 1*

In the ploughed-over Kurgan 5 (preserved height 1.4 m), the main burial (Burial 1) in the center was a catacomb of Grakov's Type III (Grakov 1962, p. 84) of modest height and depth (3.0 m from the ancient surface). Looted before its discovery, Burial 1 contained parts of a male and a female skeleton, which appear to have been buried around the same time. The grave offerings comprised a surprisingly complete set of offensive weapons, including arrows with a bow, two swords, no fewer than four spears and darts, and an axe. The set of weapons was complemented by a set of horse bits and cheekpieces, two plain black kantharoi, a silver vessel with a golden handle, vorvarkas, beads, a spindle whorl, pieces of graphite, and knives. A distinctive feature of Burial 1 was the presence of two iron axes, intentionally placed opposite each other in the center at the base of the wall (Figure 2). It is difficult to determine how rich the tomb might have been prior to its looting. To judge from its size, the burial was not overly sumptuous as it contained few gold objects (seal rings, earrings, and so on) but not much more. The surprisingly full set of offensive weapons and the bridle parts suggest that the deceased was nevertheless of an elevated status—a well-off Scythian warrior.

The placement of the axes in the burial at Novomihailovka mirrors the situation in Kurgan 4 at the Nosaki tract, where spearheads were driven into the floor in the corners on either side of the entrance pit of the central tomb (Bidzilya et al. 1977, p. 89). Presumably, these were originally complete spears with shafts. A spearhead was found in a similar location in the corner of entrance pit no. 1 of Tomb no. 2 at Babina Mogila, that is, near the entrance to the dromos (the corridor leading from the surface to the burial chamber) (Mozolevskiy and Polin 2005, p. 116, Figure 56). In the Melitopolskiy kurgan, a pickaxe covered with a stone was found at a depth of 4.4 m in the eastern corner of the fill of the entrance pit connecting to the male Burial no. 2. Since the looters' tunnel passed through the western part of the pit, the stone fill in the eastern part remained untouched (Terenzhkin and Mozolevskiy 1988, p. 43). Therefore, we can confidently assume that the placement of the pickaxe was neither accidental nor a result of the tomb's looting, but an intentional deposition associated with the funeral rites.

In the northern Tomb no. 1 at Gaimanova Mogila, a pickaxe was also placed in the passageway between the chamber and the dromos of entrance pit no. 1 (Bidzilya and Polin 2012, pp. 83, 306, Figure 431). The most striking instance of such a deposition comes from the dromos in the central tomb of Tovsta Mohyla. At the beginning of the dromos—still within the entrance pit—a guard's skeleton was found, while the area near the chamber itself contained bronze vessels, a large three-handled amphora, a whip, two quivers with arrows, a scale armor belt, a sword in a golden sheath, and, finally, a luxurious pectoral (a piece of jewelry worn on the chest). All these objects were trapped under the soil of the collapsed ceiling and, consequently, remained unnoticed by the robbers.

#### 10. What Else Could Be Put into the Entrance Pits?

The ritual character of the axe depositions becomes clearer once we consider what other finds can come to light in entrance pits. Occasionally, single fragments of amphorae and animal bones have been discovered in the fill of undisturbed entrance pits of Scythian burials, where they can be assumed to be evidence of offerings that had probably been thrown into the pit together with soil and stones by the guests attending the funeral (Polin 2014, p. 108). Normally, however, such finds tend to present a telltale sign that the burial has been visited by robbers.

Very rarely, precious items are discovered, such as the gold signet ring in front of the sealed entrance to the catacomb at the bottom of the entrance pit in Burial 4, Kurgan 9, near the village of Malaya Lepetiha (Evdokimov et al. 1992, p. 16). A gold signet ring was also found at the entrance to the catacomb of a woman's burial (Burial 1) in Kurgan 16 of the Mamai-Gora cemetery (Andruh and Toshev 1999, p. 101). Elsewhere, mirrors have been found in similar locations in entrance pits or the dromoi of catacombs (Otradnoye



Kurgan 3, Burial 2; Sholohovo Kurgan 16, Burial 1; Novopetrovka-3, Kurgan 10, Burials 2–3; the tomb of Storozhevaya Mogila, Kurgan 3, Burial 3; Korneevka, Kurgan 2, Burial 3; Polin and Daragan (2019a, pp. 210, 238–39, pls. 156–58, 162)). In 27 cases recorded in steppe Scythia, the entrance pit of ordinary burials of armed men from the 4th century BC yielded the remains of one to three horse burials with bridles, occasionally accompanied by saddles (Daragan and Polin 2020).

Notably, too, the gold gorytos overlay and the pectoral from the purported tomb of Philip II of Macedon in Vergina had been found in the entrance chamber (Andronikos 1994, p. 78, figs. 36–38; Babenko 2019, p. 278).

Finally, axes have also been recorded in the entrance pits of the Saltovo-Mayatskiye catacombs and are considered a ritual element by the excavator (Vladimirov 2015, p. 362).

### 11. Finds of Shoulder Bones of Large Animals as Functional Substitutes for Axes

Since an axe is functionally fit for both labor and military purposes, adequate criteria for distinguishing working and battle axes in archaeology are difficult to define (Ryndina et al. 2008, p. 164).<sup>19</sup> At first glance, only the klevets is clearly intended for a military purpose.<sup>20</sup> Therefore, the axes found in the entrance pit and the dromos of the kurgan at Novomihailovka should perhaps be interpreted in light of the shoulder bones of large animals excavated in the entrance pits of some tomb constructions, which were employed as tools for digging the graves. In fact, we cannot rule out that the axes from Novomihailovka were used as makeshift soil-moving implements. Such tools are necessary for excavating subterranean tombs in the northern Pontic steppe, since the clayey subsoil can be considerably dense and hard and thus require great effort.

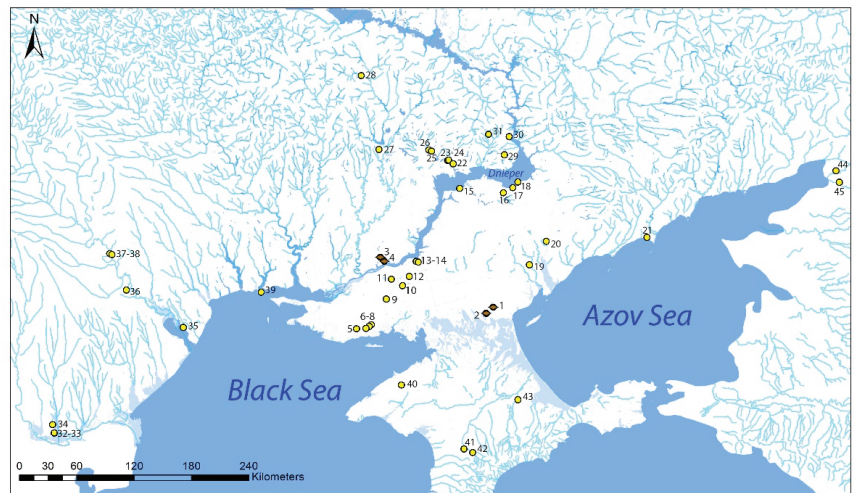
While such shoulder bones are often found in Scythian burials, they are clearly unrelated to the obligatory food offerings. Use wear on the shoulder bones shows that they were specially processed and used as shovels for pouring aerated soil into containers before it was lifted to the surface. The narrow end of the bone is often polished to a shine as a result of its intensive use as a handle. The scapula spine is often cut to shape, and the transverse edge is sharpened. Without special research, it is hard to tell whether the vertical rim of the front edge had worn off owing to its repeated contact with the soil, or whether the bone had been intentionally prepared that way (Mozolevskiy and Polin 2005, p. 256).<sup>21</sup> At the bottom of the undisturbed entrance pit no. 2 of Tomb no. 2 in Babina Mogila, a cluster of such spatulas was found, and two more had been placed opposite each other under the walls at the entrance to the tomb's dromos (Mozolevskiy and Polin 2005, p. 117, Figure 56). In Kal'kova Mogila, one spatula was found under the lateral wall of the entrance pit to the central tomb (Mozolevskiy et al. 1986). Moreover, as noted above, in both Kal'kova Mogila and Babina Mogila, spatulas were also found on the ancient ground surface under the upcast subsoil. A spatula was found in the second entrance pit of the secondary burial in Kurgan 3 near Novotroitskoe (Kubyshev et al. 1976, p. 86). A spatula also appears to have been recovered in the dromos of the first entrance pit in Kurgan 9 near Mar'evka (Bunyatyán and Fialko 2009, p. 58).

In addition to their utilitarian function as a digging tool, animal shoulders seem to have had a high semantic status in many cultures, to judge from their prominence in various ritual activities (Badmaev 2015). The find contexts of shoulder bones in some Scythian burials point to their role and meaning in ritual practice. In Burial 2, Kurgan 53, and Burial 3, Kurgan 109, on the burial ground of Mamai-Gora, worked animal shoulders were found in wooden bowls at the entrance of the catacomb (Andruh 2001, pp. 45, 170). Another telling instance comes from Kurgan 2, Burial 1, near the village of Velikaya Znamenka, where a bovine shoulder bone was placed on top of gold pendants and headdress plaques, two inlaid bone spinning wheels, a set of iron piercers and needles, and a lead spindle whorl in a distinctive assemblage that was arranged separately from the rest of the burial inventory. It is worth noting that even though these personal adornments and textile-working tools carry strong feminine associations, the tomb is otherwise identified as a man's, by both the skeletal material and the character of the rest of the grave inventory (Otroshchenko

1979, pp. 68–70). This situation mirrors the one of Burial 2 of Soboleva Mogila, where a spinning wheel was placed on a separate animal skin near the entrance to the chamber of the male burial, at some distance from the burial platform holding the deceased and all of the (typical masculine) objects that accompanied him (Mozolevskiy and Polin 2005, p. 156).

## 12. The Meaning of Axes in Scythian Burials

The placement of the axes in other Scythian steppe burials indicates that they belonged to the deceased as part of the personal equipment of warriors (Table 1, with map of key sites in Figure 13). These axes were most often placed to the right of the buried. In two instances (Nikolaevka Burial 43 and Zeleniy Gai Kurgan 5, Burial 5), the axes were driven through the floor of the chamber. In three cases, the axes were deposited to the left of the skeleton (Vladimirovka Kurgan 3, Burial 1 and Shevchenko-III Kurgan 8, Burial 5) or under the pelvis (Talaevskiy Kurgan).



**Figure 13.** Location of the axes mentioned in the article. (1) Vodoslavka Kurgan 1; (2) Novomikhaylovka Kurgan 5; (3) L'vovo Kurgan 18; (4) L'vovo Kurgan 11; (5) Novonikolayevka Kurgan 1; (6) Shevchenko-III Kurgan 8; (7) Shirokoe-II Kurgan 62; (8) Ostroy Mogily Kurgan 2; (9) Brilevka Kurgan 9; (10) Privol'noye Kurgan 10; (11) Novaya Mayachka Kurgan 18; (12) Krasnyy Podol-I Kurgan 2; (13) Lyubimovka Kurgan 6; (14) Lyubimovka Kurgan 28; (15) Mamai-Gora Kurgan 108; (16) Gaymanova Mogila; (17) Dneprorudnyy Kurgan 6; (18) Skel'ki Kurgan 13; (19) Vladimirovka Kurgan 4; (20) Melitopol'skiy Kurgan; (21) Berdyanskiy Kurgan; (22) Katerinovka (Ordzhonikidze) Kurgan 49; (23) Zavadskaya Mogila; (24) Strashnoy Mogily Kurgan 4; (25) Kamenka-I Kurgan 6; (26) Zheltokamennaya Mogila; (27) Zeleniy Gai Kurgan 5; (28) Golovkovka Kurgan 27; (29) Mar'yevka Kurgan 16; (30) Kichkas burial 25; (31) Kislichevataya-I Kurgan 10; (32)–(33) Kugurluy Kurgan 11 and Kurgan 15; (34) Plavni Kurgan 32; (35) Nikolayevka Burial 43; (36) Glinnoye Vodovod Kurgan 7; (37)–(38) Butory-I Kurgan 10 and Kurgan 15; (39) Berezan'; (40) Ryleyevka Kurgan 2; (41) Talayevskiy Kurgan; (42) Simferopol' Kurgan 1; (43) Chernozemnoye Kurgan 1; (44) Pyatibratniy Kurgan; (45) Vysochino-V Kurgan 24.

As already pointed out above, all such depositions of axes in Scythian tombs of the northern Black Sea region occurred in male burials.<sup>22</sup> This general pattern is also borne out in the toy or amulet found to the right of a child's skeleton in Burial 1, Kurgan 10, near the village of Privolnoe. This miniature iron axe had one sharp end and one blunt one opposite in the form of a poll with a hole in the middle (dimensions: 2.2 × 1 cm) (Table 1: no. 54). A related find comes from the burial of a ruler from Pyatibratniy Kurgan 8, where a gold votive model of a small axe with a curved poll was found as a part of a necklace (Table 1: no. 53).

Table 1. Catalogue of finds of axes in Scythian steppe burials from the 5th to the 4th centuries BC.

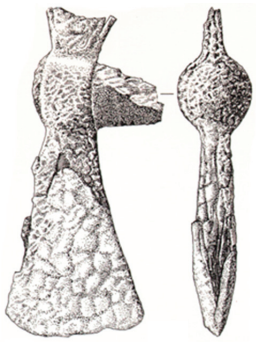


No.	Name of Kurgan/Burial	Find Spot within Burial Site	Description	Sex	Source/Date <sup>23</sup>	Appearance of the Axes
1	Vodoslavka Kurgan 1	Stuck in the top of the subsoil discharge above the burial.	<p>An iron axe with a long wedge-shaped cutting part, thin butt with a chipped end. The eye is round in plan and is highlighted by a cylindrical thickening. A cylindrical iron sleeve is inserted in the lower part, with the remains of the wooden handle inside. An iron wedge has been hammered into the handle from above (Figure 1).                      Length 16 cm, length of the cutting part 10 cm, preserved length of the sleeve 6 cm, width of the blade 7 cm, diameter of the hole 2.5 cm.</p>	Male + Male + Female	<p>Kubýshev et al. (1983).                      The 2nd quarter to the beginning of the 3rd quarter of the 4th century BC—Daragan and Polin (2020, p. 51; 2022).</p>	
2	L'ovo Kurgan 11, Burials 5–6	In the niche in the chamber.	<p>An iron axe with a long wedge-shaped cutting part and a hammer butt bent downwards with a rounded cone on the end. The eye is round in outline and marked by a cylindrical extension sharply offset to the butt. A tapered iron sleeve with a narrow roller at the base is inserted in the eye (Figure 8: 1, 2).                      Length 19 cm, blade width 7 cm, sleeve length 12 cm, diameter 3 cm.</p>	Male	<p>Terenzhkin et al. (1973a, pp. 65–67).                      The 2nd quarter to the beginning of the 3rd quarter of the 4th century BC.</p>	
3	L'ovo Kurgan 18, Burial 2	Under the mainland subsoil discharge from the burial near its entrance pit.	<p>A bronze axe with a rounded curved blade with a small spur on the underside. A high cylindrical eye with a conical opening widened towards the top and decorated with 4 faceted vertical protrusions on the outside. The butt is in the form of a griffin protome.                      The length of the axe is 12.4 cm, the length of the cutting part is 6.3 cm, the width of the blade is 7.3 cm, the height of the eyelet is 2.6 cm, the diameter of the hole is 1.2 × 1.7 cm at the top, 1.1 × 1.2 cm at the bottom (Figure 10).</p>	Male	<p>Kubýshev et al. (1982, pp. 140–41).                      The 2nd to no later than the beginning of the 3rd quarter of the 4th century BC—Polin (2014, p. 287).</p>	

Table 1. Cont.

No.	Name of Kurgan/Burial	Find Spot within Burial Site	Description	Sex	Source/Date <sup>23</sup>	Appearance of the Axes
4–5	Novomikhailovka Kurgan 5, Burial 1	Bottom of entrance pit, axes were put under the opposite side walls, placed in the middle of each.	<p>1. An iron axe with a long, wedge-shaped, slightly drooping cutting part and a short trapezoidal butt. The eye is round in plan, highlighted by a cylindrical thickening. There are traces of wood from the eye (Figure 3: 1). Length 11.5 cm, width of blade 4 cm, length of butt 2.5 cm, diameter of eye 2.5 cm, eyelet 1.5 cm.</p> <p>2. Iron axe with a wedge-shaped, slightly drooping cutting part and a round eye, highlighted by a cylindrical thickening. The butt is missing. There are traces of wood in the sleeve (Figure 3: 2). Preserved iron wedge hammered into wooden handle from above within the eyelet, a flat trapezoidal plate measuring <math>4.7 \times 1.1-1.9 \times 0.3</math> cm (Figure 3: 3). Length 13.5 cm, blade width 4 cm, diameter of eyelet 4 cm, hole 2 cm.</p>	Male + Female	Kubýshev et al. (1985, p. 77). The middle to 3rd quarter of the 4th century BC—Polin (2014, p. 567).	
6	Novomikhailovka Kurgan 5, Burial 1	In a burial chamber at the bottom near destroyed and robbed burial.	<p>1. An iron axe with a long wedge-shaped cutting part and a hammer-shaped, rectangular butt (bent and broken off). The round eye is displaced to the butt. It is marked by a cylindrical extension (Figure 4: 1). A long iron conical sleeve with a narrow clutch at the base was inserted into the eye (Figure 4: 2, 5).</p> <p>2. The lower end of the handle had an iron stock: a long cylindrical tube with a massive tip in the form of an inverted truncated cone (Figure 4: 3, 4). The length of the axe is 17.5 cm, the width of the blade is 6.7 cm, the preserved length of the butt 2 cm, the length of the sleeve 12 cm, diameter 2.5 cm, the length from the handle is 16 cm, its diameter 1.7 cm, the diameter of the tip is between 2 and 4 cm, the hole in it 1.2 cm, its height is 1.7 cm. Total length of axe with reconstructed handle is about 60 cm (Figure 4: 5).</p>	Male + Female	Kubýshev et al. (1985, p. 77). The middle to 3rd quarter of the 4th century BC—Polin (2014, p. 567).	



Table 1. Cont.

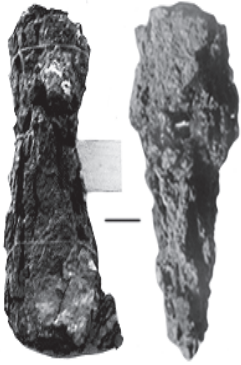



No.	Name of Kurgan/Burial	Find Spot within Burial Site	Description	Sex	Source/Date <sup>23</sup>	Appearance of the Axes
7	Kislichevataya-I Kurgan 10, Burial 1	In the robbed burial	An iron axe with a wedge-shaped cutting part and a short rounded butt. The eye is round in outline, highlighted by a cylindrical extension. Length 14.5 cm, width of the blade 5 cm, butt 4 cm.	Male + Female	Kovaleva (1987, p. 97, Figure 203); Mukhopad (1989, p. 75, Figure 1: 14). The 2nd quarter of the 4th century BC.	
8	Zhelto kamenskaya Tolstaya Mogila. Central Tomb	In the robbed burial.	Iron axe with a wedge-shaped cutting part. The butt is rectangular in cross-section, measuring 2 × 2.8 cm, extending down to 4.5 cm. The eyelet is round in plan, shifted closer to the butt. It is marked by a cylindrical thickening. Total length 15.5 cm, diameter of the eyelet 4 cm, diameter of the hole 1.2 cm.	Male + ?	Mozolevskiy (1982, p. 208, Figure 34: 22, 350–340) The 2nd to the 3rd quarter of the 4th century BC—Polin (2014, p. 454).	
9	Gruppa Strashnoy Mogily Kurgan 4, Burial 2	Near the right hand.	An iron axe with a long wedge-shaped cutting part, with a small notch at the bottom and a massive highlighted rectangular butt. The length of the axe is 20 cm; the width of the blade is 5.5 cm. The eyelet is oval and 3.5 cm long, with remnants of a wooden handle in it.	Male + Female	Terenozhkin et al. (1973b, pp. 142–43, Figure 28: 12). The 2nd to 3rd quarter of the 4th century BC—Polin (2014, p. 539).	
10	Katerinovka (Ordzhonikidze) Kurgan 49, Burial 1	On the right side at shin level perpendicular to the legs.	The axe is an iron axe with a long cutting part, which converges on the tip at the very end, and a short, solid butt. The longitudinal section is wedge-shaped, equally wide from the butt and almost to the point. It resembles a cleaver. With a total length of 18 cm, the hole with a diameter of 1.5 cm is located 5.5 cm from the butt. The butt is massive, apparently rectangular. Total length 18 cm; cross-section 5 × 4 cm.	Male + Female	Polin and Daragan (2018). The 2nd quarter of the 4th century BC.	

Table 1. Cont.

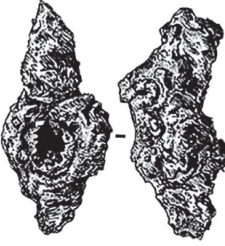
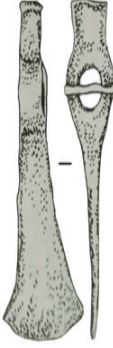


No.	Name of Kurgan/Burial	Find Spot within Burial Site	Description	Sex	Source/Date <sup>23</sup>	Appearance of the Axes
11	Butory-I Kurgan 10, Burial 2	In the robbed burial.	A fragment of an iron axe curved along its length has been preserved: the central part with a circular in plan highlighted cylindrical eye with adjacent parts of the cutting part and the butt. The preserved length is on the scale of 10 cm. The diameter of the hole is 1.8 cm.	?	Simika et al. (2013, p. 65, Figure 42: 10).	
12	Butory-I Kurgan 12, Burial 2	In the robbed burial.	An iron axe with a wedge-shaped cutting part, a short rectangular butt and an oval eye, highlighted by a cylindrical thickening. The top of the eye is overlapped by an iron tongue, fixing the handle. The length of the axe is 14.2 cm, the width of the blade is 5.5 cm, the diameter of the hole is 2 cm, the size of the butt is 2.5 × 1.4 cm.	?	Simika et al. (2013, p. 73, Figure 48: 4). The 3rd quarter of the 4th century BC—Polin (2014, p. 512).	
13	Vladimirovka Kurgan 3, Burial 1	Near the left hand.	The iron axe is slightly curved, with a long wedge-shaped chopping part and a rectangular butt. The 67 cm long wooden handle is fixed. The axe is 16.5 cm long, the butt is 5 cm long, the cross-section dimensions are 3 × 3, the length of the cutting part is 10.1 cm, the width of the blade is 4.2 cm.	Male	Polin and Kubyshhev (1997, p. 28, Figure 21: 3). The 1st quarter of the 4th century BC.	
14	Zelenyy Gai Kurgan 5, Burial 5	Near the right foot, stuck in the bottom of the chamber.	Iron axe with a long expanding cutting part and a short butt square in cross-section, separated by a cylindrical eye. The hole is sub-rectangular. Length of the axe 16.5 cm; width of the blade 3.5 cm.	Male, 18–20	Kovaleva et al. (2003, p. 45, Figure 16: 4). The 2nd quarter of the 4th century BC.	

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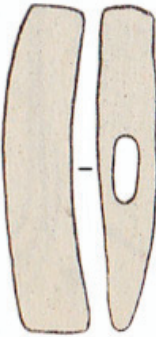



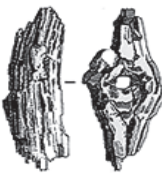
No.	Name of Kurgan/Burial	Find Spot within Burial Site	Description	Sex	Source/Date <sup>23</sup>	Appearance of the Axes
15	Golovkovka Kurgan 27, Burial 1	In the robbed burial.	Iron axe, curved along the length, with a rectangular butt. A fragment of the wooden axe handle, wedged with a bronze arrowhead, was preserved in the oval hole. The length of the axe is 14 cm, the width of the butt is 3.5 cm, the width of the blade is 5 cm.	Male	Polin et al. (1994, pp. 15–17, Figure 24: 18). The 1st half of the 5th century BC.	
16	Novonikolayevka Kurgan 1, Burial 7	On the right knee.	An iron curved axe with a rounded eye with a small hole. The length of the preserved part is 14 cm; the diameter of the hole is 1.5 cm.	Male	Evdokimov et al. (1984, p. 60). The 4th century BC.	
17	Skel'ki Kurgan 13	Beneath the animal bones from the farewell food, together with the dart and the dart-butt from its shaft.	Iron curved along the length of the axe with a rounded in plan highlighted cylindrical eye. The ends are broken off. Preserved length 27 cm.	Male	Popandopulo (2011, p. 36, Figure 13: 3). The end of 5th to the beginning of the of 4th century BC.	
18	Lyubimovka Kurgan 6, Burial 1	At the right knee.	An iron axe, slightly curved in length, highlighted by a cylindrical eye round in plan in the center. One end is pointed; the other end has a small square butt. The length of the axe is 17 cm, the greatest width in the middle is about 4 cm, the diameter of the hole is 2 cm.	Male	Leskov et al. (2023). The 2nd quarter of the 4th century BC.	
19	Lyubimovka Kurgan 28, Burial 1	Near the right shin.	Iron axe, arched along the length. The middle part with a circular in plan allocated cylindrical eye and the striking part and butt departing from it are preserved. The preserved length is 7.5 cm; the diameter of the hole is 1.2 cm.	Male	Leskov et al. (2023). The end of 5th to the beginning of the 4th century BC.	

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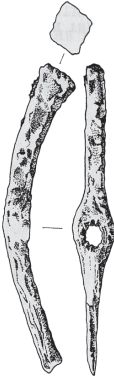



No.	Name of Kurgan/Burial	Find Spot within Burial Site	Description	Sex	Source/Date <sup>23</sup>	Appearance of the Axes
20	Mamai-Gora Kurgan 108, Burial 3	Across-wise the right arm above the wrist.	Iron axe, slightly curved in length, with a round in plan allocated cylindrical aperture with a square hole. A wooden wedge is preserved inside. The wooden hilt has been faded. Length 21 cm, width 2.7 cm, thickness 1 cm. The dimensions of the hole are 1.5 × 1.5 cm.	Male	Andruh (2001, pp. 165, 167, Figure 69: 1). The 2nd quarter of the 4th century BC.	
21	Krasnyy Podol-I Kurgan 2, Burial 1	At the entrance to the chamber on a shield, along with spears and darts.	Iron axe, curved along the length, with an equal-sized striking part and a square in cross-section butt with an extended end, with a circular in plan highlighted cylindrical eye in the center. The length is 20 cm, the striking part is 8 cm, the width of the blade is 2 cm. Butt length 8.6 cm, its cross-section 2.0 × 2.2 cm, hole diameter 1.5 cm.	Male	Polin (1984, p. 112, Figure 13: 3). Around 380 BC—Polin (2014, p. 252).	
22	Shirokoe-II Kurgan 62, Burial 1	Near the right arm, above the elbow.	Iron axe, arcuate curved in length, with a rounded in plan eye in the central part. One end of the axe is sharp; the other is blunt. There is an iron wedge in the eye for fixing the wooden handle. Length 16 cm, width 1.5 cm, diameter of the hole 1.5 cm.	Male	Chernenko and Byniatyan (1977, p. 81, Table XXI). The 2nd quarter of the 4th century BC.	
23	Shevchenko-III Kurgan 8, Burial 5	Near the left arm.	Iron axe/klevets, arcuately curved along the length with a eye in the central part. The hole is rectangular. Length 19 cm, cross-section 2.2 × 2.3 cm, eye size 2.1 × 1 cm.	Male	Bunyatyayn (1977, p. 105, Table XXVII). The 2nd quarter of the 4th century BC. Image: M. Daragan.	
24	Brileva Kurgan 9, Burial 3	Near the right leg.	Iron axe/klevets with a rounded in the plan marked out eye in the center. The long beard is sharpened; the long, thin rectangular butt is evenly trimmed in cross-section. Length 23 cm; hole diameter 1.5 cm.	Male	Evdokimov et al. (1985, pp. 16–17, Figure 11: 5). The 2nd quarter of the 4th century BC; Daragan (2020, pp. 226–27). Image: M. Daragan.	



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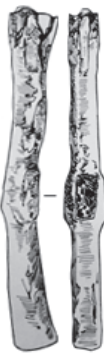


No.	Name of Kurgan/Burial	Find Spot within Burial Site	Description	Sex	Source/Date <sup>23</sup>	Appearance of the Axes
25	Mar'evka Kurgan 16, Burial 1	In the robbed burial.	An iron axe, slightly curved along its length, with the spur shifted to the butt. The combat part is narrow, extending to the blade; the butt, oval in cross-section, extends to the end. In the eyelet is inserted iron casing to fix the wooden handle. The length of the axe is 20 cm, the fighting part is 11 cm, the butt is 6.5 cm, the width of the blade is 2.8 cm.	Male?	Cherednichenko (1976, p. 88). The 2nd quarter of the 4th century BC. Image: M. Daragan.	
26	Dnepropрудnyi Kurgan 6, Burial 2	Near the right arm.	Iron axe with a narrow widening of the cutting part, a long bar-shaped butt with a blunt end, with an eye in the central part. An iron sleeve was inserted into the eye, in which a wooden hilt was fixed. There is an iron nail in the upper part of the eye, which was used to fasten the axe to the sleeve. The length is 19.5 cm, the cutting part is 9 cm, the butt is 7.5 cm, the width of the blade is 4 cm. The sleeve is broken off, diameter 2 cm.	Male	Kuznetsova et al. (2020, pp. 27–28, Figure 9a). The 1st quarter of the 4th century BC—Polin (2014, p. 363).	
27	Gruppa Ostroy Mogilykurgan 2, Burial 1	In the robbed burial.	Iron hammer with a rounded in plan highlighted cylindrical eye with a rectangular hole. Both ends blunt, rectangular in cross-section. Length 18.5 cm, section 1.7 cm, hole 2 × 0.7 cm.	Male?	Olgovskiy and Polin (1977, p. 35). The 4th century BC.	
28	Nikolaevka, Burial 43	Below the right elbow, stuck in the bottom of the grave.	The iron axe, according to A.I. Melyukova's description, is double-bladed.	Male	Melyukova (1975, pp. 91, 135, 177, Figure 56: 1). Middle to 3rd quarter of the 4th century BC.	
29	Novaya Mayachka Kurgan 18, Burial 2	Near the right leg.	Iron double-bladed axe with a eye in the center. Length 22 cm, thickness 4 cm.	Male	Evdokimov et al. (1988, pp. 29–30, Table 26: 3). The 2nd quarter of the 4th century BC. Image: M. Daragan.	

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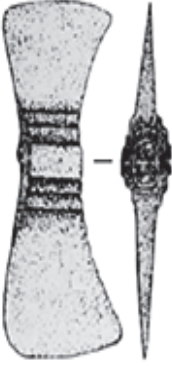



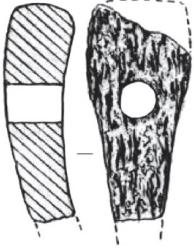
No.	Name of Kurgan/Burial	Find Spot within Burial Site	Description	Sex	Source/Date <sup>23</sup>	Appearance of the Axes
30	Ryleyevka Kurgan 2, Burial 2	On the right near the elbow joint under the spear-butt.	A bronze axe-labrys with a thickened central part with an eye and an oval hole in it, which is marked by consecutively protruding vertical ledges. The preserved 27 cm long wooden handle of the axe had a bronze conical blunt butt cap at the end.	Male	Koltuhov (2012, p. 73, Figure 60: 2). The 2nd–3rd quarter of the 5th century BC.	
31	Kugurluy Kurgan 11, Burial 1	In the robbed burial.	Iron axe with a eye in the middle, double-bladed. Length 14, 5 cm, width of the striking blade 3.5 cm, diameter of the hole 2 cm.	Male ?	Gudkova and Sunichuk (1984, p. 39, Figure 82: 2, 3). The 2nd quarter of the 4th century BC.	
32	Kugurluy Kurgan 15, Burial 2	In the robbed burial.	Fragment of an iron axe with a wedge-shaped cutting part. Preserved length 10.5 cm. Blade width 3.3 cm.	Male ?	Gudkova and Sunichuk (1984, p. 44, Figure 94: 1). The 2nd quarter of the 4th century BC.	
33	Kamenka-I Kurgan 6, Burial 2	On crossed legs.	Iron axe with a wedge-shaped cutting part and expanding rectangular in cross-section of the butt. Remains of the wooden handle are preserved in the eye. Length 17 cm, width of the blade 4 cm, butt 4.5 cm. The diameter of the hole is 2 cm.	Male + Male	Mukhopad and Androsoy (1986, pp. 15, 17, Figure 4). The 2nd quarter of the 4th century BC.	
34	Plavni Kurgan 32, Burial 1	In the robbed burial.	Iron axe wedge-shaped, evenly converging to the tip. Arc-like curved along the length, with a massive broad butt and an elongated cutting part, with a chipped blade. The length of the preserved part is 10 cm; the diameter of the hole is 1.5 cm.	Male	Sunichuk and Fokeyev (1984, p. 114, Figure 4: 16). Middle of the 4th century BC.	

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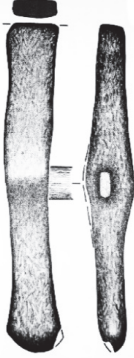


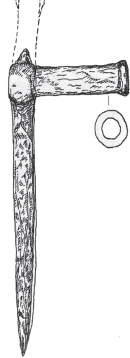
No.	Name of Kurgan/Burial	Find Spot within Burial Site	Description	Sex	Source/Date <sup>23</sup>	Appearance of the Axes
35	Glinoye Gruppya Vodovo Kurgan 7, Burial I	On the right side of the pelvis.	An iron axe with a long, narrow chopping part and butt, rectangular in cross-section. The moon-shaped blade is slightly widened. The eye is oval in outline; the hole, rectangular. The length of the axe is 21 cm, the width of the blade is 3.5 cm, the cross-section of the butt is 2.8 × 1.4 cm, the size of the hole is 1.6 × 0.8 cm.	Male	Simika et al. (2019, pp. 366, 369, Figure 3: 21). The 1st quarter of the 4th century BC.	
36	Pervaya Zavadskaya Mogila, Burial I	In the robbed burial.	The iron klevets is slightly curved along its length. The long side is sharpened; the butt has an extended end. Rounded in plan, a highlighted cylindrical eye in the center. The handle is wedged with an 8 cm long iron wedge. The length of the knuckle is 26 cm. The thickness of the eye is 4 cm. The size of the hole is 2 × 2.5 cm.	Male	Mozolevskiy (1980, p. 104, Figure 43: 5). Middle to the 3rd quarter of the 5th century BC—Polin (2014, p. 197).	
37–41	Berdianskiy Kurgan, Southern Tomb	Hanging on the catacomb wall.	Four iron klevetses and one bimetallic one. The last has a four-sided striker and a bronze cylindrical nozzle on the butt with an end in the form of a human head. The remaining klevetses are of the same type: slightly curved in length, with a circular hole in the circular cylindrical eye, rectangular in cross-section butt with a length of 5–7 cm and a long, also rectangular in cross-section, striker. The total length of two of the jaws was recorded: 12.5 and 16 cm. The others have broken ends.	A-	Murzina and Fialko (1998, p. 107). Murzin et al. (2017, pp. 36, 104, nos. 83–84, Figure 25): 380–370 BC—Polin (2014, p. 268).	
42	Gaimanova Mogila, Northern Tomb no. 1	At the end of the dromos of entrance pit no. 1 under the south side wall on the floor near the entrance to the catacomb.	Iron klevets with a long cylindrical sleeve with a sleeve base, a long, straight striker, and a chipped butt. Sleeve height 9.9 cm, diameter 2.2 cm, striker length 16.2 cm.	Male	Bidzilya and Polin (2012, pp. 88, 306–7, Figure 431). The 2nd quarter of the 4th century BC.	

Table 1. Cont.



No.	Name of Kurgan/Burial	Find Spot within Burial Site	Description	Sex	Source/Date <sup>23</sup>	Appearance of the Axes
43	Melitopolskiy Kurgan Myzhszkaya Burial 2	Specially laid in the entrance pit.	Iron klevets. The pick is 23 cm long, rhombic in cross-section, and the butt is broken off to 5.5 cm. The total preserved length is 31 cm. The round cylindrical eye is highlighted, sharply displaced to the butt. A conical sleeve 9 cm long and 2 cm in diameter is inserted in the eye.	Male	Terenozhkin and Mozolevskiy (1988, p. 43). The 2nd quarter of the 4th century BC—Polin (2014, p. 475).	
44	Vladimirovka 4, Burial 2	In the robbed burial.	Pick of iron klevets. Length 14 cm; diameter in the center 2.5 cm.	Male	Cherednichenko and Boldin (1977, p. 132). The 2nd quarter of the 4th century BC—Polin (2014, p. 385).	?
45	Talaevskii Kurgan	Under the pelvis.	Iron axe in the form of a long massive rounded in cross-section rod with a hammer-like butt on one end and a flared semicircular blade on the other. The eye is rounded in plan, 2 cm in diameter, offset to the butt. The length is 17 cm and the width of the blade is 4 cm. The wooden hilt is up to 35 cm long and is wrapped in a spiral of gold ribbon.	Male	Koltuhov and Senatorov (2016, p. 102, Figure 34: 4; 38: 3). The 1st quarter of the 4th century BC.	
46	Chernozemnoye Kurgan, Burial 3	?	Axe	Male?	Chernenko et al. (1986, pp. 175, 316, no. 309). The 5th century BC.	?



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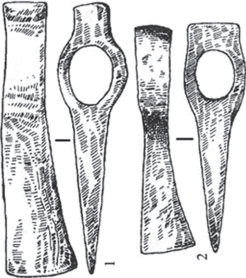


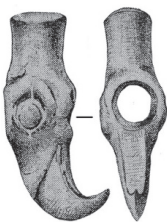
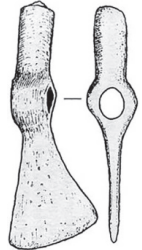


No.	Name of Kurgan/Burial	Find Spot within Burial Site	Description	Sex	Source/Date <sup>23</sup>	Appearance of the Axes
47–48	Výsochino-V Kurgan 24, Burial 3	Near the right shoulder.	<p>Iron axes:</p> <p>1. With a short rectangular butt, a long wedge-shaped cutting part, an expanding blade, a round in plan highlighted cylindrical eye, displaced to the butt. Blade length 20 cm, width 6.5 cm, cross-section of the butt 3.7 × 2.8 cm, hole 3 × 4 cm.</p> <p>2. With a short rectangular butt, a long wedge-shaped cutting part, a round eye offset to the butt. Length 17 cm; width of the blade 4.6 cm.</p>	Male	Bespalyy and Luk'yashko (2008, p. 90, Table LXXXIX: 2–3). Scythian times.	
49	Simferopol' Kurgan 1, Burial 3	Near the right hand.	<p>Bronze votive axe with an image of a horse's head on the curved end of the "cutting" part and a hoof on the end of the short butt. On the scale of 6.4 cm long.</p>	?	İllins'ka (1961, p. 44). Beginning of the 5th century BC.	
50	Kichkas Kurgan, Burial 25	In the robbed burial.	<p>Votive bronze axe with a short massive round in cross-section butt and the working part in the form of an eagle's head with a massive beak. Length 10 cm; diameter of the hole 1.5 cm.</p>	?	Dobrovolsky (1929, p. 82). End of the 5th century BC—İllins'ka (1961, p. 44).	
51	Lower Dnieper Kurgan Excavations by P.O. Burachkov		<p>Votive bronze axe with a short massive round in cross-section butt and the working part in the form of an eagle's head with a massive beak. On the scale of 7 cm long.</p>	?	Yatsenko (1959, p. 42, Table III:3). The end of the 5th century BC—İllins'ka (1961, p. 44).	
52	Berezan'		<p>Votive bronze axe. On a scale of 8.8 cm long.</p>	?	İllins'ka (1961, p. 51, Figure 13: 1).	

Table 1. Cont.

No.	Name of Kurgan/Burial	Find Spot within Burial Site	Description	Sex	Source/Date <sup>23</sup>	Appearance of the Axes
53	Eighth Piatibratniy kurgan	Model amulet as part of a necklace.	Gold pendant in the form of an axe with a wedge-shaped, slightly dangling cutting part, without a butt. Length 2.2 cm.	Male	Shilov (1962, p. 55, Figure 3: 6). Near 345 BC—Polin (2014, p. 434).	
54	Privol'noye Kurgan 10, Burial 1	The amulet model lay on the right side of a belt.	Iron hammer-shaped pendant with one sharp end and a blunt end. Dimensions 2.2 × 1 cm.	Child	Kubyshev et al. (1975, p. 24). Middle of the 4th century BC—Polin (2014, p. 562).	

In none of these cases can the iron axes be considered to indicate the special social status of their owners. There is no recurring correlation among the grave offerings of specific types of axes or other potential identifying markers. As Ilinskaya noted, axes are absent in the kurgans that are clearly identifiable with rulers. The only find that might contradict this pattern—the battle axe from Kelermess—was discovered under unclear circumstances and might reflect social and cultural conditions that differ widely from those prevailing in the northern Pontic steppe of the Classical era. Small bronze votive axes of an exclusively symbolic character might, conversely, have had a more direct connection to the status or social function of their owners. Nevertheless, Ilinskaya correctly concluded that burials with such small axes do not stand out in terms of either the wealth of the grave offerings or the opulence of the ritual.

### 13. Axes in the Ritual Practices of Various Populations

The semantics of ancient burial rituals and, first of all, its worldview basis can't be properly understood without appeal to ethnography (Kosarev 2010, p. 23).

As Ryndina, Bobrova, and Ozheredov have documented, many populations of the Eurasian steppe belt believed in the magical and protective power of axes as divine objects that circulated among both mortals and the heavenly gods. This supernatural ability to freely cross the borders of the cosmos underpinned the mythological status of these objects. This became the basis for an extended set of interdependent ideas; above all, the idea that axes are located at the boundary between the real and supernatural worlds, which is manifested especially clearly in situations where souls leave or arrive into the world (Ryndina et al. 2008, pp. 167, 170). In relation to the archeological contexts discussed in this article, it becomes clear that the axes left in entrance pits to mark the sealing of the burial and the examples found under the upcast subsoil—among them the one from Burial 2, Kurgan 18, near the village of L'vovo—were employed during and before the burial ritual, respectively, and reflect the multitude of uses to which axes were put in different household and life-cycle rituals, as well as in the burial rites of many people throughout history.

Such ritualistic and utilitarian functions can be observed in a variety of ethnographic contexts. In Poland, for instance, axes served until recently as amulets to protect the house from the entry of death. When someone died in the village, people put an axe under the threshold of their houses with the blade pointing outside and drew crosses on all four walls with a garlic clove. Another custom involved carrying the coffin over an axe lying on the threshold or under it to prevent “bad things from coming into the house.” While carrying the coffin into the yard, people put an axe and a padlock at the gate. In a similar vein, when the body was conveyed across the borders of the deceased's land, it was carried over two axes lying crosswise on the road—a practice that can be described as symbolically closing the borders of the domestic space for the dead person's soul (Fischer 1921, pp. 249–50; quoted by Andryunina 2015, p. 47).

The Siberian nations also gave the axe a special role in burial rituals. An axe was put on the threshold when the deceased was carried out. After closing the lid of a coffin, the northern Khanty customarily placed an axe under the casket in the area of the head, and the Yugansk Khanty set the coffin on top of an axe when the funeral procession stopped for a rest. The Mansi of Verhniaya Lozva threw one of the axes used during the burial into the burial pit near the coffin. Upon returning from the cemetery, the eastern Khanty drove the pole of an axe into the earth or the snow on the road so that the blade pointed across the road or back to where they had come from in order to protect themselves from an unwanted visitor—the soul of the deceased. The Chulym Turks put an axe under the feet of the deceased, and, in the south of western Siberia, the Chelkans used the axe in shamanic rituals as a barrier between the worlds of the dead and the living. In so doing, the shaman sought to chase away the souls of his living kinsmen while he accompanied the soul of the deceased to the land of the ancestors (Ryndina et al. 2008, pp. 173–74).

## 14. Conclusions

This article discussed various archeological situations indicating the use of axes in different stages of the Scythian burial ritual. The mode of deposition of these objects depended on the ritual observances of the specific Scythian burial in question. In particular, axes were used in various rituals that were performed before the digging of the grave (as seen in the examples deposited under the upcast subsoil, for instance, in Kurgan 18, Burial 2 at L'vovo); before leaving the grave (seen in the items left in the dromos and the entrance pit, such as in Kurgan 5, Burial 1, at Mihailovka); and while sealing it (as evidenced by the axes found on top of the upcast subsoil, as in Kurgan 1, Burial 1, at Vodoslavka). In one case, an axe was found in a burial niche. While we do not know what factors, aside from the social status of the deceased, determined the exact form of the burial ritual, it seems highly likely that the ritual actions involving axes derived their meaning from a shared domain of connotations, as indeed was the case in other cultures as well. Finally, we have seen that the appearance of the types of axes used in burial rituals can be reconstructed from their depictions on figure-decorated Scythian metalwork, the coins of Kerkitis, and the Borysthene coins of Olbia.

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**Conflicts of Interest:** The authors declare no conflict of interest.

## Notes

- <sup>1</sup> Of course, first of all, the Central Tomb of Tovsta Mohyla constitutes an extraordinary situation where a pectoral with a whip decorated with a golden ribbon, two quivers with arrows, an inlaid belt, and a sword in a golden sheath were placed in the dromos (usually, nothing is placed in a dromos, especially nothing of value) (Mozolevskiy 1979, pp. 52–54). The strange placement of a whole set of such precious things in Tovsta Mohyla is the most striking example of unrelated offerings being put into a burial. On par with these finds are the finds of spinning wheels in men's burials in Soboleva Mogila and in the north-eastern tomb of the Alexandropol kurgan, as well as the finds of women's headdresses in men's burials of the Eighth Piatibratniy and the Ryzhanovskiy kurgans. This phenomenon needs to be considered separately, which we are planning to do in the near future.
- <sup>2</sup> According to Ilinskaya, Herodotus described axes in this story as one of the most common types of Scythian weapon, which does not follow from the content at all (Il'ins'ka 1961, p. 28). Quite the opposite: the use of a "double poleaxe" of any kind, which was also one of the holy gifts (Dovatur et al. 1982, pp. 101, 125, para. 5; 70; Kisel 2008, p. 110), was almost unknown in Scythian ritual if we look at the actual finds. Four examples from the steppe are known, one of them being a bronze votive (Table 1: nos. 28–31). Apparently, a special type of ritual poleaxe was used in the swearing ritual. This kind of unique miniature bronze double-sided labrys—11 cm long, judging by the scale—was found in a warrior burial in Barrow 2, Burial 2, near the village of Ryleevka from the 2nd to 3rd quarter of the 5th century BC. The limited use of axes and pickaxes among the Scythians of the northern Pontic area is indicated by the rarity of these types of finds in barrows and settlements. Melyukova very reasonably considered axes and pickaxes a secondary type of weapon among the Scythians of the northern Pontic area (Melyukova 1964, pp. 65–66; 1975, pp. 202–3). To judge from the frequency of the depictions of axes on Scythian kurgan stelai, this type of weapon was slightly more popular during the archaic period. However, by the 4th century BC, the situation had changed. All 17 or 18 of the known depictions of axes appear on stelai from the 7th to the 5th century BC. Such depictions are absent from stelai of the 5th to the 3rd century (Olhovskiy and Evdokimov 1994, p. 71). The find of 14 axes in the barrows near the village of Glinoe may seem to suggest the prevalence of axes among the Scythians in the 3rd and 2nd centuries BC (Telnov et al. 2016, p. 782). However, such a conclusion seems unwarranted; the inclusion of axes is apparently a local feature of the burial ground near the village of Glinoe, as in the late Scythian culture of Crimea only one axe from the 3rd to 1st century BC is known, and there are not many more from the 4th to the 1st century BC. In the Lower Dnepr region of the late Scythian period, no axes were found at all (Puzdrovskiy 2007, pp. 69, 134–35; Viazmitina 1986, p. 231).
- <sup>3</sup> Novotroitskiy region of Herson oblast: Kubyshev et al. (1983).
- <sup>4</sup> For comparison: Melitopolskiy kurgan, 4.0–4.5 m; Berdianskiy kurgan, 8.4 m.
- <sup>5</sup> According to osteological analysis conducted by Olexandra Kozak.



6 Novotroitsky region of Herson oblast: Kubyshev et al. (1985, pp. 76–78).

7 Berislavsky region of Herson oblast: Terenozhkin et al. (1973a).

8 In a publication of some of the materials from Burial 2, Kurgan 11, near the village L'vovo, Fialko, Homchik, and But came to the conclusion that such bronze cups were used by the Scythians to sterilize medical instruments—namely, those typical for Scythian burials, such as iron knives with bone handles—which were purportedly taken out of the boiling water with the spring forceps also found in Burial 2. An example of a surgery that required a bronze sterilizing cup, knives, and forceps is the castration of a stallion, regularly practiced by the Scythians. According to the authors, “Such [an] operation demands of a veterinarian great experience and a set of special instruments (for example, a scalpel, special tools like forceps and retainers), necessarily sterilized” (Fialko et al. 2018, p. 118). In our view, this conclusion is completely absurd, in terms of both medical history and the nomad lifestyle. First of all, even as late as the mid-19th century, the idea of it being necessary to sterilize instruments did not yet exist. In the best-case scenario, surgeries were conducted with instruments that had been scrubbed to remove blood, using almost month-old sheets, which were reused multiple times, and the bloodstains from previous operations did not bother anyone. Therefore, it is ridiculous, to put it mildly, to talk of antiseptic practices in Scythian times. Second, cattle herders throughout history have castrated horses, bulls, and sheep, and, until recently, they did so without any special medical instruments, using so-called improvised means and without sterilizing anything in boiling water in bronze vessels (Miller 2009, p. 218). The methods of castration vary and include holding the stallion’s testicles with red-hot forceps and cutting them off with a knife. The forceps found in Scythian burials, which have round curved or flat blades, were completely unfit for this purpose. Long flexible plate handles do not provide the firm grip necessary for such a precise task. They had a very different purpose (Shramko 1969, p. 58).

9 Berislavskiyi district of Herson oblast: Kubyshev et al. (1982).

10 For a detailed description of the construction of Kurgan 18, Burial 2, and its finds, see Kubyshev et al. (1982, pp. 131, 140–44, Figure 1, 9–13).

11 When analyzing Scythian axes, it is customary to combine the finds from the burials of the Ukrainian forest-steppe and North Caucasus of the 7th to the 5th century with the samples from steppe Scythia of the 5th and 4th centuries BC. However, archaic and classic Scythia reflect different periods, different regions, different Scythians, and completely different material cultures. This is why we do not consider the axes from the burials of archaic Scythian times in this article.

12 According to Bunatian, the presence of an axe is a “clear” indication that the buried person was male (Bunyatyan 1985, pp. 67, 69). Nikonorov tried to refute this conclusion on the basis of the find of axes in two women’s burials in the barrows near the village of Glinoe (Nikonorov 2015, p. 403). Bunatian’s conclusion was based on the materials of barrows of the 5th to 4th century BC from the Lower Dnepr region, while the burial ground near Glinoe dates to the 3rd to 2nd century, up to the beginning of the 1st century BC. This was a completely new stage in Scythian history, with new realities that we still know little about. For the 5th to 4th century, however, it is undisputable that Scythian burials with axes belonged to men.

13 Most axes from the featured selection were studied visually. A few finds could not be located.

14 Axes with massive butts are typically considered to be working rather than battle axes (İllins’ka 1961, p. 30). However, there are a relatively large number of such axes in warrior burials of Don and Kuban, which makes it obvious that the categorization of axes into battle and working ones is typologically far from certain (Merkulov 2014; Limberis et al. 2020). Notably, in these regions, cases where several axes with massive polls were placed in a burial are known; for example, in a warrior burial in the Sholohovskiy barrow, three axes with massive polls were found (Maksimenko et al. 1984, p. 137, Figure 61: 7).

15 Axes in this shape are widely represented in medieval relics, where they are considered axe-chisels (Beylekchi 2017, Figure 4).

16 Ilinskaya, in her 1961 work, referenced the work of Grakov from 1950 (Grakov 1950, p. 11), where this question was not brought up at all. Only in the book published in 1971 was the purpose of such axes defined, literally in one sentence.

17 In fact, the opposite is true—Olbian coins copied an axe from L'vovo to some extent; however, it was a votive axe, not a battle axe.

18 Front side, Demeter’s head (no. 83); reverse side, eagle on a dolphin turned left (no. 80), but without a name (Anohin 1989, p. 106, nos. 80, 83, pl. IX: 80, 83).

19 Frequent finds of supposed “working” axes in warrior burials near the Don and in Kuban are discussed above. Therefore, perhaps, we should not focus too much on the exact function(s) of each specific axe, as these tools are designed to be versatile and fit for any use. It is likely that a longer handle is necessary for battle; however, this trait is unknown to us most of the time, as the wood rarely survives in the climatic conditions of the northern Pontic area. Accordingly, the descriptions of axes should be limited to their form: massive or narrow butt; long, short, or absent poll; and so on.

20 Even here, however, not everything is so simple. In the walls of steppe Scythian entrance pits and catacombs, two types of traces of earth-moving tools can be found: wide marks left by a tool like a small hoe and pointed marks from a tool like a pickaxe (Mozolevskiy and Polin 2005, pp. 254–58). The latter suggests the use of special pointed picks, similar to modern picks. However, such tools are completely unknown in Scythian material culture. We can assume that the pickaxes—which were supposedly used for battle—were also used for digging Scythian catacombs. It seems that pickaxes, likewise, cannot truly be categorized into battle and working tools.

21 Cattle shoulders, apparently used for the same thing, can be found in the burials of yamnaya (pit-grave) and catacomb cultures of the Bronze age and in the entrance pits of the catacomb culture (Pustovalov 2016, p. 63).

- <sup>22</sup> Axes, as well as maces, were found in some elite Sarmatian women's burials (Yatsenko 2020); for example, in Chuguno-Krepinka, a unique iron axe with a butt in the shape of a six-feather mace was found, and there was a stone mace in Sokolova Mogila. No other weapons were found in these burials. In the later period, axes become a fairly typical find in women's burials of a number of Siberian peoples. Many household chores involving an axe, such as cutting firewood, were traditionally done by women among Siberian people. Therefore, axes mostly belonged to women (Ryndina et al. 2008, p. 165).
- <sup>23</sup> Unless otherwise stated, the dates in the table are derived from the authors' analyses of the material.

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Article

# The Pectoral of Tovsta Mohyla: Understanding the Gold Insignia of Ancient Scythia

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**Abstract:** The gold pectoral from Tovsta Mohyla is a masterpiece of Greco-Scythian metalwork, the most prominent and esteemed of all the finds uncovered in 260 years of excavating the Scythian kurgans. After the pectoral was discovered on 21 June 1971 by B. Mozolevsky, dozens of other scientists joined him in studying it. The researchers have raised a wide range of interesting questions revolving around the origin of the pectoral, the technology involved in its production, its stylistic features, and the interpretation of its depictions. However, so far, none of these questions has been answered definitively. This article provides an overview of the author's recent interdisciplinary research on the Tovsta Mohyla pectoral.

**Keywords:** pectoral; Tovsta Mohyla; Boris Mozolevsky; Scythians; Greco-Scythian metalwork

## 1. Introduction

On 21 June 1971, during the excavations of Tovsta Mohyla (a Scythian burial mound of the 4th century BC), a pectoral was discovered—a gold neck or breast ornament of a noble Scythian (Figure 1). The honor of this discovery belongs to Boris Mozolevsky, head of the archaeological expedition of the Institute of Archeology of Ukraine. The object consists of four torques arranged in a concentric arc, forming three crescent-shaped ornamental fields. Each of the fields bears openwork figure decoration—scenes of predators pursuing and tearing into prey, vegetal ornament, and scenes of nomadic life. The item weighs about 1150 g and measures 30.5 cm in diameter.

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**Figure 1.** Pectoral from Tovsta Mohyla. Treasury of the National Museum of the History of Ukraine. AZS-2494. Gold, enamel. Weight 1149 g, diameter 30.5 cm (source: Dally 2007, fig. 2).

Today, the pectoral is kept in the Treasury of the National Museum of the History of Ukraine and is a symbol of the archeology and ancient history of Ukraine. It has gained enormous popularity both in and beyond the scientific world. No other archaeological

object has managed to become so deeply integrated in the life of modern Ukraine (Figure 2). Awards, festivals, cafes, and restaurants are all named after the gold pectoral. Its image is reflected in everything from cultural symbols and folk art to cosmetics and food industry products. The pectoral is one of the few ancient artifacts reproduced in a number of modern monuments, such as those in Kyiv, Donetsk, and Mykolaiv. The gold pectoral also became the official symbol of the Institute of Archaeology of the Academy of Sciences of Ukraine. Even though it has attracted the attention of scientists since its discovery, many mysteries connected with the study of this masterpiece of Greco-Scythian metalwork remain unsolved.



**Figure 2.** Pectoral in modern life: 1, 2—coins National Bank of Ukraine; 3, 4—postage stamp of the Ukrposhta (Ukrainian Postal Service); 5—cover of the journal «Archaeology» of the Institute of Archeology of the Academy of Sciences of Ukraine; 6, 8—pectoral monuments in Kyiv (6) and Donetsk (6); 7—commemorative sign of the theater award «Kyiv pectoral» (source: author of the collage, Leonid I. Babenko).

Since its discovery, the pectoral has been discussed by many researchers. An incomplete list of works in which it is mentioned consists of 1662 items (Babenko et al. 2021, pp. 21–144). The fiftieth anniversary of the pectoral’s discovery brought renewed interest in the piece, causing an upsurge in publications. Within the last decade alone, more than two dozen works were devoted to the find, including several by the author of this article. However, almost all specialist studies were written in Ukrainian and Russian and, hence, remain prac-



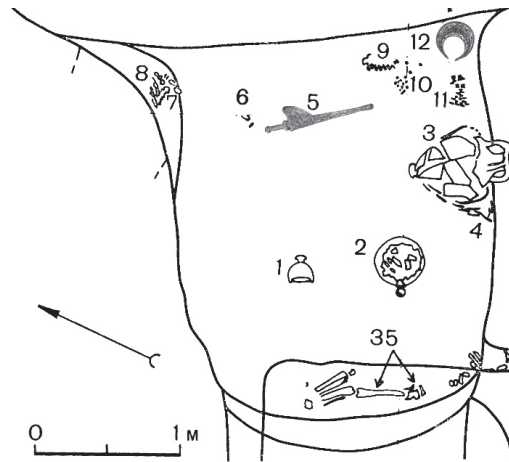
tically unknown in the English-speaking scientific community. The purpose of this article is to acquaint readers with new ideas expressed in the pages of these little-known works.

The article first discusses what the pectoral's morphology and imagery might reveal about the type's long-distance cultural connections and references. The subsequent sections assess the object's technological characteristics and innovative design features in relation to other items of metalwork from the northern Black Sea region, and the paper ends by exploring the iconography and meaning of the figural scenes in light of the pectoral's find spot in a Scythian elite tomb.

## 2. The Origins of the Pectoral: From Archaeological Context to Interregional Connections

### 2.1. A Misplaced Insignia, a Diplomatic Gift, or a Trophy: What Was the Pectoral to Its Wearer?

Despite intense research and debate, no plausible explanation has yet been given for why the famous pectoral from Tovsta Mohyla was found at the bottom of the dromos near the entrance to the subterranean burial chamber of the kurgan (Figure 3).



**Figure 3.** Plan of the dromos of the central tomb of Tovsta Mohyla (source: Mozolevskiy 1979, fig. 31). (1—bronze vessel; 2—Greek bronze bowl; 3—amphora; 4—iron hook; 5—a sword; 6—fragment of a knife; 7—belt and quiver; 8—a knife; 9, 10—remnants of a whip; 11—quiver; 12—pectoral; 35—remains of the skeleton of a servant).

Researchers have attempted to come up with various reasons for the unusual placement, including the possible consequences of ritual sacrifice associated with the cult of Ares and Artemis (Machinskii 1978, pp. 146–48). In favor of this theory, it has been argued that the objects involved in the ritual acts were carefully separated from the rest of the burial inventory (Mozolevskiy 1979, p. 159; Terenozhkin and Mozolevskii 1988, pp. 171–75). Another confounding detail of the archaeological context is that the social status of the deceased reflected by the rest of the finds from the tomb was not consistent with the status suggested by the pectoral's apparent role as a royal insignia (Moshinskii 2002, p. 87). According to another view, the object may have belonged to the commemorative *trizna* (a rite after the funeral consisting of sacrifices, a feast, and military competitions in honor of the deceased) performed one year after the funeral, when a pectoral specially made for this event was delivered to the grave of the king by his dead 'guard' (Mikhailin 2005, p. 175). Other researchers see the pectoral as a diplomatic gift (Savostina 2019, p. 71; Gavriluk 2017, pp. 327–29), which could also explain its unusual location within the burial assemblage. The placement of the pectoral and some other valuable objects outside the burial chamber could also be related to unfinished or unsuccessful looting of the tomb. Perhaps the grave robbers did not recognize the object's magical properties, as Stepanov

argued. According to this account, the pectoral was left behind in the disturbed tomb as it was of no apparent interest to the looters (Stepanov 2015, p. 47). Despite the pectoral's well-recorded archaeological provenance, its deposition seems to present more questions than answers concerning the object's origins and meaning and the identity of its original owner. In light of these uncertainties, close analysis of the object's typology, technology, and iconographic features is all the more important.

### 2.2. Pectoral or Torque? Addressing the Correlation of the Term to the Morphology of the Adornment

The ornament from Tovsta Mohyla was identified as a pectoral from the moment of its discovery. However, pectorals are not widespread among the Scythians, and the genesis of that type of adornment is not fully understood. A direct succession from Urartian pectorals is not possible due to the considerable chronological gap. The Thracian breastplates do have a number of similar features, but they differ in structure and functional purpose. Meanwhile, many elements of the pectoral's morphology reveal correlations to torques of the same era. The most prominent correlations include the configuration of false twisted braids, adornments in the shape of animals and people, and ornamental finials in the form of lion heads (Figure 4). This leads us to concur with the numerous researchers who view the pectoral from the Tovsta Mohyla as a particularly complex version of a torque, which was regarded as one of the most prominent societal status symbols by the Scythians. Overall, the pectoral's design includes elements that suggest it was influenced by a variety of cultures—both by the local toreutics from the region of the Bosporan Kingdom on the Kerch and Taman peninsulas and by innovations borrowed from the Achaemenid, Thracian, and Greek cultural environment (Babenko 2018, pp. 187–204).



**Figure 4.** Pectoral from Tovsta Mohyla and torques from other Scythian burial mounds. 1, 3, 6—Tovsta Mohyla; 2—Solokha; 4—Chertomlyk; 5—Karagodeuashkh; 7—Talayev barrow (source: Babenko 2018, figs. 5: 1, 2; 7: 1–4; 8: 5).

### 2.3. The Eastern Balkan Roots of the Pectoral

The metalsmith who produced this masterpiece borrowed many ideas from different cultural environments. One noteworthy influence may have been derived from the Eastern

Balkan prehistoric and ancient cultures. In particular, many researchers believe that Thracian and Macedonian breastplates could have had a considerable influence on the pectoral's design (Mantsevich 1976, pp. 83–98; Meliukova 1979, pp. 204, 205; Boardman 1994, p. 210; Treister 2005, p. 63). The similarities include the overall shape and size, the depiction of figural decoration in concentric compositions, and the centerpiece ornamentation consisting of intertwined plant shoots. The connection of the pectoral with the Western Balkan region is even more evident. Elements of the plant ornamentation, including the spiral tendrils, palm fronds, and acanthus leaves, constitute the central section of both the golden pectoral and the diadems from Vergina and Stavroupoli (Figure 5) (Babenko 2020, pp. 45–52).

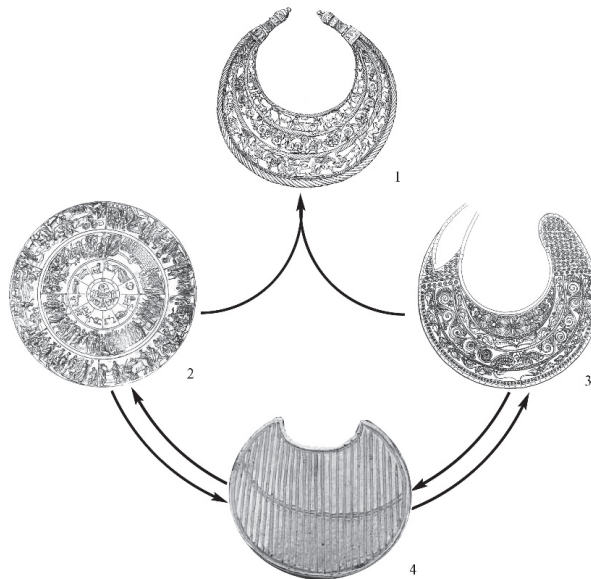


**Figure 5.** Eastern Balkan roots of the pectoral from Tovsta Mohyla. Pectorals: 1—Vergina; 2—Pydna; 3—Tovsta Mohyla (detail). Headdresses: 4—Stavroupoli; 5—Vergina (sources: Andronikos 1984, fig. 151; Grammenos 2004, p. 173; Babenko 2020, fig. 3).

#### 2.4. The Pectoral from Tovsta Mohyla as a Reminiscence of Achilles' Shield

The maker of the pectoral may have been influenced not only by the visual elements of other cultures but also by their epic traditions. An example of the latter is the eighteenth song of Homer's *Iliad*, which describes the forging of Achilles' shield by Hephaestus. It is worth noting that the pectoral from the Tovsta Mohyla has been compared with the shield of Achilles by multiple researchers, including I. V. Yatsenko (Iatsenko 1977, pp. 96, 97), L. A. Lelekov, and D. S. Raevsky (Lelekov and Raevskii 1988, pp. 222, 223), and V. Y. Mihaylin (Mikhailin 2005, p. 34). In essence, both the shield of Achilles and the pectoral are highly expressive works of art on which the cosmological image of the world is reproduced by means of opposing scenes decorated with figures in high relief. One of the sources that contributed to the conception of the pectoral could be the breastplates, which are well-known thanks to the finds uncovered at sites in Thrace and Macedonia. Such breastplates

were in fact small suspended shields that protected one of the wearer's most vulnerable areas in battle. As lightweight crescent-shaped leather shields, they were similar in form and function to peltae. Peltae became well-known to the toreutic masters who carried out the Scythian orders. Furthermore, they were depicted in the battle scenes featured on a gold comb from Solokha Kurgan and a kalathos from Bolshaya Blyznitsa. As such, the design of the pectoral is largely based on foreign but interrelated ideas that the ancient jewelers borrowed from the military sphere. The image, form, structure, and ornamental motifs of the pectoral were constructed through a combination of numerous influences and innovations. This demonstrates a complex transformation that originated with the associative chain of evolutions from Achilles' shield to pelta shield to breastplate shield (Figure 6) (Babenko 2021b, pp. 31–46).



**Figure 6.** A hypothetical chain of influences that gave rise to the pectoral shape in the northern Black Sea region: 1—pectoral from Tovsta Mohyla; 2—a hypothetical reconstruction of Achilles' shield according to A. Monticelli; 3—pectoral from Varbitsa; 4—pelta shield on the gold comb from the Solokha mound (source: Babenko 2021b, fig. 6).

### 2.5. Ancient Coin Imagery Depicted on the Pectoral

A distinctive feature of Greco-Scythian metalwork is the widespread borrowing of various images and visual conventions from coins that the masters used to decorate their creations. On the pectoral from the Tovsta Mohyla, we can see the ornamental influence come full circle in the depiction of a calf being fed by a cow. A similar theme, with similar chronological and cultural attributes, can be found on a number of ancient Greek coins. Coins with analogous scenes were first minted in Corcyra (Corfu) in the 6th century BC, and, from the 5th century BC, this theme was also used on the coins of Apollonia, Dyrrachium, and Karystos (Figure 7). The widespread use of purely Greek visual narratives in the design of so-called Greco-Scythian works demonstrates the high degree of influence that foreign imagery and traditions exerted on Scythian toreutics (Babenko 2017a, pp. 30–39).





**Figure 7.** Scenes of a cow feeding a calf: 1, 2—details of the animal scenes on the pectoral from Tovsta Mohyla; 3–10—images on ancient coins (3, 4—Corcyra; 5, 6—Dyrrachium; 7, 8—Apollonia; 9, 10—Karystos) (source: Babenko 2017a, figs. 1, 3).

### 3. The Distinct Characteristics of the Pectoral Design

#### *Movable Hinges as an Example of Weapons-Inspired Technological Transformation*

One undoubtedly significant innovation among the technical procedures used by ancient craftsmen was the concept of adding adjustable cheek clasps to helmets with movable hinges. However, it is still not definitively clear where the idea of using pivot hinges originated (Figure 8: 1, 2).



**Figure 8.** Hinges of the Tovsta Mohyla pectoral: 1, 2—detail of the pivot hinges of the pectoral; 3, 4—helmets with hinged cheek guards (source: Babenko 2017b, figs. 2, 3).

In the Greek world of the Classical and Hellenistic periods, hinges were widely used both in everyday life and in weaponry, particularly in the construction of various elements

of armor. Relevant tomb finds from the Scythian world are often accompanied by stockpiles of Chalcidian helmets with cheek guards attached by means of joint hinges (Figure 8: 3, 4).

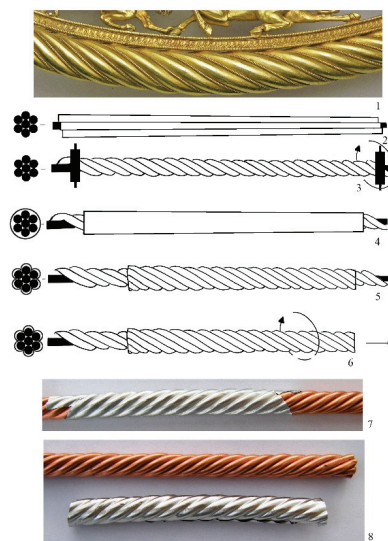
Helmets with cheek guards attached by hinged joints were well-known to the people of the northern Black Sea region and the Crimean Peninsula. They have been around since at least the first half of the 4th century BC, which was long before the pectoral existed. Thus, the maker of the pectoral may have borrowed the idea of using a movable hinge from this type of armor (Babenko 2017b, pp. 37–47).

#### 4. Secrets of Technology

##### *The Methodology of Producing False Harnesses*

The pectoral from Tovsta Mohyla is an impressive artifact that combined a variety of technologies and was aesthetically inspired by ancient Greek art. Dozens of complex technical operations were utilized to make this piece of jewelry composed of over 160 individual parts. However, what remains least understood is the set of techniques employed in creating the four false twisted torques framing the openwork figural and plant ornaments in the three crescent-shaped friezes of the pectoral. None of the theories proposed so far provides an adequate understanding of the most important steps in the technological process of manufacture, namely the toreutic methods involved in creating a realistic braided torque from hollow tubes.

That being said, certain clues do exist in solving this issue, including the design of a torque from the destroyed Kul-Oba burial in eastern Crimea, the base of which consisted of twisted bronze tubes encased in gold sheet plating. Such a base may have been used to shape the hollow torque and imitate its twisting relief surface. In order to produce the twisting effect, the masters prepared a matrix made up of seven intertwined hollow copper tubes (Figure 9: 2, 3). Next, a tube rolled from a thin gold leaf was attached to the twisted copper base and sealed at the seam (Figure 9: 4). The gold was sealed using an embossing technique, i.e., by applying pressure to the gold with a softer tool (made of wood, bone, or metal) and winding the leaf into the shape of the copper base (Figure 9: 5). In order to detach the overlay from the copper tubes, the gold sheet was twisted from the rod by rotating it around its radial axis toward the thinner end of the matrix (Figure 9: 6).



**Figure 9.** Technology of the torques of the Tovsta Mohyla pectoral: 1—detail of the lower torque of the pectoral; 2–6—reconstruction of the manufacturing stages of the torque; 7, 8—experimental production of the torque (source: Babenko 2022b, figs. 3, 6, 7).

The torque from the Solokha kurgan also features elements of a similar design (Figure 4: 2). This demonstrates the use of a very similar technique and the possibility that the pectoral and the comb were made in the same workshop, or even by the same jeweler (Babenko 2022b, pp. 19–32).

The extensive use of gold leaf gilding highlights one of the most distinctive features of the jeweler's technological style: namely his use of methods and forms devised to deceive the viewer. These include (1) the introduction of three-quarter figures in the upper and lower friezes, which appear to be worked completely in the round; (2) the four pseudo torques that frame the three pictorial panels and realistically imitate the surface of six separate intertwined rods; (3) the beaded wire applied to evoke a granulation fill in the spiral grooves of the torques; and (4) the deceptive monumentality of the pectoral, creating the impression of a solid piece of jewelry that is in fact (thanks to its gold sheet construction and hollow cast elements) much lighter than its appearance suggests. Thus, the extensive use of visual illusions and imitations in the making of the pectoral can be considered one of the characteristic traits of the master's creative choices.

## 5. The Pectoral in Context of Other Greco-Scythian Toreutics Masterpieces

### 5.1. Twisted and Pseudo-Twisted Neck Ornaments from the Workshops of the Bosporan Jewelers

To date, there are five known neck or breast adornments with twisted torques made in the workshops of the Bosporan jewelers. They can be divided into three different types of torques distinguished by their mode of construction. The first type includes the fragmentary necklace with lion head finials from the primary burial of Kul-Oba (Figure 10: 1). This type consists of a twisted bronze rod with a thin gold leaf applied to its surface. The second type is based on a single hollow tube whose surface imitates the winding relief effect of six spinning tubes, as exemplified in the Solokha torque and the pectoral from the Tovsta Mohyla (Figure 10: 2, 3). The braided strap is the final type, and it is formed by twisted tubes or rods, as observed in a torque with rider finials from Kul-Oba and the pectoral from Bolshaya Blyznitsa (Figure 10: 4, 5). Considering the mortuary context in which these items came to light, pectorals with massive gold torques or pseudo torques can be considered prominent signs of dignitaries or even royalty (Babenko 2019b, pp. 493–505).



**Figure 10.** Scythian chest and neck decorations—torques and pectorals: 1 Kul-Oba (detail); 4—Kul-Oba; 2—Solokha; 3—Tovsta Mohyla; 5—Bolshaya Blyznitsa (source: Babenko 2019b, figs. 3–5).

### 5.2. *The Two Pectorals: The Masterpiece and the Replica*

Several elements of the pectorals from Tovsta Mohyla and Bolshaya Blyznitsa (Figure 10: 3, 5) indicate that they may have both been made by one master or derived from the same workshop. The similarities can be recognized in the objects' form, general compositional structure, individual design elements, and some images and motifs, especially the animal friezes and vegetal ornament and the lion head finials with braided gold wire straps. However, closer comparison of the two ornaments suggests other interpretations. The pectorals differ in the construction of the torques and the system of reinforcing the pieces as a whole. Most of the animals depicted on the Bolshaya Blyznitsa pectoral are executed in an original, expressive style, which is otherwise unusual for the products of the Bosporan jewelers and differs from that of the figure decoration on the Tovsta Mohyla pectoral.

The constructive and artistic similarities observed in the pectorals from the Bolshaya Blyznitsa and Tovsta Mohyla have implicitly predetermined interpretative approaches to their figural representations. The interpretations of the motifs in the pectoral from Bolshaya Blyznitsa are often correlated with those of the pectoral from Tovsta Mohyla without proper justification. However, the motifs and structure of the first pectoral may have an independent background that is unrelated to the themes of the Tovsta Mohyla pectoral. Several features can serve as the key to its understanding.

It is important for iconographic interpretations to focus on the most sophisticated features of the Bolshaya Blyznitsa composition, namely the five scenes depicting goats and rams. Quantitatively and compositionally, the dominant figural elements of the pectoral are goats, represented by seven or nine individuals, one of which is placed in the center of the composition. The goat was one of the most common incarnations of Dionysus and a cult symbol of this god.

The iconography of the pectoral from Bolshaya Blyznitsa should also be considered in the context of the burial complex of Tomb no. 4 at the site and the identity of the cult, whose servant was possibly the buried priestess (see Meyer 2013, pp. 282–99, 357–59 for recent discussion in English). One of the most visible attributes that determines the affiliation of the buried woman to the priestly class is the ceremonial headdress—the kalathos. The kalathos was decorated with eleven relief figures of dancing maenads and satyrs of the traditional “entourage” of Dionysus.

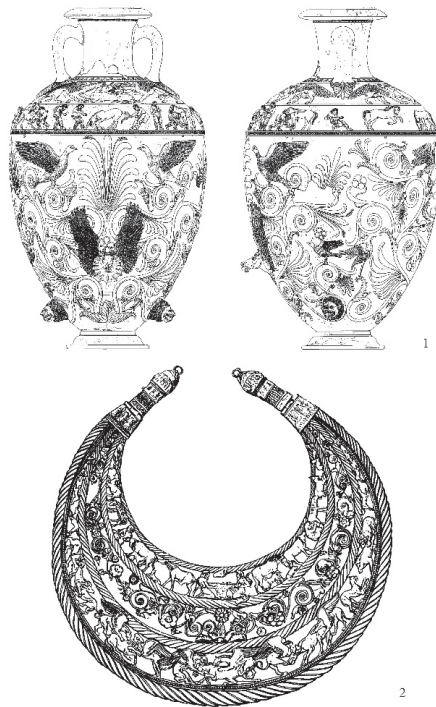
The attributes of the Dionysian cult can also be observed in other objects from this burial, including a number of terracotta statuettes, a set of necklaces, and a set of miniature terracotta and bronze vessels. Therefore, L. E. Stefani's arguments for a connection between the pectoral and the “Bacchic cults” (Stefani 1871, p. 12) can be considered quite reasonable and worthy of attention.

We may, therefore, conclude that, despite their apparent similarities, the pectorals were most likely created not only by different jewelers but also by representatives of different workshops (Babenko 2019a, pp. 102–42).

### 5.3. *The Pectoral from Tovsta Mohyla and the Amphora from Chortomlyk: Similar yet Unique*

The comparison of two masterpieces of Greco-Scythian toreutics—the silver amphora from Chortomlyk and the gold pectoral from Tovsta Mohyla (Figure 11)—has become a tradition since the discovery of the pectoral. Both objects share a number of expressive similarities, such as the three-part structure of the composition with identical themes—scenes of nomadic daily life represented by miniature high-relief figures, griffins and feline predators tearing into prey, and zones of floral ornament animated by figures of birds and other figural details.





**Figure 11.** Amphora from the Chortomlyk (1) and pectoral from Tovsta Mohyla (2) (source: Babenko 2021a, fig. 1).

Researchers have compared the amphora and the pectoral in different contexts. A.P. Mantsevich (Mantsevich 1976, pp. 83–98) saw in them primarily the products of Thracian craftsmen. Many researchers interpreted the composition of the depictions on the amphora and the pectoral as a reflection of cosmological ideas about the threefold structure of the universe. They assumed that the scenes of predators tearing into prey related to the day of the vernal equinox and ideas about cyclical changes in natural phenomena, while the composition of plants was connected with symbols of the world tree, and scenes of horse breeding were entwined with ritual sacrifice during the coronation of the king or during his funeral (Kuzmina 1984, pp. 105–8; Mozolevskiy 1979, p. 219; Raevskii 1979, pp. 70–82; 1985, p. 223).

E. Farkash (Farkas 1977, pp. 124–38) treated the history of the amphora and the pectoral as a cosmological act of creation, while S. S. Bessonova (Bessonova 1983, pp. 70–74) saw in them elements of cattle-breeding rites connected with calendar holidays. D.A. Machinsky (Machinskii 1978, pp. 132–34, 144) associated both objects with the cult of the Great Female Goddess, and F.R. Balonov (Balonov 1994, pp. 17–22) considered the composition of the amphora and the pectoral as a model of mythopoetic spacetime.

Researchers have not reached a consensus on the authorship of the objects; there are supporters of the theory that the amphora and the pectoral originated from the same workshop (Rudolph 1991, pp. 30–36; Williams 1998, p. 103; Balonov 1994, pp. 20–22) or from different workshops (Savostina 1999, pp. 200–2).

The list of other observations is mostly connected with the use of a ceremonial drink in rituals, compositional nuances of the ornithomorphic bestiary, numerical symbolism, etc. All in all, we may conclude that the comparison of the two masterpieces in different contexts remains a promising direction in their study (Babenko 2021a, pp. 121–33).

#### 5.4. The Compositional and Narrative Parallels of the Gorytoi of the Chortomlytsk Series: A Deceptive Similarity

A number of compositional and narrative parallels can be traced between the pectoral and the Chortomlytsk series of gold overlays for gorytoi (bow-and-arrow cases) (Figure 12). In particular, the composition of the overlay has a three-part structure, the subjects of each part (anthropomorphic and floral compositions as well as a frieze with scenes of mythological and animal predators tearing into their prey) conditionally corresponding to the composition of the pectoral. The friezes with anthropomorphic characters are the least similar. However, the friezes with plant ornaments and the scenes of violence are also characterized by the absence of a clear hierarchy and division into center and periphery, which is typical for the composition of the pectoral. In general, the composition of the overlays of the Chortomlytsk series does not seem to be fully consistent. This indicates that different molds were used to produce individual parts of the compositions. At the same time, the exceptional level of detail in the miniature figurines on the pectoral demonstrates the maker's close familiarity with military equipment.



**Figure 12.** Gold of gorites upholstery: 1—Chortomlyk; 2—Melitopol barrow (sources: Farmakovskii 1911, fig. 1; Polidovych 2022, fig. 1).

#### 5.5. Pan and the Narrative Plot of the Pectoral: Non-Random Coincidences?

The gold overlay of the sword hilt from the Tovsta Mohyla was decorated with Pan playing the flute—a unique feature for the products of Greco-Scythian metalwork (Figure 13: 1). The appearance of this image in the decoration of the sword can be explained by a number of factors, including the deity's association with martial activity, the contemporary spread of Dionysian cults, and the reframing of Pan's image as an equivalent of the Iranian god of war, Verethragna (Polidovich 2015, pp. 134, 135).



**Figure 13.** 1—crosshair of the sword with the image of Pan; 2—the central stage of the pectoral. Tovsta Mohyla (source: Babenko 2016a, fig. 2: 1, 2).

For a deeper understanding of the reasons for the use of this image, we should also take into account the archaeological context of the find. First of all, we need to note that it was found in the same complex as the pectoral. This allows us to venture a guess about the existence of a possible connection between the individual images and the subjects represented on both objects. It is probable that the three features of Pan's icons—shaggy feet, a flute, and horns—could have been reinterpreted by the Scythians to denote a person dressing in fur clothing and drinking from a ceremonial horn to obtain communion. If this is indeed the case, we may conclude that Pan was perceived as a symbolic master swordsman depicted in the midst of a ritual that assured his success as a fighter. The pectoral appears to depict various stages during the preparation for this ritual—namely the preparation by the young men of a drink for the initiation and by the priests of a shirt from a sheep's fleece (Figure 13: 2) (Babenko 2016a, pp. 9–26).

#### 5.6. Non-Scythian Cultural Parallels in the Central Scene

B. Mozolevsky (Mozolevskiy 1979, pp. 221–24) proposed three cultural parallels to the central scene of the pectoral, in particular a scene on the gold bowl from Hasanlu, a marble tablet from Moesia, and a plaque of the outer cauldron lining from Gundestrup (Figure 14: 1–4). These analogies have been criticized by many scholars for their stylistic, iconographic, and thematic inconsistencies.



**Figure 14.** Foreign cultural parallels to the central scene: 1—pectoral from Tovsta Mohyla (detail); 2—Gundestrup cauldron (detail); 3—Moesia marble tablet (detail); 4—bowl of Hasanlu (detail) (source: Babenko 2022a, fig. 2).

One can certainly agree with the rejection of the scene on the chalice from Hasanlu, which is now interpreted by many scholars as the murder of Humbaba by Gilgamesh and Enkidu (Ornan 2010, pp. 235, 243, 244, 248; Winter 1989, pp. 95, 96; Francfort 2008, pp. 95, 97; Collon 2010, p. 119; Frayne 2010, p. 175; Lambert 2010, p. 103). At the same time, the analysis of the scene on the tablet from Moesia allows us to see some possible ritual parallels to the scene on the pectoral. The sword stuck vertically in the ground was one of the manifestations of the world tree. The object sacralized the space around it and provided communication between the three worlds of the universe, arranged vertically one above the other: the underworld of the dead, the earthly world in the middle, and the upper heavenly world—the abode of the gods (Raevskii 1985, pp. 114–22; Polidovich 2015, pp. 129–31). The pectoral is also interpreted as a pictorial cosmogram, a mythological model of the world of the Scythians, based on the concept of the world tree and ideas about the three-part vertical structure of the universe (Raevskii 1985, pp. 181–203, 229–33). In other words, there is a conceptual overlap that connects the scenes on the tablet with those on the pectoral (Babenko 2022a, pp. 31–48).

## 6. The Symbolism of the Pectoral

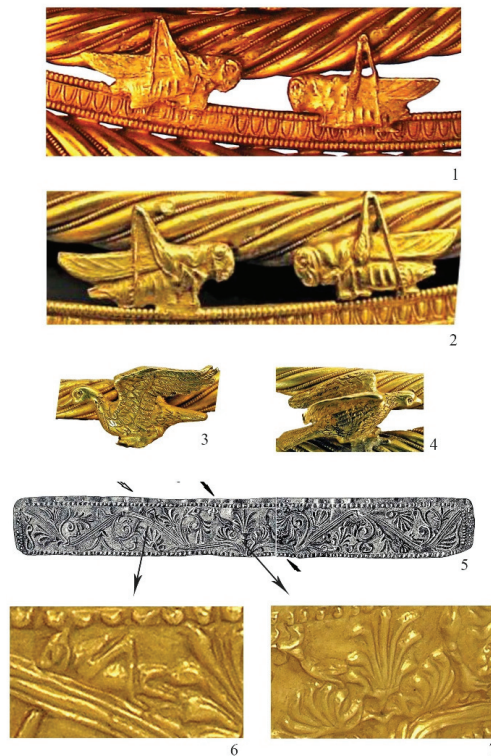
Since the discovery of the pectoral, researchers have expressed different interpretations of its various scenes and the figures involved in them. D. Raevsky’s interpretation is widely known and accepted (Raevskii 1985, pp. 180–203, 229–33). Raevsky’s interpretation of the pectoral as a pictorial cosmogram—a mythological model of the Scythian world—is based on the concept of a world tree and the notion of a three-part vertical structure of the universe. However, many of the meanings inherent in the themes of the pectoral remain unresolved. The following discussion engages with select details in the figure scenes of pectoral that have rarely been commented upon but may provide vital clues for understanding the mutual relationships and meaning of the compositions in the three crescent-shaped friezes.

### 6.1. Peripheral Imagery

Of the numerous images of the pectoral from Tovsta Mohyla, the figures of the peripheral areas of the composition have attracted the least attention from previous researchers. These figures consist of two pairs of locusts at the ends of the lower frieze, as well as the figures of two birds, a water bird and a “predator”, which complete the composition of the upper frieze (Figure 15: 1–4). At the same time, one related group of ornaments, which may



allow us to clarify the functions of these peripheral figures, has escaped the attention of researchers almost completely. These are the gold plaques from ceremonial headdresses with vegetal compositions containing images of locusts and birds (Figure 15: 5–7). This combination of motifs suggests the same connection of the peripheral signs with the plant elements of the pectoral frieze. Accordingly, their main function in the composition is as mediators, providing the connection between the upper and lower panels. Thus, this is once again proof of the semantic unity of the composition of the pectoral and the interrelationship of the characters and narrative plots of all three friezes (Babenko 2016b, pp. 90–104).



**Figure 15.** Peripheral characters of the pectoral: 1–4—pectoral from Tovsta Mohyla (details); 5–7—gold sheet plaque from Tovsta Mohyla headdress (6, 7—details) (source: Babenko 2016b, figs. 1–3).

### 6.2. The Sacred Amphora

In one of the scenes in the pectoral thought to represent the milking of sheep, an amphora is used as one of the vessels (Figure 16: 1–4). However, the actual release of milk into the amphora is not shown, in contrast to the amphora on the other side of the pectoral. Since the suitability of the amphora as a vessel for milking is questionable, it may not have been employed to store milk in this scene. A more plausible content is wine, which was widely used in ritual practices because of its accessibility. The amphora may also have been meant to suggest the use of a starter culture for the preparation of a fermented milk drink. During the coronation, the Persian king drank a small cup of sour milk (Plut., *Artaxerx.*, III). The people of Tuva kept sourdough starter from autumn and used it to prepare the first spring *hoytpak*—a sour milk drink (Vainshtein 1991, p. 127).



**Figure 16.** Scythian youth with an amphora: 1, 2—general view; 3—detail of Scythian holding a handful of grass; 4—detail of Scythian holding an amphora. Pectoral from Tovsta Mohyla (details) (source: Polidovych 2021, figs. 64–67).

### 6.3. *Death, Absence, Rebirth: The Initiation and Investiture Motifs in the Visual Narratives of the Pectoral*

The interpretation of the central scene in the pectoral's upper frieze is plagued by the greatest diversity of opinions (Babenko 2013, pp. 111–13). Additional information for solving this problem can be extracted from the compositional structure of the pectoral itself and the numerical structures embedded in it. The imbalance between the number of deaths in the lower frieze (seven) and births in the upper frieze (six) provides reason to interpret the dominant meaning of the central scene as also containing the idea of birth or rebirth, i.e., the seventh in number. The symbolism of the number seven is embodied in the composition of the pectoral and by the seven bird figures, as well as in the seven-part structure of the pectoral itself, consisting of four twisted torques and three figure-decorated or ornamental friezes between them.

When solving the problem of identifying the figures of the central scene, it is necessary to take into account the nature of the pectoral as a personal ornament and the participation of its owner or wearer, who was the central figure of the entire composition of the pectoral. The central scene of the pectoral illustrates the focal point of a vital cosmological event, meant to finally restore the broken world order. The event was usually the selection of a new king, which took place on the day of the vernal equinox (Mozolevskyi 1979, p. 224; Babenko 2013, p. 119). The ceremony consisted of a whole complex of procedures, such as an initiation rite with a sacred test and the transfer of investiture attributes (as described in Herodotus 4. 5). The ritual culminated with the king's receipt of royal glory—a divine grace designed to ensure the well-being of the entire collective. In this case, the pectoral, as sacred gold, was the material embodiment of royal power itself, and the king's wearing of the pectoral during the ceremony was intended to symbolize its receipt.

#### 6.4. Time and the Pectoral as a Calendar: A Different Point of View

The cornerstone of many reconstructions, on which the whole chain of iconographic interpretations is based, is the calendar date of the central scene, namely the day of the vernal equinox. A possible asynchrony of the calendar time of the scenes depicted on the upper frieze (Polidovich 2020, pp. 136–8) allows us to make interesting observations about the direction of the flow of time reflected on both friezes and to coordinate the scenes with possible calendar dates. As observed in the upper frieze, the birth of domesticated young animals of different breeds takes place at around the same time of the year, but finer temporal distinctions were introduced by placing newborn calves and foals (denoting early spring) near the central scene, while the kids and sheep further to the left and right are already weaned and almost adults ready for independent existence (denoting early summer). In this manner, the flow of time on the upper and lower friezes is made visible through seasonal phases of growth and maturation, and distinctive human activities relating to them, and can be seen to unfold in different directions. On the upper frieze, from the central scene to the periphery, time flows from the present to the future (Figure 17). On the lower frieze, the opposite flow is from the periphery to the center, from the past to the present, approaching the moment of death. If the calendar date of the central scene of the upper frieze coincides with the day of the vernal equinox, the time of the following scenes, gradually moving forward, corresponds to the middle of spring and the beginning of summer. In the lower frieze, the progression of time is reversed: it begins with late summer in the peripheral scenes with locusts and moves toward the center, into autumn, to the day of death at the autumnal equinox. The middle frieze appears as a mediator in the calendar context, representing the summer season with its abundant vegetation.



**Figure 17.** Representation of time in the figure scenes and the pectoral as a calendar (source: author of the illustration, Leonid I. Babenko).

### 6.5. *The Eschatology of the Upper Frieze*

The central scene in the upper register of the pectoral can also be interpreted in the context of ideas about death as the highest form of initiation and the posthumous fate of the deceased. In this hypothesis, the characters of the central scene may represent the twin deities with forbidden names in Alano–Ossetian mythology, located between *zenet* (paradise) and the dead arriving in the underworld (Vertiienko 2010, p. 67). These twins met the souls of the dead and provided them with various items necessary for their journey into the afterlife. In this case, the whole complex of the upper frieze can be interpreted as gifts that the paired mediators should give to the deceased—that is, the owner of the pectoral—upon his arrival in the other world. Among them are the shirt with which the twin deities intend to clothe the newcomer, ceremonial weapons, and young slaves preparing various drinks. Everything on this list coincides with what we know from archaeological finds about the rituals conducted at Scythian royal burials (Olkhovskii 1991, pp. 94–135).

Thus, the upper frieze of the pectoral can be interpreted as one of the embodiments of the Scythian *Gerrhos*—the mythical other world of the heroic ancestors, warriors who fell on the battlefield (Herodotus 4. 71). As an archetypal depiction of the blessed life, the figures in the upper frieze of the pectoral also portend its owner’s happy afterlife.

## 7. Resume

The pectoral from the *Tovsta Mohyla* is a masterpiece of Greco–Scythian toreutics, which, at the same time, became a symbol of Ukrainian archaeology and the ancient history of Ukraine. The phenomenon of the pectoral in Scythian culture reflects the synthesis of the manifold local and foreign cultural traditions embedded in its composition. On the one hand, the pectoral is a complicated modification of the torque—a traditional insignia of Scythian society with which the pectoral shares a number of morphological correspondences. In the shape of the pectoral, on the other hand, and the structure of its composition and figural scenes, numerous cross-cultural influences can be traced, including ancient Greek, Macedonian, and Thracian. One can glean the idea of Greek pedimental sculpture and of Thracian–Macedonian breastplates, the borrowing of plant motifs and of diverse Greek coin designs. Finally, one can recognize the influence of literary works, in particular, as we have argued, the *Iliad*. The central scene of the upper frieze is, however, an unparalleled innovation of the pectoral’s artist. Analogies of this plot are still unknown either among artistic works of the nearest cultural circles or among the creations of more distant cultures and societies.

Such borrowings are not only pictorial in nature; they can also be seen among the constructive elements of decoration. In particular, the hinged joint used by the craftsman to attach the movable clasps to the main body of the pectoral was otherwise practically unknown among the products of Bosporan toreutics. Most likely, it was adopted from the design of Attic and Chalcidian helmets that were part of the armament of Bosporan and Scythian soldiers of that time.

The technological innovations drawn upon in the manufacture of the pectoral include four pseudo-twisted hollow torques framing the decorative friezes. It is interesting that the form of twisted torques had a deep tradition in the Scythian environment. This is evidenced by the depiction of torques with a similar texture on many stone statues. While imitating a traditional form, the master involved innovative technology, which achieved a number of tasks. In particular, he significantly diminished the weight of the ornament and made it cheaper and more comfortable to use.

In terms of shape, composition, and select subjects, the pectoral finds a number of correspondences among products of Bosporan toreutics, such as a series of ceremonial torques and a silver amphora from *Chortomlyk*. This corroborates the arguments of a number of researchers who prefer to see these products as creations of one jewelry workshop or even a single jeweler. However, a comparison of the pectoral from the *Tovsta Mohyla* with the most similar decoration, the small pectoral from *Bolshaya Blyznitsa*,



reveals significant differences in construction, manufacturing techniques, stylistic choices, and possible semantic references entailed in the pictorial narratives and burial context. In the view of this author, these differences show that multiple workshops were involved in the production of Bosporan and Greco-Scythian metalwork.

The iconographic references and meaning of the images and subjects represented on the pectoral have generated a prolific historiography and a significant number of interpretations. Researchers look for possible explanations in different cultural environments—local, Scythian, or Bosporan—or direct their gaze in search of acceptable interpretations to the east, to the Iranian-speaking world, or to the west, to Thracian or Macedonian parallels. However, it seems obvious that the scenes depicted on the pectoral, and, above all, the central scene of the upper frieze, must be consistent with the function of the object as such. The pectoral, as an insignia of power, a sign of the high social status of its owner, was the material embodiment of divine grace, designed to ensure the well-being of the ruler as well as the entire collective. Therefore, the central scene of the pectoral reproduced the ritual of the acquisition of divine favor by the king. This event took place during the ceremony of electing the king on the day of the vernal equinox. Important for understanding the essence of the central scene with its two opposing characters is the inclusion of the pectoral's wearer directly in its narrative when he puts on the item of jewelry. In this case, it was he who became the main character of the central scene as well as a participant in the ritual in which the pectoral was used.

No less complicated and still unresolved is the question of the relation between the pectoral and the deceased buried in the central tomb of the Tovsta Mohyla. As we have argued, the rank of the pectoral as a royal insignia does not correspond to the level of the other components of the burial complex: the size of the structure is insignificant compared to the mounds of the royal kurgans. Equally mismatched are the labor costs of the tomb's construction and the status of the equestrian decoration. Further complications are presented by the find spot of the pectoral and other valuable and status items outside the tomb's main vault (namely in the dromos in front of the entrance to the chamber). As our discussion has shown, this archaeological context has created a fertile environment for conflicting interpretations, considering the pectoral variously as a disused insignia, a military trophy, a diplomatic gift, or something else. The only thing that unites these interpretations is their speculative character.

As a historical source, the pectoral from the Tovsta Mohyla is a uniquely informative artifact capable of deepening our knowledge of the most diverse issues of Scythian culture. Quite rightly, this ornament is called the golden encyclopedia of Scythia. Despite the half century of history of studying the pectoral, scientists are still only on the threshold of understanding its many secrets.

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## Article

# A Child Burial from Kerch: Mortuary Practices and Approaches to Child Mortality in the North Pontic Region between the 4th Century BCE and the 1st/2nd Century CE

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**Abstract:** This article discusses a poorly studied child elite burial discovered in 1953 at the necropolis of Panticapaeum, situated near the modern city of Kerch, Crimea. A reassessment of previous research is urgently needed since it did not offer an analysis of Bosphoran society from the perspective of childhood studies in general and local approaches to child mortality in particular. This fresh approach sheds new light on social structures and transformations within the northern Black Sea region. A broad chronological and geographical perspective is provided in order to detect changing mortuary rituals regarding deceased children in relation to shifting socio-political situations among North Pontic Greek and non-Greek societies. A survey of current social interpretations concerning the (in)visibility of children in the mortuary customs, particularly between the 4th century BCE and the 1st/2nd century CE, is followed by a detailed description of the history of research in the Panticapaeum necropolis. A comprehensive analysis of the grave goods that accompanied the deceased child is also provided. The discussed material suggests that a new form of elite self-representation, expressed through mortuary rites, appeared around the turn of the first millennium. This included a different approach to deceased children, whose ascribed status and expected, yet unfulfilled, social roles were frequently displayed by the family through the funerary ceremony.

**Keywords:** child burial; funerary ritual; Glinishche; Panticapaeum necropolis; Crimea

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## 1. Introduction

In October 1953, an ancient child burial was accidentally discovered on the territory of the Kerch powerboat-fishing station by an excavator operator named A.I. Sobolev and his assistant A.I. Kosyakin. A short report concerning the discovery, which was accompanied by black and white photographs of the finds, was published in 1959 by the archaeologist, Larisa Chuistova (Chuistova 1959, pp. 239–45). Based on the chronology of the funeral assemblage, the burial was dated to the 1st/2nd century CE. Hitherto, the burial has never undergone closer examination either in relation to other recorded child graves from this period or with regard to the uniqueness of the finds that display a notable cross-cultural character. The mixed Greek-“Barbarian” character of the assemblage suggests that the meaning behind the use of specific objects in funerary rites was clearly not ethnically oriented, which seems to be a frequent feature in funerary contexts of the northern Black Sea region.

This paper aims to build on the aforementioned report by providing a more detailed analysis of the archaeological material discovered in the grave and reassessing the chronology put forward by Chuistova. A catalog of the finds complemented by high-quality color photographs will also be presented. The burial will be discussed in a broader chronological and geographical context, which will highlight the changes in mortuary practices and approaches to child mortality that were adopted in the region in question in both Greek and non-Greek cultural milieus. The late 4th century BCE represents the starting point



for the discussion on the visibility of child burials in relation to socio-political situations within societies outside the world of the Greek *polis*. During this period a visible change can be observed regarding the proportion of inhumed children and adults in North Pontic burial mounds, which will be discussed in more detail further on in this paper. This alone demonstrates that ancient attitudes towards children, as well as their social significance and role in society, varied over time. Changes may have been caused by economic, social, or political factors, which in turn may have influenced not only the display of power and status of the deceased and their family but also the ideas regarding the societal importance of children and their unfulfilled social roles.

Most of the objects from the funerary assemblage in question are stored in the Treasury of the National Museum of the History of Ukraine (NMHU Treasury), which allows for the reproduction of photographs of the gold objects found in the grave. It is important to note that XRF analysis of the enamel and metal from several items has only partially been completed due to the evacuation of the museum's collection during the Russian invasion of Ukraine in 2022. Nevertheless, the results obtained so far have been included in this study with the caveat that further analysis will be necessary to complete the data once the gold objects from the grave are returned to the NMHU Treasury after the end of the war. Unfortunately, the current location of the glass jug (Chuiustova 1959, p. 242, Fig. 9; item no. 11 in the catalog below) has not been ascertained. It is possible, however, that the object is still stored somewhere in the Kerch Museum, which housed the entire burial assemblage up until 1964 when the gold objects were transferred to the newly opened Museum of Historical Treasures of Ukraine in Kyiv.

Additionally, it needs to be explained that the word “Barbarian” used in this study does not refer to a clear-cut division between the Greeks and Others (Scythians, Sarmatians, and other neighboring non-Greek populations), which was rooted in the culture-history approach that was popular for many decades during the 20th century.<sup>1</sup> Seeking clear ethnic markers in the archaeological material of the North Pontic region has been proven on many occasions to be futile.<sup>2</sup> Moreover, the terminology that is used to describe ancient non-Greek populations in Crimea has repeatedly been proven to be based on modern concepts.<sup>3</sup> The terms Greek, non-Greek/Barbarian, Sarmatian, and Scythian will be used in this paper to express differences in traditions, cultural milieus, and place of habitation (the Greek *polis* and its *chora* vs. the steppe or territories remaining outside the administrative system of the Greek *polis*) rather than ethnic identity.

## 2. The (In)visibility of Children

The growing awareness of archaeologists of the importance and the role of children in past societies is evident in a number of publications that have appeared during the last several decades regarding their visibility in archaeological material.<sup>4</sup> The archaeology of childhood, and its ascribed status as seen in archaeological material, has been extensively explored by authors such as Gillian Shepherd and Jane Baxter (Shepherd 2007, 2021; Baxter 2005). Such studies devoted to the Black Sea “colonial” world would be particularly welcome and this paper aims to contribute to the discussion of the importance and visibility of children in ancient societies beyond the Mediterranean. It is noteworthy that the numerous recent studies devoted to childhood in ancient history and classical archaeology tend to focus on text and images rather than bioarchaeology, which seems to be a prevailing trend in current research more broadly. As an example, in (Beaumont et al. 2021) only three out of forty-one studies are devoted to bioarchaeology whereas in (Cohen and Rutter 2007) only one bioarchaeological study is provided (see also Aasgaard et al. 2018; Beaumont 2012).

The reason why children remained for many years beyond the scope of mainstream archaeology was undoubtedly due to the fact that child burials are often underrepresented in ancient cemeteries, which is a general tendency in the Greek world. This trend is also noticeable in Black Sea necropoleis, where the recorded number of child graves does not always correspond to estimated rates of child mortality in past societies, which is believed to be between 34 and 40% for children under 10 years of age (Ērkške 2020, p. 162 with

further literature). For instance, there are only 12 non-adult burials recorded in flat graves at the Olbian necropolis dating to the late 4th and 3rd century BCE (Papanova 2006, p. 82). It should be pointed out, however, that ascertaining the exact number of adult burials from this period is difficult since Papanova only mentions the discovery of “a great number” of graves dating to the 4th and 3rd centuries BCE during the excavations conducted in 1905–1906 and 1956, and that the Hellenistic necropolis covered an area of approximately 500 ha (Papanova 2006, p. 71). Additionally, she mentions that children were also buried in niche graves; however, she does not specify the number of such depositions, which appear to have been especially frequent during the early Hellenistic period (Papanova 2006, p. 92).

The visibility of child burials in the archaeological material varies considerably over time and space, which may have been caused by changing social conditions (Shepherd 2018, p. 521) and most probably, changing attitudes towards childhood itself. It has been observed that economic and political changes could have had an impact on mortuary rites, an example of which is provided by Olbia. As a consequence of the crisis that the city faced during the 3rd century BCE, the number of earthen crypts decreased in favor of rock crypts that could be constructed using debris from the city (Papanova 2006, p. 106).

The high number of perinatal and infant deaths in antiquity, that often stands in stark contrast with the relative scarcity of archaeological evidence, suggests that deceased children who did not receive a formal burial must have been disposed of in a different way, which is now undetectable in the archaeological record. As an example, the evidence from Athens discussed by Morris demonstrates that less than 10% of the burials recorded in Kerameikos between ca. 925–725 BCE belonged to infants and children, whereas between 725 and 700 BCE this figure increases to 53%; the same pattern is also visible throughout Attica and Argos (Morris 1992, pp. 78–80). The shift in the way children were treated after death is readily apparent and cannot be simply explained by factors such as differences in the speed of child bone decay or the rapid growth of the population from 725 BCE onwards.

Additionally, a 2nd-century BCE deposit of the bones of over 450 infants, neonates, and late-term fetuses, discovered in the so-called Agora Bone Well in Athens, demonstrates that at least in certain periods very young individuals were disposed of beyond the cemetery. The bone analysis has demonstrated that the majority of the deceased infants died of natural causes at or shortly after birth, which rules out other scenarios for the deposit such as an epidemic, famine, human sacrifice, or selected infanticide. It has been assumed that the individuals were buried in the well without receiving conventional funerary rites due to their young age and/or low social status (Liston et al. 2018, pp. 1, 138–40).<sup>5</sup>

### 2.1. The Word of Greek *Apoikiai*

The visibility of children in Black Sea Greek necropoleis also varies depending on the given period and the area of settlement. This diversity of mortuary practices appears to be a general phenomenon throughout the Greek world, including the mainland and Greek *apoikiai* (Greek “colonies”).<sup>6</sup> These practices may have reflected differences in cults or religious beliefs that were popular in a specific *polis* at a certain time, especially in the case of *apoikiai* where the cultivated practices were an amalgam of traditions brought from the mother city and other regions of the Greek world from where the settlers originated (Sorokina and Sudarev 2000, pp. 193, 199). An example of this is the practice of child *enchytrismoï* (burials in clay containers). Burials of this type have been recorded on 18 occasions in Archaic and Classical Olbia even though this tradition does not seem to have its roots in Olbia’s mother city, Miletos (Sorokina and Sudarev 2000, p. 195). The popularity of child *enchytrismoï* is visible at the settlement of Berezan (Borysthenes) where 150 such burials (which constitutes ca. 31% of all child burials) have been recorded.<sup>7</sup> Over the years inhabitants of Berezan moved to the larger urban center of Olbia, which resulted in the complete abandonment of their settlement by the end of the 5th century BCE. Thus it is possible that these migrants introduced the practice of child *enchytrismoï* to Olbia.<sup>8</sup>

Even though it is difficult to identify a direct link between a specific cult and a change in mortuary practices performed in the Black Sea region, it should not be excluded that such a link may have existed. The popularity of a particular cult during a certain period can be observed in Olbia during the late 6th and 5th centuries BCE, when the Orphic-Dionysiac cult was attested in the city (Guldager Bilde 2008, p. 30; Porucznik 2021a, p. 54). The cult was associated with transcendence and utopian thinking and may have played an important role in the development of group identity among settlers as a response to the stress associated with the process of migration (Guldager Bilde 2008, p. 33; Porucznik 2021a, p. 109).

Another frequent funerary tradition that appears in Black Sea Greek necropoleis is constituted by child burials that follow the same pattern as adult burials, including cremation. Deceased children are usually accompanied by the same types of grave goods as adults. This tradition seems to have been especially popular in Black Sea Milesian *apoikiai* such as Olbia, Apollonia, Tomis, Istros, and Odessos on the western Black Sea coast (Sorokina and Sudarev 2000, p. 198), as well as in Roman Chersonesus (Sviridov 2023, p. 336). It is possible to assume, as Sorokina and Sudarev argue, that this tradition may have been connected with religious beliefs, according to which the soul of a child was perceived in the same way as that of an adult, requiring, therefore, the same funerary rituals (Sorokina and Sudarev 2000, p. 198).

It has been pointed out that child burials were located in a specific part of the necropolis of Olbia during certain periods.<sup>9</sup> During the archaic period, as Petersen argues, lower-status children were interred in a reserved burial site (Sector II) whereas higher-status children were buried in family plots, which demonstrates that criteria such as age may have overlapped with other aspects such as wealth or the social role applied to the deceased by the family (Petersen 2010, pp. 60, 68). Furthermore, the evidence from Panskoye I, a rural settlement of the so-called distant *chora* of Olbia situated in north-west Crimea and dated to 400–270 BCE (Stolba and Rogov 2012, pp. 40, 56, 73–74), demonstrates that attitudes to children and their role in society may have also depended on a given lifestyle. Kurgan burials of both children and women are well represented in the archaeological material, which may suggest that their social role in rural societies was more important than in the more male-oriented cities (Petersen 2010, p. 197). Such observations regarding gender and age relations in Black Sea communities suggest that, firstly, there was a difference in the way that children from urban centers were treated compared to those from rural backgrounds, and secondly, there might have been a disproportion between these two zones based on gender. Both issues undoubtedly deserve further analysis.

## 2.2. Preservation of Child Bones

The preservation of infant and child bones is a problematic issue that impedes the visibility of children in the archaeological material. Child remains, both inhumed and cremated, are frequently difficult to interpret in terms of gender, age, and the original position of the body in the grave. Factors such as acid soil are known to prevent the preservation of bones (Carroll 2011, p. 109). The natural conditions of the North Pontic region in antiquity do not seem to be favorable for the preservation of child bones. Moreover, as Polin argues in his study of the Gaimanova Mohyla, in the chambers of Scythian catacombs that had access to air, child skeletons decompose completely, even if they were isolated from the soil. Therefore, a careful and thorough exploration needs to be conducted at a given site in order to properly identify skeletal remains, a fact that was not taken into consideration during Soviet times (Bidzilya and Polin 2012, p. 147 note 60). This may have also been the case with the child grave from Kerch as Chuistova mentions that “the skeleton was almost completely decayed”; however, she provides no further details regarding the possible presence of any organic material at the site (that could potentially be analyzed today) (Chuistova 1959, p. 239).

This demonstrates how little interest archaeologists had at the time regarding more complex analyses of the age and gender of the deceased child, focusing more on grave goods and their value.<sup>10</sup> The lack of remains also makes it impossible today to identify

the biological sex of the deceased; however, it is generally difficult to ascertain the sex of pre-pubescent individuals at the best of times. The funerary assemblage may only suggest the gender of the deceased, which may or may not correspond with their biological sex. Additionally, the expression of gender is not only culturally determined but it also, in certain instances, may not be clearly defined by the funerary assemblage. Indeed, the grave goods discovered in the child burial from Kerch do not appear to be gender specific and thus cannot be used to determine whether the buried child was male or female. While DNA analysis also shows potential in determining the biological sex of deceased sub-adults, the lack of bone remains in the grave does not allow such a method to be applied.

### 2.3. *The Age and Ascribed Status*

Identifying the age of individuals whose skeletal remains have not survived is extremely difficult and usually based on the size of the grave and/or the objects or elements of clothing that accompanied the deceased. According to Chuistova, the Kerch burial was arranged inside a stone cist while the dimensions of the grave were 0.48 m × 0.89 m with a depth of 0.6 m, which allowed the archaeologists to interpret it as a child burial (Chuistova 1959, p. 239). One of the objects discovered in the grave appears to be a baby rattle, which may suggest a very young age of the deceased, presumably 2–3 years of age (?) (item no. 4 in the catalog below). However, it cannot be excluded that the child was older and placed in the grave in a contracted position,<sup>11</sup> which would make it even more difficult to identify its age.<sup>12</sup>

One also needs to bear in mind that the division of childhood into several periods was by no means uniform throughout antiquity, either in Greek or in other cultural milieus.<sup>13</sup> Moreover, the perception of age is relative and may differ depending on whether one applies purely biological criteria or a more social perspective. A given system of division applied by society undoubtedly had an impact on attitudes to child death (especially of perinatal, newborn, and infant children) by determining the moment in which a child becomes part of society and consequently, becomes “visible” in the funerary context. However, there are recorded cases in which inherited social status and wealth determined the treatment of a child after death rather than age.<sup>14</sup> Such an applied social status seems to be visible in upper-class child burials in the Mausoleum of Scythian Neapolis. From the late 2nd century BCE until the end of the 1st century BCE, the Mausoleum functioned as a necropolis for the city elites (who were interred there during this period rather than in the cemetery where the rest of the population was buried). In several cases, the deceased children were equipped with gold face covers. Such objects were made specifically for funerary purposes and they frequently appear in rich burials in both Greek and non-Greek cultural milieus between the 2nd century BCE and 3rd century CE.<sup>15</sup> As a rule, face covers were present in adult male burials, which suggests that in this cultural milieu, the covers may have been used to indicate the male identity of members of the local elite. Consequently, the face covers that accompanied the deceased children may have served to impose such an identity on deceased underage individuals (Porucznik 2021b, pp. 866–69).

The definition of elites in this paper has been adopted from Mordvintseva’s comparative analysis of Crimean burial assemblages dating between the 3rd century BCE and the 3rd century CE, in which the so-called prestige objects are identified as markers of power and status (Mordvintseva 2020, pp. 30–32).

### 2.4. *Outside the Greek Polis*

A similar example of the manipulation of “adult” objects in funerary assemblages can be found in a 4th century BCE Scythian burial of a noble child (aged 2–3 years) from Tovsta Mohyla (Tolstaya Mogila) (Mozolevs’kiy 1979, pp. 110–11). Interestingly, the 4th and 3rd centuries BCE represents the period in which infants and older children are visible in Scythian burials, while they are absent in older kurgans (Kokorina 2023, p. 28). The deceased child from Tovsta Mohyla, who most probably belonged to the royal family, was accompanied by a small “child” rhyton, a small goblet, and a bow that were made



specifically for the funeral. Also, the child's clothing was adorned with smaller versions of gold decorations that were normally used on adult clothing (Kokorina 2023, pp. 30–31; Klochko 2019, pp. 667–70; Mozolevs'kiy 1979, p. 142). Kokorina's thorough analysis of the semiotics represented through the funerary assemblage has allowed her to reconstruct the social position of the child within Scythian society, a position that was undoubtedly inherited (Kokorina 2023, p. 29 with Tab. 1; pp. 32–39). The gender of the child is not clearly defined by the funerary inventory, which, as Kokorina argues, may have been caused by the fact that the deceased had yet to undergo initiation into the adult world, which would take between the ages of 12 and 15 (Kokorina 2023, p. 36). Additionally, Klochko's analysis of the burial inventories (including decorative elements of child costumes, earrings, necklaces, bracelets, and rings) from Scythian child graves of that period demonstrates that the combination of clothing and ornaments that accompanied deceased children had a strong symbolic meaning. The objects had apotropaic functions, but they were also used to display the inherited social status and a specific age group to which the deceased may have belonged (Klochko 2019, pp. 665–75).

Child burials have also been recorded in non-elite kurgans, mainly in those located in the "Vodovod" and "Sad" groups near Hlinaia (Glinoye) on the left bank of the Lower Dniester dating from the late 4th to the 2nd century BCE. Over half of the recorded kurgans from this region (29 out of 55) included child burials, 18 of which contained exclusively child skeletons whilst three appear to have been child cenotaphs.<sup>16</sup> The reason behind such a change in the funerary rites concerning deceased underage individuals among the steppe population at the turn of the 4th century and the 3rd century BCE could be explained by the change in Scythian lifestyle from nomadic and semi-nomadic to predominantly sedentary, which in turn had an impact on mortuary rites (Sinika et al. 2018a, p. 70). It should not be excluded that this change in lifestyle impacted Scythian attitudes towards children, who were active members of society and whose social roles (both acquired and assigned) started to be displayed after death. Notably, the importance of children as active and productive members of the community has been proven on several occasions in ethnographic studies of mobile pastoral societies, including southern Mongolia (Michelet 2016; Torimiro et al. 2003).

The child burial from Kerch is most probably connected with and/or influenced by the "Barbarian" cultural milieu (including the Late Scythians), which begs the question of whether there were also any social or political changes in the region that could have impacted mortuary rites. Importantly, as will be discussed below, excavations of the necropolis at Glinishche have revealed that the burial was located in an area in which other child burials have been discovered, which points to increased visibility of children during that period. Mordvintseva's analysis of markers of prestige in funerary assemblages reveals that there was indeed a change in the socio-political structure of the Crimea at the turn of the 1st century BCE/1st century CE (Mordvintseva 2017, p. 193). Consequently, during the 1st and 2nd centuries, CE Crimean cemeteries such as those of Scythian Neapolis, Ust'-Al'ma, Zavetnoe and Vilino started to resemble elite necropoleis, which points to the existence of more than one non-Greek center of power in the region, unlike in the previous period when Scythian Neapolis seems to have been the only center of political power in the Crimea (Mordvintseva 2017, p. 194). This suggests that local elites transformed their means of self-representation and the display of power and wealth through mortuary rites. The evidence from Ust'-Al'ma (1st–3rd centuries CE) demonstrates a considerable number of child graves<sup>17</sup>, among which a separate category constitutes the so-called "double" burials that include the burial of a child and an adult, usually a woman. Analogies have been recorded at the cemetery in Scythian Neapolis and Zavetnoe (Puzdrovskiy and Medvedev 2015, p. 254). A separate child sector is also visible at the non-elite cemetery at Opushki near Simferopol dating to the 1st century BCE–3rd century CE (Stoyanova 2012, p. 6, Fig. 2).

### 3. The Archaeological Context of the Child Grave from Kerch

As mentioned above, the child burial in question was discovered on the site of the Kerch powerboat-fishing station in October 1953. Chuistova mentions that the grave was found accidentally by two workmen who were digging a trench for a water pipe. Unfortunately, when the archaeological staff arrived at the grave, they discovered that it was already damaged. Since the finds from the burial had to be “removed from a pile of mixed soil”, it was impossible to ascertain the skeleton’s position and finds in situ (Chuistova 1959, p. 239).

The burial was located in a stone cist made from four limestone slabs set on the edge, covered with another slab. The child’s skeleton was almost wholly decayed, and it was most likely laid with its head to the east. Fragments of thin wooden planks suggest that the grave may have had wooden decking (Chuistova 1959, p. 239). The burial assemblage included a torque, elements of a necklace, a bracelet, a ring, and a glass jug.

Based on the location of the grave, it is assumed that it was situated within the boundaries of a 1st/2nd century CE cemetery that served the city of Panticapaeum in the Glinishche section of the modern city of Kerch (Chuistova 1959, p. 242)<sup>18</sup> and was explored during the 19th and early 20th centuries. The boundaries of the Panticapaeum necropolis were ascertained at the beginning of the 20th century during excavations led by Vladislav Shkorpil, the published results of which were used by Michail Rostovtzeff in his description of the necropolis (Rostovtsev 1925, p. 215). Later on, the topography and planimetry of the necropolis were refined and analyzed in detail by Galina Tsvetaeva (Tsvetaeva 1951). In fact, these boundaries are only nominal, since the main part of the necropolis was explored in the late 19th and early 20th centuries, a time when the approach to excavations was barely scientific and resembled treasure hunting. Extensive and systematic excavations were either not carried out at all or (as in the case of the Shkorpil’s excavations) they were not recorded on a map. A topographic plan of the excavations or drawings of the excavated graves were also not prepared. In addition, during the second half of the 19th century (after the discovery of the first burials) the necropolis was regularly plundered by the local population, which reached catastrophic proportions.

Another factor that affects the current state of research involves the previous practice of transferring finds from archaeological sites to central imperial museums or to private collections, which was still widespread at the beginning of the 20th century. Consequently, most of the archaeological material from the Panticapaeum necropolis was relocated; only small quantities of “doublet” finds were allowed to be kept in the local museum (Bykovskaya 2004, pp. 503–4). As a result, the artifacts discovered at this rich Black Sea necropolis have been scattered across several museums and are only partially preserved today. These museums include the Hermitage, the Kerch Museum, and the State Historical Museum in Moscow, whilst the Staatliche Museen of Berlin and the British Museum hold items labeled as being “from Kerch”, which also possibly come from the Panticapaeum necropolis. Unfortunately, the finds from the burial ground have never been published as a comprehensive list of materials from a single archaeological site.<sup>19</sup> Analyzing these materials today is also difficult since a verbal description is often the only basis for dating the excavated burials. Moreover, the descriptions sometimes appear vague, and certain details remain incomprehensible to the modern reader. One can only assume how much information has been lost due to such undetailed and inaccurate descriptions.

The total number of excavated burials dating to the 1st–3rd centuries CE is enormous: more than a thousand have been opened since the beginning of the 20th century, the majority of which date to the 1st and 2nd centuries CE (Maslennikov 1990, p. 20). Most of the recorded tombstone stelai that include reliefs and inscriptions from this period have been found in the territory of Glinishche. These burials can be associated with the local aristocracy as well as military and commercial elites, together with members of their families (Tsvetaeva 1951, p. 81). Marble tombstones with representations of Greeks from Asia Minor, who were apparently engaged in trade and military affairs in the Bosphorus, have also been found. Interestingly, these individuals were depicted

wearing Greek clothing, unlike the local inhabitants who were often portrayed on stelai in local, non-Greek attire, although they bore Greek names (Tsvetaeva 1951, pp. 83–84). These representations undoubtedly draw attention to the mixed cross-cultural character of the necropolis.

Local treasure hunters<sup>20</sup> claimed that there was once a burial mound at the site where the grave in question was discovered. Therefore, Chuistova suggested that the child may have been interred inside this tumulus as there are analogous burials recorded at the necropolis of Panticapaeum, including in the territory of the so-called Sobachyi kurgan (Shkorpil 1911, pp. 90–91).

Regarding the funerary rite, inhumations were predominant in the 1st and 2nd centuries CE. These could be ordinary flat graves without covering, flat graves covered with stone slabs, flat graves with tiles<sup>21</sup>, flat graves covered with wooden boards or beams, niche graves, stone cists, or earthen/stone crypts. The deceased could be placed on decking, grass or laurel leaves as well as in a coffin or a sarcophagus.<sup>22</sup>

The diverse characteristics of the necropolis are also reflected in child burials, which were located in all types of graves. Children have been recorded in individual graves (which constitute the vast majority) and in burials alongside adults. The fact that some burials were devoid of grave goods whilst others, including the child burial in question, contained an exceptionally rich assortment of such objects suggests that the deceased most probably belonged to various social classes. The accompanying burial inventory of child graves is also diverse, similar to adult burials recorded at this necropolis. Grave goods that are frequently recorded include different types of glass and clay vessels (which are present in almost every grave), terracotta figurines, coins, astragals, beads (that are possibly the second most common find after pottery in child graves from both parts of the cemetery at Glinishche and Mount Mithridates), and metal jewelry.

It is difficult to precisely ascertain the percentage of child graves at Glinishche. During the period of the most intensive and systematic excavations at the site between 1902 and 1903, when, respectively, 336 (OAK 1904, p. 47) and 217 burials (OAK 1906, p. 49) were excavated, child burials accounted for 57 in 1902 (Shkorpil 1904) and 56 in 1903 (Shkorpil 1905). A large concentration of child graves was located “on the shore of the bay”, which is apparently in the same area where the child burial in question was discovered in 1953. Vladislav Shkorpil alone examined about 50 child burials in this area.<sup>23</sup>

#### 4. The Grave Goods

The cultural amalgamation that was present in the North Pontic region seems to be reflected in the funeral assemblage itself. Importantly, as we argued above, objects cannot indicate the ethnicity of the deceased. On the contrary, the appearance of specific objects in graves often reflects their circulation between different cultural milieus, as well as their development and conceptual change depending on a given context.<sup>24</sup> The burial from Kerch contained grave goods that are frequently recorded in child burials. The burial assemblage includes the following items:

1. A torque made of twisted wires that form an open-worked “Herakles knot” in the center, decorated with a carnelian intaglio and featuring the head of a young man (Apollo?) in left-profile with a kithara. Gold, carnelian.<sup>25</sup> 80.32 g; 164 × 170 mm; cast: 25 × 21 mm (stored in the NMHU Treasury Inv. No. A3C—1719; Figures 1–3).
2. A bracelet with knotted ends. Gold. 13.62 g; 44 × 48 mm (stored in the NMHU Treasury; Inv. No. A3C—1677; Figure 4).
3. A finger ring with a dot-punch inscription “χαρά” (“rejoice!”). Gold. 2.7 g; 15 × 12.5 mm (stored in the NMHU Treasury; Inv. No. A3C—1678; Figures 5 and 6).

4. A pendant, possibly a rattle, in the form of a scallop shell with a wide rim and a wire loop. Hollow, made of two identical halves; inside there is a small object that makes a noise when the item is shaken. Gold. 2.64 g; 35 × 26 mm (stored in the NMHU Treasury; Inv. No. A3C—1683; Figures 7a and 8h).
5. A pair of double-tube decorations with an ornament in the form of ivy leaves, teardrop- and round-shaped, lined with twisted wire and inlaid with green and blue enamel. Gold, enamel. 3.26 g, 3.06 g; 23 × 14 mm, 24 × 15 mm (stored in the NMHU Treasury; Inv. No. A3C—1720, A3C—1723; Figure 8c,d and Figure 9c,d).
6. A pair of round and rhomboid-shaped plaques with loops. The surface is decorated with an ornament of S-shaped scrolls and drop-shaped figures made from thin wire, inlaid with enamel and red stone. Gold, garnet, enamel. 3.46 g, 3.97 g; 31 × 23 mm, 42 × 20 mm (stored in the NMHU Treasury; Inv. No. A3C—1721, A3C—1722; Figure 8a,b and Figure 9a,b).
7. A pair of elongated barrel-shaped beads. Gold. 1.05 g; 0.95 g; 11 × 6 mm (stored in the NMHU Treasury Inv. No. A3C—1679, 1680; Figure 8i).
8. A drop-shaped pendant with a green insert. Gold, malachite. 1.46 g; 21 × 9 mm (stored in the NMHU Treasury; Inv. No. A3C—1724; Figures 7c and 8g).
9. A rectangular pendant with five hemispherical bulges with a wire loop. Gold. 1.75 g; 27 × 13 mm (stored in the NMHU Treasury; Inv. No. A3C—1681; Figures 7b and 8f).
10. A hollow spherical pendant. Gold. 2.02 g; d—12 mm (stored in the NMHU Treasury; Inv. No. A3C—1682; Figure 8e).
11. A glass jug (Chuistova 1959, p. 242; Figure 10) (the current location of this object is unknown; however, it is probably stored in the Historical and Archaeological Museum in Kerch).



Figure 1. Torque. Photograph by Dmytro Klochko. © National Museum of the History of Ukraine.





Figure 2. Torque and intaglio. Drawn by Evgenia Velychko.



Figure 3. Intaglio. Photograph by Dmytro Klochko. © National Museum of the History of Ukraine.



**Figure 4.** Bracelet. Photograph by Dmytro Klochko. © National Museum of the History of Ukraine.



**Figure 5.** Finger ring with the inscription "ΧΑΡΑ". Photograph by Dmytro Klochko. © National Museum of the History of Ukraine.

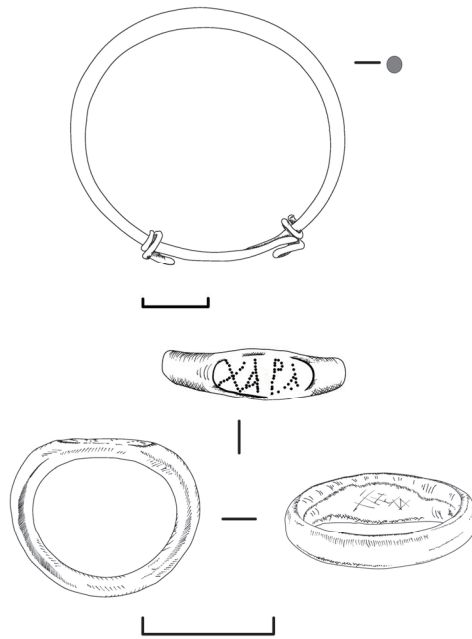
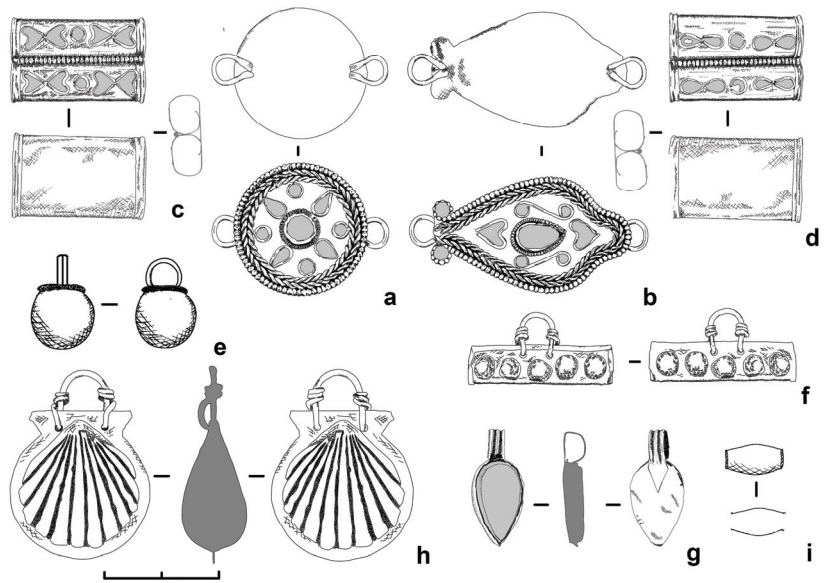


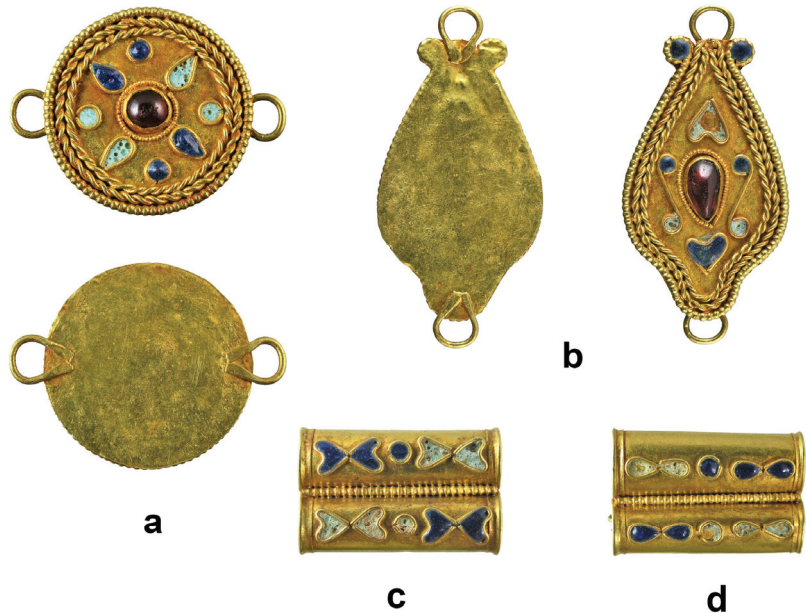
Figure 6. Bracelet and finger ring with the inscription “χαρά”. Drawn by Evgenia Velychko.



Figure 7. Pendants. (a)—pendant in the form of a scallop shell; (b)—rectangular pendant; (c)—drop-shaped pendant. Photograph by Dmytro Klochko. © National Museum of the History of Ukraine.



**Figure 8.** Necklace details. (a,b)—round and rhomboid-shaped plaques; (c,d)—double-tube decorations; (e–g)—pendants; (h)—pendant in the form of a scallop shell; pendants; (i)—bead. Drawn by Evgenia Velychko.



**Figure 9.** Necklace details. (a,b)—round and rhomboid-shaped plaques; (c,d)—double-tube decorations. Photograph by Dmytro Klochko. © National Museum of the History of Ukraine.





**Figure 10.** Glass jug. After (Chuistova 1959, 242, Fig. 9).

#### 4.1. Metal Composition

Non-destructive X-ray fluorescence analysis (XRF) was carried out with a desktop XRF analyzer ElvaX'03 by Yuriy Bulakh at the laboratory of the Kyiv National University of Trade and Economics as part of cooperation between the Museum and the University (Table 1).<sup>26</sup> The detection system is a Fast SSD detector. The measurement spot size is about 6 mm<sup>2</sup>. The resolution of the detector is 140 eV for the K $\alpha$  line of Mn; identification of elements in the range of elements from S (Z = 16) to U (Z = 92) in various concentrations.

**Table 1.** X-ray fluorescence analysis.

Object	Number of Samples	Au (%)	Ag (%)	Cu (%)	Other (more than 0.1%)
Torque. Kat. 1. Inv. No. A3C—1719.	6	82.83–86.92	10.12–10.84	2.41–6.34	Fe—0.62; Sn—0.14
Bracelet. Kat. 2. Inv. No. A3C—1677.	3	75.00–77.55	20.65–22.63	1.69–2.13	Fe—0.10–0.32
Finger ring. Kat. 3. Inv. No. A3C—1678.	3	92.25–92.66	5.15–5.41	2.11–2.27	Fe—0.3
Double-tube decoration. Kat. 5. Inv. No. A3C—1720.	5	69.34–70.18	26.75–27.94	2.23–2.78	Fe—0.4; Ni—0.1
Double-tube decoration. Kat. 5. Inv. No. A3C—1723.	5	71.41–67.93	26.20–29.06	2.00–2.99	Fe—0.19
Round-shaped plaque. Kat. 6. Inv. No. A3C—1721	7	76.12–78.12	19.63–21.92	1.32–2.32	Fe—0.42; Ni—0.1; Pb—0.22
Rhomboid-shaped plaque. Kat. 6. Inv. No. A3C—1722.	7	74.94–77.12	19.23–21.12	2.93–3.72	Ni—0.1; Fe—0.22
Drop-shaped pendant. Kat. 8. Inv. No. A3C—1724.	3	80.00–82.01	17.01–18.32	1.21–1.23	Fe—0.22; Sn—0.12

A total of 39 analyses were obtained for eight items, the number of samples taken for each product ranged from 3 to 7 (samples were taken of both the internal and external surfaces, as well as from attached elements, decorative elements, and in soldered areas).

Previous studies have established that the copper content in gold from primary and alluvial deposits amounts to 1%, rarely 2% (Zaykov et al. 2015, p. 273; Hribkova and

Bulakh 2013, pp. 69–75). In accordance with previous researchers' conclusions, a threshold of 2% is therefore accepted as the boundary between native (natural) and alloyed gold. The first category includes gold with an admixture of copper of up to 2%, which is due to copper sulfides being included in the gold ores. This metal is sometimes called naturally alloyed. For alloying, additives of copper, nickel, and lead were used, which increased the wear resistance of products (Zaykov et al. 2015, p. 274). A higher concentration of tin was observed in the soldered areas.

As for the use of gold for different elements of the same object, in most cases, metal of the same composition was used. Only in some cases is there a discrepancy in the composition of the metal, particularly for the manufacture of loops and twisted wire.

The items made from precious metal are of a very high quality, which suggests that they were produced in a highly professional workshop. This is evidenced by the close attention to detail, the use of the finest twisted wire from which the ornament is laid, the well-inlaid high-quality enamel, and the neat and invisible soldering of elements.

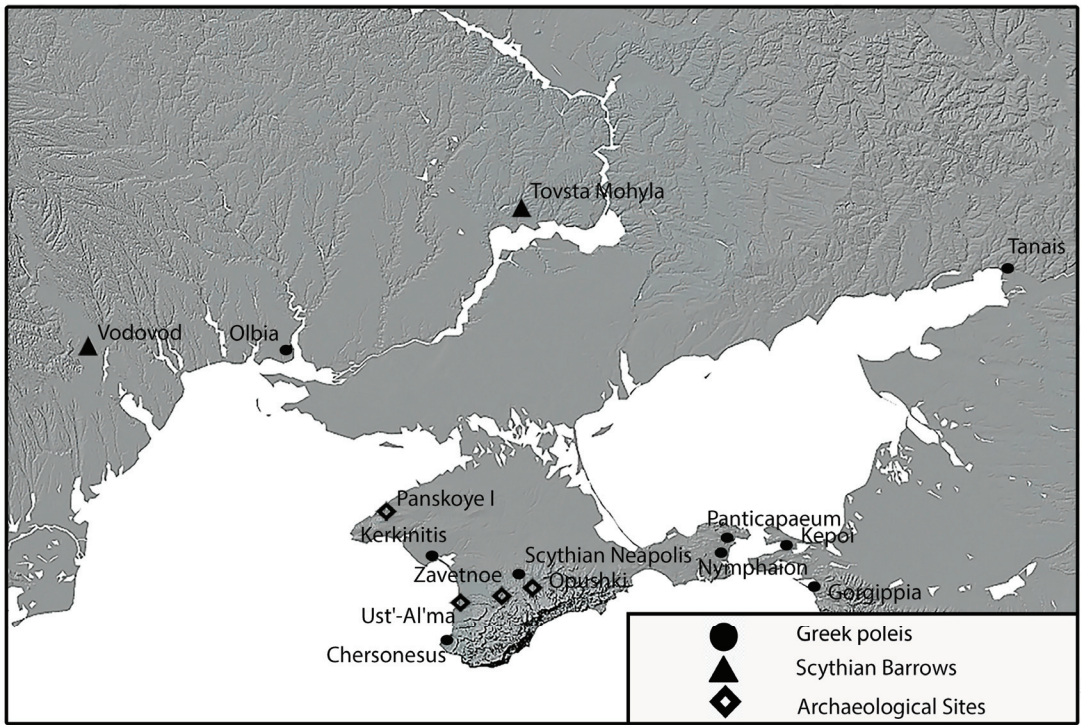
A more in-depth study of the composition of the metal will likely make it possible to hypothesize the sources of gold based on its microinclusions. To accurately determine the sources of the metal from which the described finds are made, it will be necessary to compare the composition and isotopic characteristics of the metal with samples in primary and placer gold deposits.

The accumulation of results concerning the composition of the metal will provide more opportunities for future research and will add to the discussion on a wide range of issues—from trade relations in antiquity to the specifics of technological processes.

#### 4.2. *The Torque*

Torques are often perceived as a typically “Barbarian” piece of jewelry that acquired “Greek” features. The emergence of the tradition of wearing these objects among residents of the ancient cities of Crimea is still debated. According to Natalia Pyatysheva, the use of torques by the inhabitants of Chersonesus was associated with the influence of the city's ethnic Scythian component (Pyatysheva 1956, p. 257). Tatiana Vysotskaya considers the torques from the Late Scythian Ust'-Al'ma necropolis to be an element of Sarmatian influence (Vysotskaya 1994, p. 108; Figure 11). Vitaliy Zubar' associates them with the Romanized people from the Danube region and attributes the presence of torques in burials from Scythian Neapolis to a Late La Tène influence (Zubar' 1987, p. 88). Anastasia Stoyanova believes that torques were characteristic of Late Scythian society from the very beginning, whose members essentially continued the Scythian tradition of wearing this type of jewelry (Stoyanova 2011, p. 124). This claim is supported by the fact that early Late Scythian torques, unlike Roman period jewelry, do not have analogs in ancient cities of the Northern Pontic region while being typologically close to the torques from Scythian burials.

The torque (item no. 1 in the catalog) is a vivid illustration of this concept: it is a typically “Barbarian” piece of jewelry that symbolizes high status; however, it is decorated with a Greek “Herakles Knot” and an intaglio. An analogous piece depicting a “Herakles Knot” in the center, made using the same technique, comes from a male burial in a sarcophagus (crypt 2, sarcophagus 2 found in 1975 in Gorgippia (Treister 2003, pp. 45–46; Figure 11). There are no other attested objects similar to this type. Another well-known case of using a “Heracles knot” on torque is a decoration on the loop of a torque made of smooth, round wire from Chersonesus, dated to the second half of the 1st–2nd century CE.<sup>27</sup> Numerous torques made from bronze false-twisted wire with smooth ends bent into a loop and hooks are known from the cities of the Crimea and they mostly date the 1st–early 2nd century CE; however, torques of this type survived until the 3rd century CE.<sup>28</sup>



**Figure 11.** Geographic locations of sites discussed in the article. Map by Evgenia Velychko.

The carnelian intaglio decorated with an elegant head of Apollo in left profile with a kithara belongs to a series of images of Apollo dating to the late 1st century BCE /1st century CE (Figures 2 and 3). It has been pointed out by scholars that after the Battle of Actium, the image of Apollo became extremely popular in glyptics (Zwierlein-Diehl 2012, pp. 126–27; Gołyźniak 2020, p. 183). All these representations are variations of the head of Apollo from a statue made by Scopas in the 4th century BCE which was transported from Ramnunta (Greece) to Rome in 28 BCE and installed in the Temple of Apollo on the Palatine Hill. Intaglios with Apollo wearing a laurel wreath (Gołyźniak 2020, Kat. 9.799–800, Fig. 594) accompanied by his bow and quiver have also been recorded (Gołyźniak 2020, Kat. 9.781–802, Fig. 595). Iconography similar to the intaglio from the Kerch torque—namely Apollo holding a kithara—appears on intaglios held at the Museo Archeologico Nazionale dell’Umbria (Perugia), the Antikensammlung Berlin (Berlin), the Calouste Gulbenkian Museum (Lisbon), and in a private collection from Germany, that was bought from Sternberg, which dates to the last third of the 1st century BCE (Gołyźniak 2020, Kat. 9.803–806, Fig. 596).

The decoration of the central part of the torque with the Heracles knot and the intaglio is probably a reflection of the same tradition used in the decoration of torques with beads and pendants, which appeared in the 1st century CE. Such cases are known from other locations including the necropolis of Panticapaeum<sup>29</sup>, Chersonesus<sup>30</sup>, Late Scythian burial grounds of the Crimea<sup>31</sup>, Scythian Neapolis<sup>32</sup>, and the Lower Dnieper region.<sup>33</sup> Several analogies can also be found at Sarmatian sites of the North Pontic region, including a golden torque with a carnelian intaglio as a pendant from a female burial near the village of Chugunno-Krepinka, Donetsk region (Mordvintseva and Treister 2007, Cat. 382.6; Simonenko 2008, Taf. 57.44) and a bronze torque with beads and pendants from the girl’s burial in the Zolotyj Mys burial ground near the village of Shyroka Balka, Kherson region (Dzneladze and Sikoza 2022, pp. 369–71, Fig. 33). It is still difficult to explain what caused the emergence of the practice of selecting this type of personal ornament as a grave offering.

However, it was most likely due to changes in the way in which the torque as a specific social marker was perceived culturally, or perhaps the catalyst was provided through cultural contact when a typically “Barbarian” form of jewelry acquired traditionally Greek features. Future research is required to properly address this problem.

#### 4.3. The Necklace

A number of the finds from the Kerch burial are presumed to be parts of a necklace, which includes the plaques with loops, the double-tube decorations, the gold beads, and various pendants (items nos. 5–10 in the catalog). Most probably, the grave contained further beads that have not survived. The round and rhomboid-shaped plaques with loops were probably used as a necklace tip, double-tube elements formed its central part and were complemented with beads and pendants.<sup>34</sup> This type of necklace usually appeared in rich child burials of the 1st century CE and was carefully analyzed by Mikhail Treister (Treister 2007, pp. 82–84; 2015b, pp. 134–36). Treister drew attention to the frequent combination of double-tube decorations with figured or round tips with a quite stable decor of filigree, enamel, and stone inserts. The originality of this compact group of necklaces and their elements, as well as the fact that finds of such jewelry, are unknown outside the Northern Black Sea region, suggests that they were more than likely produced in Bosphoran workshops. Furthermore, similar necklace elements are frequently found at urban necropoleis only (when the context of the find is known), including Panticapaeum<sup>35</sup>, Chersonesus<sup>36</sup>, and Phanagoria.<sup>37</sup> They are absent both in Late Scythian and Sarmatian tombs. Another significant observation is that most examples were discovered in child graves, which suggests that they could have been produced specifically as child jewelry. Interestingly, like the child burial from Kerch, the necklace in grave 99 on the slope of Mount Mithridates was also accompanied by a ring bearing the inscription “χαῖρα”.

The shell-shaped pendant (item no. 4 in the catalog) may also have formed part of a necklace, as is indicated by the design of the loop which closely resembles that of the rectangular pendant with five hemispherical bulges. However, this does not exclude the possibility that it could have been used as a baby rattle, as Chuistova assumed, although children’s toys made of gold have yet to be discovered. There are known finds of toys (or items that are interpreted as toys) in the necropolis of Panticapaeum, such as the following: “some kind of wooden toy, covered with thin silver in the form of the club of Herakles” in grave 99 on the slope of Mount Mithridates (Shkorpil 1905, pp. 25–26), a terracotta toy—“torochtushka” in the form of a box with the relief of a figure on top and a clay ball inside.<sup>38</sup>

Pendants in the shape of scallop shells are known from burials in the Chersonesean necropoleis dated to the 1st–2nd centuries CE: for example, crypt 2158 excavated by Karl Kostsyushko-Valyuzhinich in 1907 (Zhuravlev et al. 2017, Cat. 134) and crypt 113 excavated by Robert Leper in 1912 (Zhuravlev et al. 2017, Cat. 135). The closest parallel in shape, size, and technique is a shell from the Staatliche Museen<sup>39</sup>, which is decorated using the same technique and style as the necklace elements from Kerch. Unfortunately, the archaeological context of this find remains unknown (Treister 2007, p. 84).

#### 4.4. The Finger Ring

The finger ring with the inscription “χαῖρα” (“rejoice!”) (item no. 3 in the catalog) also has numerous analogies from child burials in Panticapaeum, Phanagoria, and Chersonesus (Rozanova 1968, pp. 126, 130, note 21; Treister 2015b, pp. 154–55, Tab. 3, 5–6; 49, 3–4; Fig. 34, 1–2; Cat. 11, 158; Zhuravlev et al. 2017, Cat. 327). Around seventeen rings with “χαῖρα” inscribed on the shields have been found in the North Pontic region. Ranging from 12 to 16 mm in diameter, they are mostly small in size (Arsent’eva and Gorskaya 2019, p. 13), and date to the 1st century CE. Documented examples are either from Panticapaeum or are presumed to have originated there. In 1843, Sergei Kareisha discovered a child’s burial in a sarcophagus to the west of Glinishche with a golden torque around the deceased’s neck, a bracelet with knotted ends, and a ring with the inscription “χαῖρα”. According to the shape



of the sarcophagus, the assemblage dates to the 1st century CE (Chuiustova 1959, p. 244). The same type of ring is known from a child's burial discovered in a sarcophagus on the Northern slope of Mount Mithridates in 1873 (OAK 1876, p. 14), and at least three rings of this type have been unearthed during excavations conducted by Vladislav Shkorpil.<sup>40</sup>

Michail Treister considers these rings as a "local Bosporan phenomenon" and assumes that they were produced in the Bosporus (Treister 2015b, pp. 154–55). Sergei Tokhtas'ev devoted a special study to the "χάρρα" inscriptions that appear on rings. He noted that the wish "χάρρα" meant roughly the same as "χαῖρε" if one uses the proper definition—"rejoice!" (i.e., "wearing this ring") (Tokhtas'ev 2015, p. 203).

The ring was most likely made for a child due to its small size. Additionally, examples of this type of ring are absent in typically "Barbarian"-style tombs. Thus, it is reasonable to consider that such finger rings were a localized Bosporan phenomenon that perhaps reflected a local tradition or cult.

#### 4.5. Other Finds

Bracelets with knotted ends, such as item no. 2 (Figures 4 and 6), represent one of the most common forms of gold bracelet found in the necropoleis of North Pontic Greek cities and Late Scythian and Sarmatian complexes (Treister 2007, p. 144). This type of bracelet is also frequently found in child burials, which seems to reflect its popularity among young individuals. This can be explained by the fact that the size of the bracelet could easily be adjusted to fit a growing child's wrist. Numerous silver and bronze examples of such bracelets point to their remarkable popularity. This type of bracelet first appears in Thrace and the Western Black Sea region as early as the 3rd century BCE. From the 1st century BCE onwards, it also became a characteristic adornment among members of the Late Scythian culture.

It is difficult to say anything more about the glass vessel based on the low-quality photograph provided in Chuiustova's publication (Chuiustova 1959, p. 242; Figure 10). To judge by the silhouette, it may belong to a common type of bottle that appeared in the second half of the 1st–2nd century CE (Lazar 2003, Kat. 6.3.4) and was in use until the 4th century CE (Lejsek 2012, p. 127, Fig. 6a). However, in order to provide a more accurate attribution, it is necessary to obtain access to the item or at least a good-quality photograph.

It is noteworthy that in 1st-century CE Panticapaeum a fairly typical set of decorations was used for child graves, consisting of a ring, a bracelet, and a necklace or a torque. Elements of this assemblage could be combined with each other in different variations. The fact that unique "child" forms of jewelry, unknown in adult burials, such as rings with the inscription "χάρρα" were produced, suggests that in Bosporan society a high demand existed specifically for child adornments. Undoubtedly, the subject of child jewelry, its use, and its meaning requires further research.

## 5. Conclusions

There is no doubt that the child burial from Kerch should be attributed to the category of elite burials. This is clearly demonstrated by the jewelry, the torque in particular, that displays the child's high social status and the sense of belonging to the local elite. The torque is apparently too large for a child and, evidently, it was originally intended for an adult. Nevertheless, it was intentionally placed in the child's grave, which suggests that it was deposited there due to its symbolic rather than practical meaning, which could include the display of the family's wealth and social position. Similarly, the intaglio that was used for the torque's decoration dates to an earlier period than the burial itself, which may suggest the presence of an heirloom and, as such, highlights the elitism of the grave goods. As one may assume, such an expensive stone with high-quality carving was passed down within the family from generation to generation. The funerary assemblage also reveals that the child belonged to a local family. This is indicated by the large percentage of local forms of jewelry used exclusively in the Bosporus, such as elements of necklaces, a ring, and a torque with a Herakles knot. The analysis of the findings demonstrated a cross-cultural

character of the objects.<sup>41</sup> The “mixed” nature of the jewelry is demonstrated by elements such as the Hellenized “Barbarian” torque, the bracelet typical of Late Scythian sites, and the ring bearing a Greek inscription. The lack of gender-specific objects as well as the presence of a pendant in the shape of a baby rattle may point to a very young age of the deceased individual.

Moreover, the type of grave that included a burial in a stone cist may also indicate that the child belonged to an aristocratic Bosporan family. Although, according to the funerary ritual, such types of burials did not differ greatly from simple flat graves (except for the fact that their construction was more expensive), the grave goods that accompanied individuals buried in stone cists resemble those recorded in tombs with ceilings which were the most common form of burial (Maslennikov 1990, p. 25). Therefore, it can hardly be argued that the deceased buried in stone cists differed significantly in terms of wealth from those buried in tombs with ceilings. The differences in the shape of the grave may have been associated with specific religious cults that were popular within a family. Alternatively, they could have also been used as markers of a particular social group. In Panticapaeum, the highest number of such graves in stone boxes has been recorded in the area of Glinishche, where they constitute approximately 4% of all recorded graves (Tsvetaeva 1951, pp. 78–80).

The analysis of the grave goods confirmed the previously proposed chronology of the child complex from Kerch in the second half of the 1st–the first half of the 2nd centuries CE (Treister 2003, pp. 45–46; Mordvintseva and Treister 2007, Cat. A. 343). It is not without importance that this period witnessed important changes regarding the self-representation of North Pontic elites in both Greek and non-Greek cultural zones. As mentioned above, the self-representation of the Crimean “Barbarian” elites seems to have undergone transformation as a result of the decentralization of power in the region. New contact zones influenced the display of power and status in elite burials, which is visible through the so-called “prestige objects” such as golden funeral wreaths that are well-known from the Greco-Roman world (Mordvintseva 2017, p. 194).

The period between the 1st and 3rd centuries CE is also the time when the so-called consolation decrees were popular, which were issued by Greek cities on the occasion of the premature death of a citizen to console the grieving family. The means of consolation was the decree itself, but it could also include a public funeral, a statue, or a golden wreath. Half of all recorded consolation decrees pertain to deceased children and young individuals who were praised for their exceptional values and their unfulfilled future duties towards the city (Strubbe 1998, pp. 60–62). As a rule, the deceased belonged to local elite families whose members held the most important magistracies and were often local benefactors. This suggests that the occurrence of consolation decrees can be connected with oligarchic tendencies that were characteristic of Greek *poleis* during the Roman period.<sup>42</sup> The phenomenon of consolation decrees seems to have also influenced the North Pontic epigraphic habit. Elements characteristic of consolation decrees can be found in several post-mortem decrees from Olbia dating to the 2nd and 3rd centuries CE.<sup>43</sup> One such decree was issued by the city to honor a boy (παῖς) named Dados who was granted a golden wreath and a statue. He “had been snatched away from his parents and from his mother city without mercy”, and he was also “expected to fulfil all liturgies according to the prestige of his family”.<sup>44</sup> Another example honors a deceased (and most probably young) man named Karzoazos whose death brought sadness to the whole city.<sup>45</sup> The partially preserved *IosPE I<sup>2</sup> 46* may also honor a deceased young man who was similarly expected to fulfil all liturgies towards the city.<sup>46</sup>

A common motif of such decrees demonstrated that a child’s death was a great loss not only to the parents but to the whole city. In a non-Greek cultural milieu, where epigraphic culture was not practiced, rich child burials may have served a similar purpose by offering elite families the means to express their social status and the importance that family continuity had with regard to the good fortune of the whole community. It should not be ruled out that both Greek and non-Greek elite families may have shared and promoted the similar idea that the death of children should be perceived as a loss

for the whole community since these deaths deprived it of future valuable members and possible benefactors who would no longer be able to perform their duties and fulfil their ascribed future social roles. The cross-cultural character of the burial assemblage from Kerch demonstrates that elite self-representation was not based on ethnicity but rather on a shared concept of the agency of elite families and their importance with regard to the well-being of the whole of society. The example of the Opushki cemetery (Figure 11), where a separate section for child graves was identified, may suggest that the idea of treating deceased children in a special way was also shared (or emulated?) by non-elite societies.

The material discussed in this study has demonstrated that the treatment of children after death and the mortuary rites conducted by the living changed over time and were intertwined with a given socio-cultural situation, which may have been affected by political factors and changing power relations in the region. These factors may have prompted specific cultic and religious trends that were reflected in the mortuary rites, but they may also have influenced the modes of displaying one's power and wealth through the funerary ceremony.

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## Abbreviations

<i>IosPE</i> <sup>1</sup>	Latyshev, Vasilij Vasil'evich. 1916. <i>Inscriptiones Antiquae Orae Septentrionalis Pontis Euxini Graecae et Latinae: Inscriptiones Tyrae, Olbiae, Chersonesi Tauricae</i> . Vol. 1, 2nd ed. Petropoli: Societas Archaeologicae Imperii Rusici.
<i>IGBulg</i> <sup>1</sup>	Mihailov, Georgi. 1970. <i>Inscriptiones Graecae in Bulgaria Repertae: Inscriptiones Orae Ponti Euxini</i> . Vol. 1, 2nd ed. Sofia: Typographia Academiae Litterarum Bulgaricae.
АДУ	Археологія і Давня історія України
БИ	Боспорские исследования
ВДИ	Вестник Древней Истории
ЖМВД	Журнал Министерства Внутренних дел
ЗООИД	Записки Одесского общества истории и древностей
ИАК	Известия Императорской Археологической комиссии
КСИА	Краткие сообщения Института Археологии СССР
КСИИМК	Краткие сообщения института материальной культуры
МИА	Материалы и исследования по археологии СССР
СА	Советская Археология
САИ	Свод археологических источников
СГМИИ	
им. А.С. Пушкина	Сообщения Государственного музея изобразительных искусств им. А.С. Пушкина

## Notes

<sup>1</sup> See the discussion provided by (Shennan 1991; Shnirelman 1995; Patterson 2003, pp. 63–149).

<sup>2</sup> e.g., (Grach 1999, pp. 25–31) who prefers to identify three non-Greek funerary traditions at the necropolis of Nymphaion instead of applying an ethnic-oriented interpretation of graves dating to the 6th and 5th centuries BCE. Similarly, Fless and Lorenz have also adopted a social approach when analyzing the material from the necropoleis of Panticapaeum: the funerary assemblage seems to have been arranged according to the social status and gender of the deceased rather than their ethnicity (Fless and Lorenz 2005, pp. 57–77). See also (Petersen 2010, pp. 114, 153, 241, 250–51, 265) regarding the evidence from Olbia, Kerkititis, Panskoye I and Nymphaion dating between 550 and 270 BCE. A mixed character of finds is also noticeable in 4th/3rd century

BCE burial mounds in which the funerary assemblage contains items of both Scythian and Greek origin, e.g., the burial in the Elder Brother Kurgan that belongs to the Three Brothers Kurgan group near Nymphaion (Treister 2008, p. 151), and the central grave in the Kul-Oba Kurgan near Kerch (Tsvetaeva 1968, pp. 44–50; Fedoseev 2007, p. 1009, Fig. 3). See also (Meyer 2013), especially the appendix with grave inventories of Bosporan elite kurgans dating to the 5th and 4th centuries BCE (pp. 309–71).

Most recently see (Mordvintseva 2013a, 2013b) regarding Sarmatians, and (Mordvintseva 2019) and (Ivanchik 2019) regarding Late Scythians; see also (Porucznik 2021a, pp. 133–80) regarding Scythians, Taurians and Sa(u)r(o)matians.

(Shepherd 2018, p. 521); see e.g., (Wileman 2005; Lally and Moore 2011; Kamp 2001; Crawford and Shepherd 2007); with regard to the North Pontic region, see e.g., the last issues of *Stratum Plus* (vol. 2023, nos. 3 and 4) and Sorokina and Sudarev 2000 with further literature. The relevance of child burials and the variability of the archaeological and iconographical evidence has been presented in the three-volume publication entitled *L'Enfant et la mort dans l'Antiquité* (Guimier-Sorbets and Morizot 2010; Nenna 2012; Hermary and Dubois 2012). The study includes material gathered from a number of regions throughout the Mediterranean. Unfortunately, as far as the Black Sea area is concerned, only two papers regarding the western Black Sea region have been included (Koeller and Panayotova 2010; Lungu 2010).

For analogies from other regions, including burials in settlements, see (Liston et al. 2018, pp. 106–16).

The diversity of mortuary practices are clearly visible in studies concerning a broad chronological and geographical range of Greek material such as (Kurtz and Boardman 1971, pp. 29–326; Morris 1987, pp. 7–139; 1992, pp. 103–99).

Interestingly, the proportion of child burials recorded at Berezan corresponds with the expected rate of child mortality in ancient society and is estimated at 43% (Sorokina and Sudarev 2000, p. 195).

Sorokina and Sudarev (2000, p. 199) suggest the Rhodians may have been among the first settlers at Berezan who established the practice of child *enchytrismo*. Such a burial custom was also popular in other North Pontic centers especially between the 6th and 3rd centuries BCE or the 1st century BCE in the case of Asiatic Bosphorus. The expected rate of child mortality is clearly reflected in the archaeological material from the necropolis of Kepoi: 42% for the period between the 6th and 5th centuries BCE and 53% for the period between the 4th and 1st centuries BCE (Sorokina and Sudarev 2000, p. 196). During the Roman period, the custom of burying children in clay containers seems to have gained popularity again, which may have been connected with new religious trends, particularly with regard to the rural territories of Olbia where such burials have for the first time been recorded under the floors of houses, suggesting a possible cult of the dead: 46 such burials have been discovered at Kozyrka, 3 burials in Petuchovka 2, and 6 burials in Zoloty Mys (Kryzhitskiy et al. 1989, pp. 214–15; Burakov 1976, p. 138). The same burial tradition also occurs during the Roman period (1st–5th centuries CE) in the city and *chora* of Chersonesus (Zubar' 1982, pp. 50–51). The necropolis of Sovkhoz 10 (Sevastopol'skiy) (1st–5th centuries CE) is especially important, since two archaic elements of the funerary ritual have been recorded there, namely children buried in amphorae in a contracted position (Vysotskaya 2002, pp. 271–73). Contemporary analogies (1st century CE–mid-4th century CE) can also be found in the city of Tanais located at the mouth of the Don River (Bazilevich et al. 2020; Shelov 1961, pp. 17, 32, 88; Arsen'eva et al. 2001, pp. 45, 91, 139, 184, 192). Bazilevich et al. 2020, 8 argue that the introduction of the new funerary custom of child *enchytrismo* in Tanais was caused by changes in the socio-cultural sphere of Tanaitan society, prompted by the influx of new inhabitants after Polemon's invasion.

See (Papanova 2006, pp. 76–77) with analogies from other Black Sea cities; (Petersen 2010, p. 60).

This lack of interest and/or experience may result in shortcomings that are occasionally found when dealing with child burials; see (Carroll 2011, p. 109) who gives interesting examples of cases in which child bones found at archaeological sites were accidentally mixed up with animal bones. See also (Gur'yanov and Chubur 2023) who discuss zoomorphic clay toys from the Early Iron Age forest zone settlements that were previously wrongly interpreted as votive figurines.

It is worth mentioning, however, that such a position of the body is not typical for the necropolis of Panticapaeum (Maslennikov 1990, p. 37).

This problem is visible in other studies; see e.g., (Petersen 2010, pp. 15–16) who uses the size criteria to determine child burials: graves less than 1.5 m long are viewed as child burials whilst those that measure more than 1.5 m are considered to be adult burials; but see (Sviridov 2023, p. 336) who gives an example of two child burials in grave 199 from the Chersonesean necropolis of Frontovoe 3, the size of which was larger than the size of those usually prepared for children.

See (Dasen 2013) for ancient ideas concerning conception, pregnancy and the question of when a fetus becomes a human/receives a soul.

Vivid examples outside the Black Sea region are six graves of aristocratic children (including an infant aged ca. 9–12 months) from the pre-Roman necropolis of Piazza d'Armi in Spoleto, Umbria (dating to between the 8th and 6th century BCE) who were accompanied by exceptionally rich funerary offerings such as weapons and ritual ceramics (Weidig and Bruni 2018).

Grave XIX, skeleton no. 24; grave XI, skeleton no. 9; possibly also grave X, skeleton 54; (Mordvintseva 2017, Fig. 7); (Porucznik 2021b, pp. 881–85) with further literature.

For the "Vodovod" complex, see (Sinika et al. 2018a, kurgan 6); (Sinika et al. 2021, kurgan 16, burial 10); (Sinika et al. 2019, kurgan 10); for the 'Sad' complex, see (Sinika et al. 2018b, kurgan 7).

During the excavations between 2008 and 2014, 31 child burials have been recorded among 102 excavated graves. Unfortunately, the age of the deceased is rarely ascertained whereas the gender is never identified (Puzdrovskiy and Trufanov 2016).



- 18 The toponym “Glinishche” refers to the area on the outskirts of Kerch where the necropolis was located. The ground necropolis of Panticapaeum itself reached its maximum territorial scope during the 1st–2nd centuries CE when it covered areas on the northern and southern slopes of Mount Mithridates and Glinishche.
- 19 It is surprising that still, after so many decades, the main sources of information on this incredible and rich necropolis (including both the area of Mount Mithridates and Glinishche) are notes and diaries written during the excavations, dating back to the late 19th and early 20th centuries, along with periodic publications of research carried out in the already excavated areas or publications of random finds from the territory of the necropolis (see Ashik 1846, 1850; Blaramberg 1848; Dumberg 1901, 1902; Gagarin 1853; Kareysha 1844; Shkorpil 1903, 1904, 1905, 1907, 1909, 1910, 1911, 1914, 1916). The graves excavated in the necropolis of Panticapaeum during the 1920s and 30s of the 20th century have practically not been published (see Grinevich 1926; 1957, p. 420; Ivanova 1950, pp. 239–40; Marti 1926, p. 89). In the second half of the 20th century, no systematic excavations of the necropolis were carried out, and materials from occasional excavations were only partially published (e.g., Azarova 1962; Bessonova 1969; Blavatskiy 1947a, 1947b, 1949, 1950, 1960, 1962; Sokolskiy 1961; Chevelev 1989; Sharov 1994; Tsehmistrenko 1968; V. N. Zin’ko 1994). This paradoxical situation leads to the fact that the “conventional” topography of the necropolis that was prepared by Tsvetaeva has not been refined and updated for more than 70 years and it still remains the main study on this issue (except for the study made by E. A. Zin’ko (2003) who clarified the topography of the necropolis dating to the late antique period). Furthermore, the current location of a number of finds remains unknown. It can be ascertained, however, that the bulk of the material has been transferred to the Hermitage; nevertheless, there has been no publication of this collection as a separate category of finds. It is also unknown what exactly was lost during the long and eventful 20th century, since there are practically no photographs or drawings of finds in the publications issued during the 19th and the first half of the 20th centuries. Unfortunately, the authors at the time were focused on recording the presence of a particular item, rather than on describing its exact appearance. As a consequence, the rich materials from the Panticapaeum necropolis have never found their way into scientific circulation; instead, scholars need to deal with fragmentary information published in a number of separate studies based on different (often outdated) methodologies from various periods. This begs the question of whether the material will ever be available to academia in the form of a comprehensive and up-to-date study.
- 20 Chuiustova calls them “старые счастливики”—“starye schastlivchiki”, i.e., “old lucky guys”. People engaged in illegal excavations or treasure hunters, were called “schastlivchiki” in Kerch at the beginning of the 20th century. Illegal excavations in Kerch were a serious problem in the late 19th and early 20th centuries. All directors of the Kerch Museum of Antiquities tried to fight illicit treasure hunting to no avail. Often, such “schastlivchiki” were associated with the criminal world, not to mention the fact that the director of the Kerch Museum, the archaeologist Vladislav Shkorpil, was killed by the “schastlivchiki” in 1918.
- 21 N.B. this type of ceiling with tiles is known only from the Panticapaeum necropolis.
- 22 According to Tsvetaeva’s calculations, simple graves, as always, were significantly predominant; they accounted for about 80% of all burials, niche graves—ca. 13%, stone cists—ca. 4%, stone crypts—3% (Tsvetaeva 1951, p. 80).
- 23 (Shkorpil 1904, pp. 123, 153; 1905, pp. 34, 39, 41–50, 53–56, 58, 63, 65–67; 1916, pp. 21–22). This number is approximate due to the lack of a topographic plan of the necropolis and a rather conditional topographic reference in the reports of Shkorpil: “near the Serganidi factory”, “near the slaughterhouse”, at the intersection of such and such a street, etc.
- 24 Such “borrowings” are visible in the form of weapons and jewelry that circulated among Black Sea populations (Maslennikov 1990, p. 40). Cross-cultural character is also apparent in the case of gold face covers that circulated between Greek and non-Greek cultural milieus bearing different symbolic and ritual meanings (see Quast 2014, pp. 279–90; Porucznik 2021b, pp. 879–81).
- 25 Identification of metal and semi-precious stones for Cat. 1–10 was made by a commission of the USSR Assay Service headed by Vera Zotova in 1988.
- 26 This joint work was carried out in several stages between 2010 and 2014. On behalf of the Museum, Elena Podvysotskaya, Tatyana Shamina, Hanna Hribkova, and Evgenia Velychko took part in this work; Yuriy Bulakh conducted the sampling on the spectrometer under the supervision of Tatyana Artyukh. The research results were only partially published (Hribkova and Bulakh 2013). These results may contain a certain degree of error due to the equipment that was used at the time being less accurate compared to the equipment of today. Unfortunately, it is currently impossible to re-examine these items and analyze the missing items from the child’s burial due to the evacuation of the collection of the NMHU Treasury in 2022. Nevertheless, the authors have decided to include the preliminary results of these analyses in this publication.
- 27 Cremation in an urn, niche No. 3, crypt No. 1013/1899 in Chersonesus (Mordvintseva and Treister 2007, Cat. A. 343.1; Treister 2007, p. 100).
- 28 Type 5b according to (Stoyanova 2011, p. 120).
- 29 The bronze torque found with a copper coin of Kotis I and five small beads from burial 239 (116) on the shore of the bay, excavated by Shkorpil in 1903 (Shkorpil 1905, p. 50), grave 134 (26) near the slaughterhouse in Glinishche, excavated by Shkorpil in 1905 (Shkorpil 1909, pp. 39–40).
- 30 The golden torque with five pendants from the urn cremation in niche No. 3, crypt No. 1013/1899 (Mordvintseva and Treister 2007, Cat. A. 343.1).

- <sup>31</sup> Ust'-Al'ma necropolis: grave 88 (Vysotskaya 1994, pp. 108, 138, Tab. 28 and 44), grave 511 (Puzdrovskiy 2007, p. 397, Fig. 123.2), grave 523 (Puzdrovskiy 2007, p. 397, Fig. 123.6) grave 614 (Puzdrovskiy 2007, p. 397, Fig. 123.4), grave 640 (Puzdrovskiy 2007, p. 397, Fig. 123.2).
- <sup>32</sup> Grave 16 (Puzdrovskiy 2007, p. 148,397, Fig. 124.5), grave 69 (Puzdrovskiy 2007, p. 397, Fig. 123.5), Dubois tumulus, burial 2 (Dashevskaya 1991, p. 52, Tab. 72.22).
- <sup>33</sup> The bronze torque with beads and bucket-shaped pendants from the Chervoniy Mayak burial ground, grave 83 (Dzneladze and Sikoza 2022, p. 369, Fig. 1.4).
- <sup>34</sup> Elements of the same type of necklace from child grave 99 on the slope of Mount Mithridates excavated by V. Shkorpil in 1903 (Shkorpil 1905, pp. 25–26) were located in such a way.
- <sup>35</sup> A burial of a boy in stone tomb No. 6 in a rocky hill near the eastern slope of Mount Mithridates, excavated by A. Lyutsenko in 1872 (Mordvintseva and Treister 2007, Cat. 186.1); grave 99 on the slope of Mount Mithridates, excavated by V. Shkorpil in 1903 (Shkorpil 1905, pp. 25–26).
- <sup>36</sup> Crypt No. 429/1894, crypt No. 599/1895, crypt No. 1009 /1898 (Mordvintseva and Treister 2007, Cat. 329.1, 333.1, 339.1).
- <sup>37</sup> Burial 38/2003 (Treister 2015a, Cat. 147–148).
- <sup>38</sup> Grave 44 from excavations in 1901 (Shkorpil 1903, p. 86) and grave 299 (111) in Shkolny Lane excavated in 1902 (Shkorpil 1904, p. 126), turned bottoms of glass vessels (child burials Nos. 204 (81) and 250 (127) on the shore of the bay excavated in 1903 (Shkorpil 1905, pp. 44, 53), astragals (graves 17–18 on the southern slope of Mount Mithridates excavated in 1902 (Shkorpil 1904, pp. 77–78)), grave 283 (95) at Glinishche excavated in 1902 (Shkorpil 1904, p. 123), and grave No. 204 (24) behind Karantinnaya street from excavations in 1904 (Shkorpil 1907, p. 63).
- <sup>39</sup> Staatliche Museen zu Berlin, Antikensammlung, Inv. Misc. 11863,192a.
- <sup>40</sup> Grave No. 356 (168) near the slaughterhouse in 1902 (Shkorpil 1904, pp. 135–36), grave 99 on the slope of Mount Mithridates in 1903 (Shkorpil 1905, pp. 25–26) and grave 27 near the Postal Road in 1912 (Shkorpil 1916, p. 14).
- <sup>41</sup> N.B. the cross-cultural character of the grave goods seems to correspond well with the multicultural composition of Bosporan society that can be observed during the first few centuries CE (see Halamus 2017, pp. 690–91 with further literature). The influx of Iranian speaking upper-class families is also visible in contemporary Olbia (see Tokhtas'ev 2013, pp. 565–608).
- <sup>42</sup> This is clearly visible on the Cycladic Island of Amorgos where such decrees were especially popular: in the cities of Aigiale and Arkesine consolation decrees were the only decrees issued during the Roman period (see Porucznik forthcoming). Strubbe 1998, 64 with further literature. There is only one consolation decree that dates to the pre-Roman period, namely a Hellenistic decree from the Western Black Sea shore, possibly from Mesambria (*IGBulg* I<sup>2</sup> 388; 260–250 BCE).
- <sup>43</sup> Honorary post mortem decrees resembled consolation decrees with the exception that they did not offer consolation to the relatives. They first appeared in the late Hellenistic period and became popular during the Imperial period. In general, they rarely pertain to children or young individuals, which makes the evidence from Olbia exceptional (Strubbe 1998, p. 65).
- <sup>44</sup> *IosPE* I<sup>2</sup> 52, 2nd/3rd century CE; transl. after Strubbe 1998, 66 note 66.
- <sup>45</sup> *IosPE* I<sup>2</sup> 39; probably 2nd century CE.
- <sup>46</sup> The expression ἐπιτιζόμενος πάσας τὰς λειτουργίας ἐκτελέσειν is exactly the same as in the honorary post mortem decree for the boy, Dados (*IosPE* I<sup>2</sup> 52).

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## Article

# Royal Tamga Signs and Their Significance for the Epigraphic Culture of the Bosporan Kingdom

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**Abstract:** This article examines the phenomenon of the so-called royal tamga signs issued on stone stelae in the Bosporan Kingdom in the 2nd and 3rd centuries CE. Tamgas were symbols commonly used by Eurasian nomads throughout the first millennium BCE. The appearance of tamgas in the northern shores of the Black Sea in the 2nd/1st BCE, followed by their adoption into the Greek epigraphic culture of the kingdom, represents an intriguing example of symbolic integration and another step in the formation of Bosporan culture. Research on cultural interactions between the inhabitants of the Bosporus has rarely focused on epigraphic material in its own right. Analyzing a small group of public stone slabs that feature tamgas, this article contributes to existing studies on numerous private funerary reliefs. Furthermore, the current work aims to incorporate several examples of stelae with royal tamga signs into the growing interest in syncretism, which is occurring in other epigraphic cultures of the Greco-Roman world. The case of the Bosporan Kingdom shows that such processes can also occur in places where no literate culture had previously been firmly established.

**Keywords:** tamga signs; the Bosporan Kingdom; Tiberii Iulii; epigraphic culture; epigraphic mode; stone stelae

## 1. Introduction

Combined with a movement away from Hellenocentric studies, postcolonial approaches offer a new outlook on approaches to cultural and ethnic identities in the ancient world.<sup>1</sup> The postcolonial view has resulted in greater attention on the so-called peripheries, i.e., areas that are distant from the center of Greek culture. Additionally, it has prompted questioning of dominant theories, such as Hellenization and acculturation, on the interactions between Greeks and non-Greeks (Bilde and Petersen 2008, pp. 9–12). The possibility of various forms of syncretism and cultural hybridization, as well as a challenge to the concept of a permanently shaped *ethnos* focusing on the importance of gradual “becoming” has formed as the subject of growing consideration.<sup>2</sup>

Despite appearing with some delay, these new approaches have also begun to gain application in research on the regions of the northern Black Sea. They are used in analyses of the influence of Greco-Roman culture on the local population and the development and functioning of multi-ethnic societies. Worth highlighting are changes in the approach to material culture from the northern shores of the Black Sea and its significance in assessing cultural influences. Attention has been focused on the difficulties in determining an individual’s *ethnos* solely based on artefacts, which are often more universal in nature, used in burial practices.<sup>3</sup> Another interesting example of a different approach is the study of Greco-Scythian art from the northern shores of the Black Sea. By placing these beautifully decorated artefacts in a local context and reinterpreting the applied iconography, previous researchers have demonstrated their cross-cultural character, which was primarily influenced by social conditions (Meyer 2013).

Discussions about intermingling Greco-Roman with local cultures in the so-called peripheries extend beyond material culture and can encompass various aspects of life. “Global” phenomena, such as the spread of the Greek *polis* model and the associated specific

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lifestyles, art, religiosity, or diet, could lead to the development of distinct forms specific to a given region. Vlassopoulos describes such phenomena, referring to globalization and glocalization which are local syncretic forms of a globally occurring phenomenon (Vlassopoulos 2013, pp. 19–25).

The abovementioned trends in the study of cultural interaction on the northern shores of the Black Sea have, to a lesser extent, covered the issue of epigraphic culture. Therefore, the main goal of this article is to take a closer look at the small group of inscriptions and unscribed stone stelae on which the so-called royal tamgas were placed. Tamga marks were symbols that the Eurasian nomads used. The widespread distribution of tamga marks on the northern shores of the Black Sea is associated with the migration of tribes such as the Siraces and Aorsi in the 2nd century BCE. With the rising position of the Sarmatians, the symbols found their way to the rich epigraphic culture of the Bosporean Kingdom, complementing the official image of rulers from the *Tiberii Iulii* dynasty. Attempting to locate the phenomenon of royal tamgas within the Bosporean epigraphic habit, linking them to the epigraphic curve, reflecting on the epigraphic mode of these public stone stelae, and presenting the significance of tamgas in the official image of local kings may supplement research on the numerous private Bosporean funerary reliefs, which also provide an excellent example of the development of local Bosporean culture.<sup>4</sup>

## 2. Studies on Epigraphic Cultures and the Origins of Their Glocalization

The case of the Bosporean Kingdom demonstrates the adaptation of Greek epigraphic habits with local cultural features. This was the case when an epigraphic culture based on Greek formats and conventions adopted many elements from the cultures of local non-Greek tribes and incoming steppe peoples.<sup>5</sup>

The introduction of the concept of epigraphic habit by MacMullen (1982), which referred to the Roman practice of creating commemorative inscriptions in stone, was a pivotal moment in the study of the role of epigraphy in socio-political life in antiquity. MacMullen examined this custom as it was practiced from the 1st century BCE to the early 3rd century CE. He noted that its peak popularity did not coincide with periods of Roman prosperity but occurred during the reign of Caracalla. In his work, MacMullen emphasized that stone inscriptions differed from other forms of documentation, such as papyri or ostraca. The analysis of this form revealed its significant symbolic importance for communities, especially for influential groups such as property owners and officials. MacMullen argued that symbolic rather than practical motivations shaped the changes in the popularity of this custom, pointing to the elusive sense of audience.

Despite some criticism, subsequent researchers continued MacMullen's line of thought. They strived to identify specific factors that influenced the changing frequency of epigraphic use and determine what could shape the sense of audience.<sup>6</sup> Initially, the researchers focused mainly on Latin epigraphy, where "imperial trends" were more easily discerned. In 1991, Alföldy (1991) wrote an influential essay that significantly impacted research on epigraphic culture. According to Alföldy, the epigraphic habit that MacMullen identified was not a spontaneous phenomenon but was intentionally established and promoted by the first Roman Emperor, Augustus. Alföldy argued that what MacMullen called a "habit" should instead be recognized as a full-fledged "culture" systematically promoted to confirm and strengthen social order in the Roman Empire. Woolf (1996) further developed the concept of epigraphic culture, suggesting that the Roman epigraphic habit was part of a broader trend toward personal monumentalization, a response to feelings of rootlessness and anxiety that resulted from increased social and geographical mobility in the 1st and 2nd centuries CE. In equally significant works, Meyer (1990, 2011) noted that the rise and subsequent decline of Latin epigraphic production correlated with the desire for Roman citizenship and the personal prestige associated with elite membership. After the enactment of the *Constitutio Antoniniana* and the granting of Roman citizenship to all, setting inscriptions became less attractive.

Over time, the term epigraphic culture has gained significance, and it is often used interchangeably with epigraphic habit to describe commemorative activities such as the production of inscriptions on stone. Nevertheless, a clear distinction between the two terms occurs only at times. Epigraphic culture typically encompasses a broader range of practices related to epigraphy beyond stone monuments and may include various writing practices specific to a particular community. In the context of research into Greek epigraphic culture—or, as Bodel noted, epigraphic cultures—one cannot easily point to any overarching trend in the Greek world (Bodel 2001, pp. 6–15). Naturally, in the eastern Mediterranean, common phenomena such as the emergence or decline of democracies and euergetism influenced the production of inscriptions. However, the decentralized nature of the world of Greek *poleis* resulted in local solid trends, as evidenced by recent studies focusing on the forms of epigraphic curves for individual regions, including the northern shores of the Black Sea.<sup>7</sup>

As stated earlier, this study aims to present a specific aspect of dualism in the epigraphy of the Bosphoran Kingdom. This is illustrated by the example of the so-called tamga signs, which can undoubtedly be viewed as a local, idiosyncratic phenomenon. However, worth considering first is the context of the presence of such local features in the global phenomenon of creating stone inscriptions in antiquity. Many languages other than Greek and Latin found daily use in the Roman Empire. Several appeared in writing, while others were only spoken. As a result, in most regions of the eastern Mediterranean basin, where non-Greek forms of statehood previously existed (for example, in Egypt and Phoenicia), non-Greek epigraphic cultures emerged, leaving numerous inscriptions in local languages such as Aramaic, Phoenician, Hebrew, hieroglyphs, and others. These inscriptions belonged to a broader literate culture that usually gave way to Greek writing or disappeared entirely.<sup>8</sup>

Moreover, the emergence of multilingual inscriptions, often in languages beyond Latin and Greek, became a widespread phenomenon. For example, inscriptions from Palmyra were recorded in Latin, Greek, and the local Aramaic dialect. Such inscriptions vividly illustrate the cross-cultural processes that occur in a given territory (Parca 2001, pp. 71–72). The concept applies to official inscriptions but perhaps even more so to inscriptions that “ordinary” people created. In these inscriptions, as Parca (2001, pp. 64–68) noted, the evolution of language and the emergence of new “local” formulations are evident.

The presence of another language in an inscription strongly suggests that its purpose was to reach a diverse audience and that it was erected at the initiative of individuals or groups of mixed identities. However, besides using bilingual inscriptions, individuals of different ethnicities also found it natural to create inscriptions exclusively in Greek and Latin. Several indicators can help identify merged features or the development of local trends. In addition to the aforementioned linguistic modifications, one often-cited factor includes onomastics, which, in itself, does not determine but may suggest ethnic background. However, this is merely an indication because, as examples from the northern shores of the Black Sea demonstrate, locally used names could result from the prevailing fashion, mixed marriages, or the fact that the bearers of the names did not necessarily feel the need to identify with one specific ethnic group.<sup>9</sup>

Therefore, when studying the local epigraphic culture, one can draw significant conclusions by analyzing the iconography and form of the stelae and the context of their erection. Certain stelae contained integral elements, such as signs or symbols indicating affiliation with a specific ethnic or social group. For example, menorahs were placed in several inscriptions from the Levant region alongside epitaphs or dedications written in Greek, clearly indicating the practitioner’s adherence to Judaism (For example, IJO Syr. 7; 10). However, it is worth emphasizing that this phenomenon was not limited to a specific region. Rather, it was applied to individuals who travelled and influenced epigraphic cultures in various parts of the Greco-Roman world. Examples include menorah epitaphs and bilingual texts in Greek and Hebrew from the Bosphoran Kingdom.<sup>10</sup>

This section concludes with a new concept called the epigraphic mode proposed by Bodel. According to this concept, factors such as the form of the inscription, its interaction

with the environment, the precision and technique of execution, and the employed iconography can determine whether a particular text is considered more or less epigraphic. In presenting his considerations, Bodel (2023, pp. 14–34) focuses on Latin inscriptions. He demonstrates that in certain cases, a painted text could exhibit a high level of the epigraphic mode, for example, if it incorporated elements typically reserved for stone inscriptions such as a painted border and text written in capital letters, as seen in popular *tabulae ansatae* or certain inscriptions from Pompeii. This approach is particularly interesting, as it allows for us to include the epigraphic mode concerning stone stelae from the Bosporan region with discussion on the so-called royal tamgas, whose form, in certain aspects, resembles typical inscriptions. Consequently, one may question why this form of communication was chosen and what role it may have played in the self-presentation of Bosporan rulers in the public sphere.

### 3. Tamga Signs and Their Spread across the Northern Shores of the Black Sea

As mentioned in the previous section, globalization within the epigraphic cultures of Mediterranean regions with well-established writing traditions, such as the Levant, Egypt, and Asia Minor, was a frequently encountered phenomenon. However, local populations lacking the literary tradition and epigraphic culture of one of the regions could also influence the development of an epigraphic habit. This occurred in epigraphic material from the northern shores of the Black Sea, particularly in those produced in the Bosporan Kingdom, where, under the influence of Eurasian nomads (mostly Sarmatians), numerous so-called tamga marks began to appear.

Tamga marks are symbols used by several peoples of the Great Steppe from ancient times to the modern era. Initially, the marks appeared across the vast areas of Central Asia. Over time, as the nomadic populations moved, the marks spread to neighboring regions. The word “tamga” is of Turkish origin and was not used in antiquity. Therefore, the symbols that the Sarmatians spread in the northern Black Sea regions from the 2nd/1st centuries BCE are often described as “Sarmatian signs” (*Сарматские знаки*), “tamga-like signs” (*Тамгообразные знаки*), or simply “tamga signs” (*Знаки-тамги*).<sup>11</sup>

There is an ongoing discussion about the original use of these symbols. At an early stage, long before they reached the Black Sea, the symbols were used in various ways; for example, in Central Asia, they were placed on rocks as petroglyphs (Yatsenko 2001, pp. 105–6). One cannot rule out the initial religious or magical significance of the symbols. Nonetheless, it should be emphasized that the application of these symbols evolved and differed depending on the region and period (Yatsenko 2001, p. 27). Over time, tamga signs associated with the Saka people permeated the Iranian world. The earliest signs from Khorezm probably date back to the 6th century BCE. Then, they reached Sogdiana and later Bactria (Weinberg and Novgorodova 1976). Boardman (1998) notes that certain signs found on bricks or seals in Persepolis, Pasargadae, and Anatolia resemble those on the northern shores of the Black Sea. These signs were used during the reign of the Achaemenids, Parthians, and Sasanians.

However, the signs used on the northern shores of the Black Sea from the 1st century BCE to the 3rd century CE likely served to mark ownership and indicate the clan affiliation of the owner (Yatsenko 2001, pp. 22–23; Solomonik 1959, pp. 34–46). Tamga signs penetrated and spread to the territory of the Bosporan Kingdom through the Sarmatian tribes, which gradually moved westward from Central Asia. Due to limited archaeological sources, there is a debate on the scale and course of this Sarmatian migration.<sup>12</sup> However, the appearance of tamgas in the Black Sea region should be linked to events in China and Central Asia, where peoples such as the Xiongnu and Yuezhi conflicted.<sup>13</sup> The conflict initiated population movements that contributed to the fall of the Bactrian kingdom in the 2nd century BCE. Subsequently, this directly impacted the movement of Sarmatian tribes, such as the Siraces and Aorsi, toward the Lower Don region in the 2nd/1st century BCE. The elite of these tribes used the signs, which, with further migration, spread to the northern shores of the Black Sea.

Non-Greek elites placed the Sarmatian tamgas on various objects such as jewelry, weapons, and stone sculptures and inscriptions. However, it should be emphasized that in most cases, tamgas were later additions to the artifacts.<sup>14</sup> The most common reasons for placing tamgas were to indicate the ownership of an item or to mark presence in a particular location. Religious matters were likely less significant. A prime example is the stone lions from Olbia, covered with hundreds of various signs, made much later than the lions were constructed. The stone lions from Olbia are a case of the so-called tamga encyclopedias, i.e., groupings of several signs together (Solomonik 1959, Figures 41 and 42, pp. 87–97). Another excellent example of the tamga encyclopedias, the slab from Panticapaeum, demonstrates the diversity of Sarmatian tamgas. Additionally, the slab is the best example to illustrate the variety of symbols used by Sarmatian elites in the areas of the northern Black Sea in antiquity (Dračuk 1975, plates XXXII–XXXVI; Solomonik 1959, Figure 47, pp. 103–4). The slab, similar to the stone lions from Olbia, contains examples of signs from diverse locations across the northern Black Sea coast, indicating the extensive mobility of its owners (see Figure 1). Encyclopedias, however, were not employed to mark ownership but were probably used to confirm presence at a meeting, to confirm an alliance, or perhaps to mark territory (Yatsenko 2001, pp. 80–83). There are several possibilities for categorizing tamga signs. However, the so-called royal tamgas are most important for this work as they penetrated the epigraphic culture of the Bosporan Kingdom, serving as integral parts of public stelae with and without Greek inscriptions.



**Figure 1.** The so-called encyclopedia of tamga signs from Panticapaeum. Roman times. After (Dračuk 1975, plate XXXII).



The so-called royal tamgas can be linked to specific rulers (Yatsenko 2001, pp. 45–60; Dračuk 1975, pp. 97–98). Such signs, like those of less significant elite members, could be placed on jewelry, weapons, or stone stelae that were made earlier. However, the importance of the signs lies in the fact that, in certain cases, one can determine that they were created simultaneously with the objects on which they are found. Therefore, a sign becomes an integral part of its corresponding object from the beginning. In forming the epigraphic culture of the Bosphorus, the royal tamgas of the *Tiberii Iulii* family form the essential group among these types of signs. The royal tamgas appeared from about the mid-2nd century CE to the first half of the 3rd century CE. They are discussed in detail later in this article.

Before the creation of stone stelae with the royal tamgas came the minting of coins with the tamgas of individual rulers. The oldest examples are from Queen Dynamis and King Aspurgus who ruled over the Bosphorus at the turn of the 1st century BCE and 1st century CE.<sup>15</sup> It was a tumultuous time characterized by upheavals and internal conflicts.<sup>16</sup> During this period, the Sarmatian tribes gained an advantage, leading to the appearance of these signs (Halamus 2017, pp. 163–64).

One should emphasize that these tamgas began to appear at the beginning of the formation of a new ruling dynasty. Aspurgus was the dynasty's first representative and likely the first to adopt the Roman name Tiberius Iulius Aspurgus, which is typical for a Roman client. From then on, for the next three centuries, the rulers of the Bosphorus adopted *tria nomina*, starting with *Tiberius Iulius* and ending with the cognomen—the local name of the ruler.<sup>17</sup> Tamga signs on Bosphoran coins appear infrequently, and later, Aspurgus' successors used traditional monograms. Another example of someone placing a tamga on a coin, although outside the Bosphorus, occurred with the coins of Sarmatian kings Pharzoios and Inensimes, coins which were minted in Olbia in the second half of the 1st century CE. One of the coins was minted by Pharzoios (see Figure 2) whose sign is carried in the claws of an eagle—a reference to the local Olbian iconography (Tokhtas'ev 2013, pp. 568–69).



**Figure 2.** (Not to scale) stater of King Pharzoios with an eagle holding a tamga sign. Struck ca. 50–75 CE, AV Stater, 8.28 g, 18 mm. Auction XIX Day 1, 26 March 2020, Lot 86. With kind permission of Roma Numismatic Limited.

There is a fundamental difference between tamga signs used for marking territory, for indicating participation in a clan assembly, for marking clan leaders, or simply for indicating presence, and tamgas created on coins and inscriptions by rulers. When a coin or an inscription was created, such a sign acquired an additional symbolic meaning: it transformed into an element of the ruler's title. This sign, placed on coins or stone stelae, ceased to be solely a symbol aimed at other Sarmatians who used them. Its use as an integral part of elements (coins or inscriptions) typical for Greek cities offered the sign a more universal character, directing it to a broader audience.

#### 4. Stelae with Royal Tamga Signs of the Tiberii Iulii Dynasty from the Bosporus

The previous section, together with the next section, provides a detailed analysis of the role and significance of royal tamgas in the Bosporan Kingdom. The *Tiberii Iulii* dynasty began its reign over the kingdom toward the end of the 1st century BCE. The dynasty traced its roots back to Mithridates Eupator, who, at the end of the 2nd century BC and after the death of the last of the Spartocids, took control of the Bosporus. Both his granddaughter Dynamis and Aspurgus who ruled after Dynamis used tamgas, although sparingly (see Notes 16 and 18). A limited collection of stone slabs bears royal tamgas as an integral part of the objects. These symbols can be divided into two groups: those with accompanying Greek inscriptions and those solely featuring the royal tamga (uninscribed).<sup>18</sup> A century after king Tiberius Iulius Aspurgus and precisely during the reign of King Tiberius Julius Rhoemetalces (131–153 CE), these stone stelae adorned with royal signs began to appear. This practice continued with subsequent monarchs until the 230s CE. Individual rulers used these symbols in their propaganda. However, it is plausible that the symbols also resonated with a broader group of individuals, including family (clan) members and the king's inner circle.

Compared to other tamgas, these symbols are noteworthy for their complexity. The base of an individual symbol features an "inverted trident," with the upper portion potentially including one or two additional marks. The dominant interpretation suggests that the lower part of tamga was a shared feature distinctive of the *Tiberii Iulii* royal lineage, while the upper elements derived from the maternal side of the sovereign or another dynasty member (Yatsenko 2001, p. 46). According to Dračuk (1975, p. 65), the lower part of the symbol (inverted trident) could be associated with Poseidon, reflecting attempts in the propaganda of Bosporan rulers to trace their lineage back to this deity. However, Yatsenko correctly observed that tamgas in this form were present in earlier times in Central Asia, thereby dismissing a connection to Poseidon (Yatsenko 2001, pp. 50–51). Nevertheless, despite arising from the traditions of the Iranian steppe peoples, these symbols represent an aspect of the culture that flourished on the Bosporus. The royal symbols of the *Tiberii Iulii* are found exclusively within the kingdom's territory or on artefacts directly linked to its rulers.

Stone slabs with royal tamgas were discovered in several locations of the Bosporan Kingdom. Almost all examples, except for two from Panticapaeum (Solomonik 1959, Figures 2 and 5, pp. 50–52), come from the eastern (Asiatic) part of the kingdom, with the majority originating from Tanais (CIRB 1237; 1241; 1248; 1249; 1250; 1251; Böttger et al. 2002). Other findings originate from Hermonassa (CIRB 1053; Solomonik 1959, Figures 3 and 4, pp. 51–52), Phanagoria (Kuznetsov 2008), and Khutor Krasnaya Batereya in the Kuban River basin, about 65 km east of Phanagoria (Solomonik 1959, Figure 6, p. 54). As previously mentioned, stone stelae with royal tamgas can be divided into two main groups: those with accompanying Greek inscriptions and those with just the sign (uninscribed). Almost all texts that accompany royal symbols are building inscriptions, describing the construction or repair of walls, towers, and other structures. They can also be partially considered honorific, typically with the aim of presenting influential people and their activities for the city. The inscription from Hermonassa, dated 208 CE, informs about the construction of a building by a certain Herakas, son of Pontikos, the chief translator of the Alans. It bears the mark of Sauromates II (Figure 3 = CIRB 1053). Other building inscriptions come from Tanais and bear the marks of Eupator (Figure 4 = CIRB 1241), Rhescuporis III (Figure 5 = CIRB 1248), and Ininthimaeus (Figure 6 = CIRB 1249 and Figure 7 = CIRB 1250). It is worth mentioning another lost inscription from Tanais, dated 193 CE and presented by Zenon, son of Zenon—the royal envoy to the city. On the inscription, according to the surviving drawing, a dedication text to Zeus, Ares, and Aphrodite was present (CIRB 1237 = Solomonik 1959, Figure 12, p. 59). Besides the dedication, the inscription also has honorific features, as it celebrates the victories of King Sauromates II over the Syraci, Scythians, and pirates, enabling navigation through the Black Sea to Pontus and Bithynia. In the lower left corner, a small tamga of the ruler was also present on the stone.



**Figure 3.** Building inscription with royal tamga of King Tiberius Iulius Sauromates II, Hermonassa, 208 CE. CIRB-album 1053.



**Figure 4.** Building inscription with royal tamga of King Tiberius Iulius Eupator, Tanais, 163 CE. CIRB-album 1241.



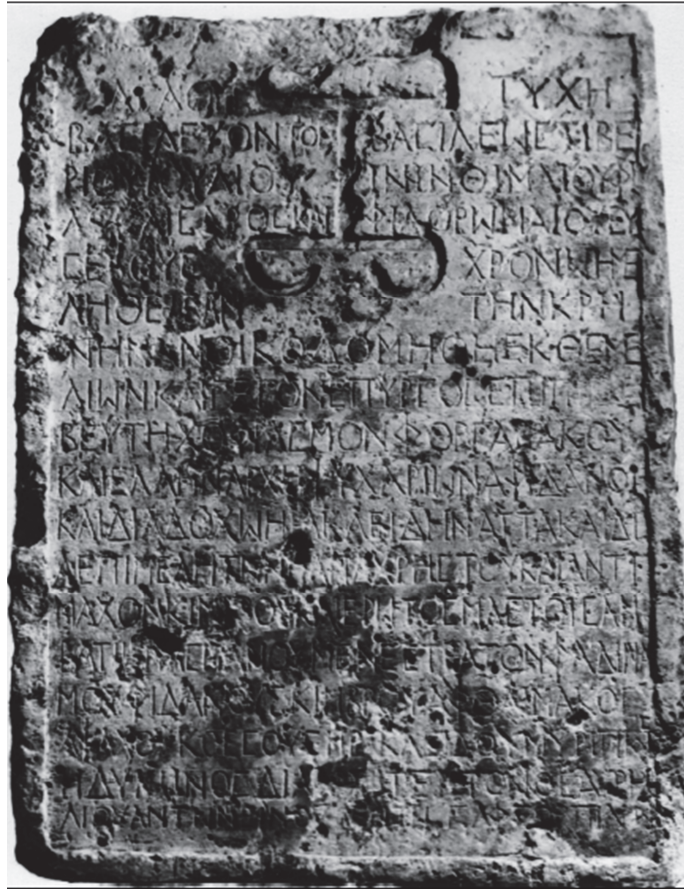


**Figure 5.** Building inscription with royal tamga of King Tiberius Iulius Rhescuporis III, Tanais, 210–227 CE. CIRB-album 1248.



**Figure 6.** Building Inscription with royal tamga of King Tiberius Iulius Ininthimaeus, Tanais, 236 CE. CIRB-album 1249.





**Figure 7.** Building inscription with royal tamga of King Tiberius Julius Ininthimaeus, Tanais, 236 CE. CIRB-album 1250.

The function of the royal sign accompanying the Greek inscription is difficult to determine definitively. One possibility is that it could have been used as an alternative to the king's titles. For example, the building inscription from Hermonassa does not reference the ruler in the text. In this case, according to an interesting interpretation by Shkorpil, the royal sign could have acted as an equivalent to the standard formula "βασιλεύοντος βασιλέως Τιβερίου Ἰουλίου Σαυρομάτου φιλοκαίσαρος καὶ φιλωρωμαίου, εὐσεβοῦς," which can be translated as "During the reign of King Tiberius Julius Sauromates, pious friend of Caesar and friend of Romans" (Shkorpil 1910, pp. 32–34). However, on other inscriptions, despite the inclusion of the sign in the text, references to the rulers' titles are present. These include both elaborate "pro-Roman" formulas and single names of rulers (CIRB 1248; 1251), which make finding a uniform pattern difficult.

The royal tamga placed on the inscription could but did not necessarily have to serve as a substitute in the ruler's titulature. Placed on the stela along with the text, it could increase the audience's reach and afford certain monumental features to the entire object. Two identical building inscriptions from Tanais that mention King Rhescuporis III (211–227 CE) are interesting examples supporting this thesis. The text informs about the repair of walls and describes the king's representative in Tanais and the chief of Aspurgians. On one of the stelae, which is larger and made of marble, the inscription appears along with the sign (CIRB 1248 = Figure 5), and on the other, which is smaller and made of limestone, only

text is present (CIRB 1246). It is possible that the copy with the sign was placed in a more exposed manner, with the aim of reaching a larger audience.

However, unscribed stone slabs bearing the royal signs are a slightly different case. The first category includes stelae carved or in the form of relief without additional elements except for possible framing or decorations. These stones are most likely associated with the construction activity that the Bosphoran kings initiated, and the sign itself also played its role in the official propaganda of the ruler. In this work, I include five examples, which, due to the piety of execution and sizes, indicate a deliberate placement on the stone slab rather than a random engraving. The earliest example is the sign of King Rhoemetalces found in Tanais in a relief form (Figure 8). The next three are carved signs of King Eupator: the first one is lost, and we have only a drawing (Solomonik 1959, Figure 6, p. 54); the second was issued on the reverse side of an epitaph from Panticapaeum (CIRB 738 = Figure 9), the third is now in Kerch, although its provenance is uncertain (Solomonik 1959, Figure 5, p. 53). The last example in this subcategory is the carved sign of Sauromates II from Phanagoria (Kuznetsov 2008 = Figure 10).



**Figure 8.** Stela with royal tamga of King Tiberius Iulius Rhoemetalces, Tanais, 131–154 CE. (Böttger et al. 2002, p. 75).



**Figure 9.** Stela with royal tamga of King Tiberius Iulius Eupator, Panticapaeum, 154–173 CE. CIRB-album 738.



**Figure 10.** Stela with royal tamga of King Tiberius Iulius Sauromates II, Phanagoria, 173–211. (Kuznetsov 2008, p. 48).



The second subcategory belongs only to two examples of unscribed slabs with royal signs from Hermonassa (Taman), which are presented along with Victoria figures holding wreaths above them. One of these slabs can have a connection to Tiberius Iulius Eupator (Solomonik 1959, Figure 3, pp. 51–52 = Figure 11), while the identification of the second is problematic due to the removal of the top part of the signs and their replacement with an inscription dated to the 5th/6th centuries CE (Solomonik 1959, Figure 4, pp. 52–53 = Figure 12). Interestingly, on this slab, two signs appear next to each other, with the base of one differing from the typical *Tiberii Iulii* “inverted trident.” This sign has only two “legs,” which may indicate that it possibly belonged to a relative of the ruler or his son (Treister 2011, pp. 314–15).<sup>19</sup> The figure of Victoria/Nike was present in the iconography of the Bosphorus even during the time of Asander (second half of the 1st century BCE)<sup>20</sup> and later during the reign of the *Tiberii Iulii* dynasty. An interesting example is the relief from Panticapaeum, where Victoria hovers with a wreath over the figure of the man—perhaps a ruler (Treister 2011, pp. 323–25). Therefore, these slabs should instead be associated with honorific activity and may refer to military victories that the Bosphoran kings achieved, as in the case of the earlier-mentioned dedication with the sign of Sauromates II.



**Figure 11.** Stela with royal tamga of King Tiberius Iulius Eupator, accompanied by Victoria, Hermonassa, 154–173 CE. (Solomonik 1959, Figure 3).

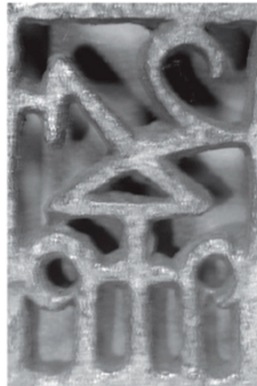


**Figure 12.** Stela with two unidentified royal tamgas, accompanied by Victoria, Hermonassa, 2nd century CE. (Solomonik 1959, Figure 4).



As previously noted, it is still unresolved whether the so-called royal tamgas were used as signs identifying only one ruler or if a broader group of individuals could use them. For example, Zavoikina (2003) considered the placement of these signs on stone slabs to be a local custom from Tanais. He connected the practice to the activity of local dominant clans, which is also visible on numerous lists of names (Zavoikina 2003).<sup>21</sup> Moreover, this form of syncretism would undoubtedly match the ethnic diversity in Tanais, which was the most Sarmatized center of the kingdom (Halamus 2017, pp. 162–63). Nevertheless, Yatsenko (2005, pp. 414–17) and Treister rightly rejected this interpretation, noting several examples of royal signs issued on stone in other parts of the kingdom mentioned earlier.

The firm connection between this phenomenon and central authority also allows for the appearance of characteristic belt buckles shaped as royal signs and made of bronze and gold (Figure 13). Gold buckles made of thin foil found use in burials, while those made of bronze most likely served as gifts from the rulers of the kingdom to their closest commanders. Treister (2011) suggests that the Roman Empire influenced this practice, as similar decorative belt elements appeared in Germania and Raetia. Among the signs visible on bronze buckles, two are attributable to the kings Rhoimetalcus II and Eupator, whose signs we know from stone slabs. The rest could belong to other members of the royal elite or to rulers who cannot be identified. Two signs were made next to each other on one of the buckles, which may correspond to one of the honorific stone slabs from Hermonassa (Treister 2011, pp. 326–27).



**Figure 13.** Bronze belt buckle with royal tamga of King Tiberius Iulius Eupator, 154–173 CE. (Treister 2011, Figure 2.1).

Buckles and belt endings with tamgas most likely originated in Panticapaeum. From there, they spread throughout the kingdom and beyond. As a result, the signs were present in the vast consciousness of the Bosporan society. Nonetheless, one should note that royal signs on stone slabs, both with inscriptions and without, almost exclusively appear in the territory of the so-called Asiatic Bosphorus, which possibly relates to the aforementioned higher level of Sarmatization of this part of the kingdom. Of the inscriptions outlined earlier that appear with the royal sign, they were not issued directly by the ruler but instead by the kingdom's elite members. Therefore, both the sign and the formulas with the rulers' titulature, predominantly found in Bosporan public texts, fit into a broader policy of self-presentation of the kingdom's ruling elite. Royal tamgas were universal symbols of royal power, which the Bosporans and the steppe population surrounding the Bosporan centers recognized.

##### **5. Epigraphic Curve, Epigraphic Mode, and the Representation of the Bosporan Rulers**

It was likely not coincidental that a new type of royal tamgas appeared during the reign of Tiberius Julius Rhoemetalces. As it has been observed, the use of tamgas in royal

propaganda in the Bosphorus occurred together with internal transformations within the kingdom (Yatsenko 2001, pp. 45–46). This may have been the case with the aforementioned signs of Aspurgus and Dynamis, as well as those that appeared sporadically from the second half of the 3rd century CE (Dračuk 1975, pp. 63–64). The emergence of the *Tiberii Iulii* family's signs could be attributable to changes on the throne following the death of Tiberius Julius Cotys II around 132/3 CE. In his *Periplus of the Pontic Sea*, Arrian (*Peripl.* 17) informs Hadrian about the Bosphoran Kingdom in light of the potential need for an expedition related to Cotys II's death. A brief mention in *Historia Augusta* (3.9.8) also speaks of a dispute in the Bosphorus and the eventual granting of the kingdom to Rhoemetalces. However, no expedition was necessary, as the kingdom remained loyal to Rome. Arrian further notes that the Bosphorans continued to fulfil their duties, with a detachment from the kingdom fighting against the Alans in Cappadocia in 136 CE (Arr. *Alan.* 3). Additionally, in an inscription dated to 133 CE, Rhoemetalces honors Hadrian, calling him his *ktistes* (CIRB 47).

These brief mentions may indicate temporary tension associated with the power transition and suggest that Rhoemetalces came from a different branch of the *Tiberii Iulii* family. Seeking new forms and mediums for self-presentation, the new ruler might have expanded the use of the royal tamga beyond jewelry, coins, and belt buckles to stone stelae resembling inscriptions, which played a significant role in the public space of the kingdom at the time.

A connection may exist between the occurrence of royal tamga signs between the realms of Rhoemetalces and Ininthimaeus (131–238 CE) and the epigraphic curve of the Bosphoran Kingdom.<sup>22</sup> To highlight the integration of royal signs into the Bosphoran epigraphic habit, one must consider two aspects. First, epitaphs were the predominant category of inscriptions during the *Tiberii Iulii* dynasty. Although the funerary inscriptions were mostly dated through palaeography, it is rather certain that their surprising popularity surged in the second half of the 1st century CE. The number of epitaphs remained high in subsequent decades (see Figure 14).<sup>23</sup> Predominantly originating from Panticapaeum, these inscriptions were typically laconic but almost always featured accompanying reliefs depicting the kingdom's inhabitants. Many of them portray riders and local warriors, which, among other things, led Kreuz (2012, see Footnote 5) to recognize the inscriptions as a local Bosphoran phenomenon. Over time, the trend of erecting inscriptions reached the Asiatic part of the kingdom, where, from the early 2nd century CE, alongside frequent epitaphs, lists of names (mostly of *thiasoi*) and building inscriptions began to predominate (see Figure 15).

Thus, the introduction of the first royal signs on stone slabs coincided with the peak popularity of inscriptions in the Bosphoran Kingdom. With the potential of this communication form being recognized, a stone stela with a royal tamga served as a clear message for both "epigraphically literate" Bosphorans and the surrounding Sarmatians who were familiar with the symbols. As stated earlier, most of the stone slabs had a building character, matching the trend in the Asiatic part of the kingdom, and included unscribed slabs, which were also thought to refer to typical stone inscriptions in form. Therefore, in my opinion, royal tamgas appear on stone slabs (both epigraphic and unscribed) associated with building activities and military victories because these were the areas that provided the ruler with the greatest prestige.

By employing royal signs on stone stelae, rulers addressed a broader group than the Bosphoran audience. Specific measures can be identified that were taken to enhance the epigraphic mode of stone slabs and consequently make them resemble the commonly occurring inscribed stelae (almost exclusively in Greek). First, the shape, size, and material of the slabs matched those of standard inscriptions. Most of them were carved, with three exceptions of the relief form (Figures 8, 11 and 12). Second, certain slabs were adorned with decorative elements found in traditional inscriptions. For example, the tamga sign of Rhoemetalces from Tanais was framed to highlight its epigraphic character (Figure 8), and the slab with Eupator's sign from Panticapaeum has decorative rosettes above it

(Figure 9). Finally, it is worth noting that the unscribed stelae were probably painted, as was commonly the case with inscriptions. According to the description of the lost slab with King Eupator’s tamga found in Krasnaya Batereya, remnants of red paint could be seen in the recesses of the carved sign (Solomonik 1959, p. 54). Thus, the abovementioned examples, which involve the enhancement of the epigraphic modality of these unscribed stone slabs, validate Shkorpil’s suggestion that the sign may serve a substitute function to the text.

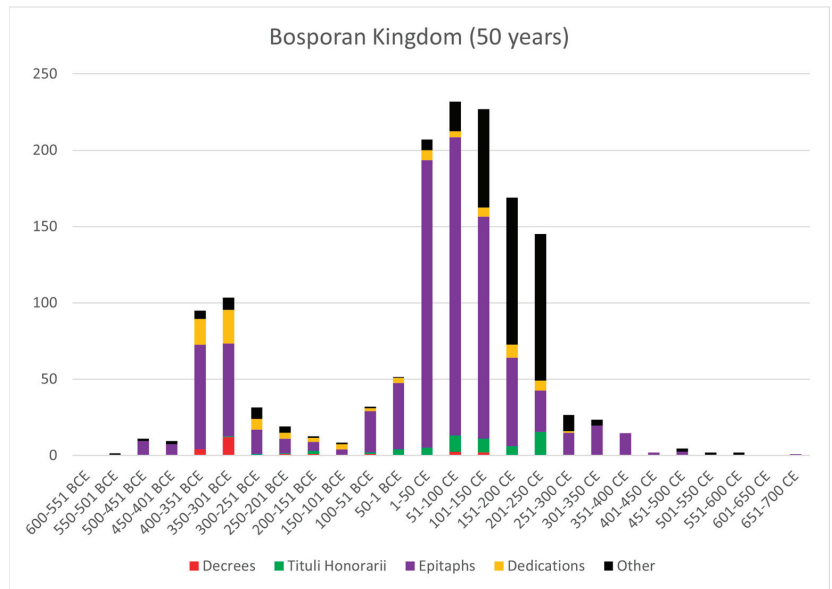


Figure 14. Chart presenting epigraphic curve in the Bosporan Kingdom (1432 texts). Author: M. Halamus.

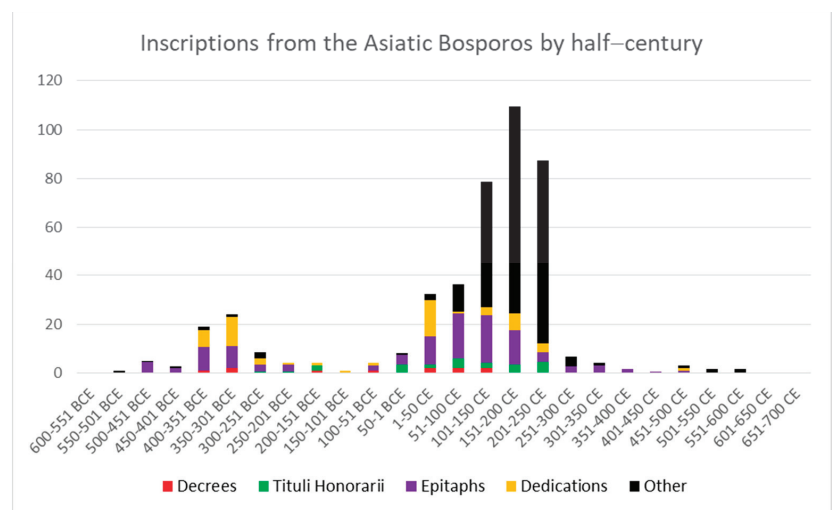


Figure 15. Chart presenting epigraphic curve in the Asiatic part of the Bosporan Kingdom (444 texts). Author: M. Halamus.

One can view the inclusion of royal signs within the epigraphic culture of the Bosporan Kingdom through the lens of enduring traditions. The reason for doing so is that the signs illuminate the shaping processes of self-presentation and thus a form of consciousness among local ruling elites. A notable example is King Ininthimaeus (234/5–238 CE) whose tamga appears alongside three inscriptions (CIRB 1249; 1250; 1251). It is immediately striking that his royal sign is distinctly different from the royal tamgas that preceded it, lacking the lower part, characteristic of the *Tiberii Iulii*, the “inverted trident.” Meanwhile, his title found in the texts of the inscriptions is a typical combination of pro-Roman elements that the rulers of the kingdom had employed for over two centuries (βασιλεύοντος βασιλέως Τιβερίου Ίουλίου Ίνινθιμαίου φιλοκαίσαρος καὶ φιλωρωμαίου, εὐσεβοῦς).

Despite persisting into the 3rd century CE, the importance of Roman propaganda likely evolved for both parties. Tracing the political landscape of the Bosporan Kingdom during the Third Century Crisis proves exceptionally challenging. Anokhin (1999) identifies King Ininthimaeus as the last of the *Tiberii Iulii* lineage. Highlighting the king’s official titulature, Anokhin (1999, pp. 162–64) suggests that Ininthimaeus originated from the dynasty’s Sarmatian branch. Yatsenko (2001, pp. 55–56), who places greater emphasis on the tamga, theorizes that Ininthimaeus could have been a Sarmatian chieftain, which corresponds with Dračuk’s (1975, pp. 63–65) view. The tamga, appearing as a single curved line and thus diverging from the *Tiberii Iulii* tradition, is evident on the coins of later monarchs such as Thothorses (285/6–308/9 CE). Intriguingly, a rare later inscription referencing King Teiranus (275–279 CE) continues to display the traditional pro-Roman titulature (βασιλεύοντος βασιλέως Τιβερίου Ίουλίου Τειράνου φιλοκαίσαρος καὶ φιλωρωμαίου, εὐσεβοῦς) (CIRB 36).

The account of Zosimus corroborates the altered political dynamics within the mid-3rd century CE Bosporan Kingdom. He records the extinction of the royal lineage, leaving governance to “worthless individuals” incapable of thwarting barbarian incursions (Zos. 1.31–3). It is likely that Ininthimaeus represented the first Bosporan sovereign outside the *Tiberii Iulii* dynasty and merely adopted their official pro-Roman titles. In his analysis of coinage distribution within the Bosporan Kingdom, Bjerg (2013, pp. 211–12) rightly notes that, during Ininthimaeus’ era, the pro-Roman titulature, prefixed with “Tiberius Iulius” to the king’s name, became an essential aspect of royal depiction. Moreover, to ensure control over cities and ports, any chieftain aspiring to the Bosporan throne had to align with the longstanding tradition of self-representation. Ininthimaeus, similar to his predecessors, used his Sarmatian sign while adopting the titulature of previous rulers, demonstrating how, throughout the centuries, the pro-Roman titulature intertwined with the function of a Bosporan ruler.

## 6. Conclusions

The so-called royal tamga signs from the Bosporan Kingdom and their use alongside Greek inscriptions serve as intriguing examples of cultural interaction and a local trend within a “global” epigraphic habit. Moreover, the application of these signs as inscriptions effectively substituting a Greek text is also a noteworthy case of local specificity. This phenomenon exemplifies an element belonging to the culture of Eurasian nomads, thus not part of the Greco-Roman epigraphic tradition, penetrating the Mediterranean epigraphic culture. These slabs cannot be considered “full-fledged” inscriptions since the “royal tamga” is not any kind of textual script (non-epigraphic slabs were not included in the charts presenting the curve). However, I believe they should be treated as an element of the Bosporan epigraphic habit. Several factors support this view, such as the appearance of the slabs during the peak period of Greek inscription production by the Bosporan Kingdom’s society and their form. Also relevant are the elements of the epigraphic mode that were applied.

Inscriptions and unscrubed stone slabs with royal signs constitute a relatively small group of public objects that the narrow elite of the kingdom or the ruler himself displayed. They should be considered an element and an essential complement to the local



epigraphic habit, dominated by hundreds of private inscriptions—mostly epitaphs with accompanying reliefs. Additionally, the royal tamgas were another of several elements that composed the official image of the rulers from the *Tiberii Iulii* dynasty. This image took shape over centuries, absorbing Pontic/Iranian (Mithridatic), Thracian, Greco-Roman, and Sarmatian elements.<sup>24</sup>

As Gygax and Bodel noted, in a society where only a minority could read, the mere presence of an inscribed stela, along with its iconographic message in public space, constituted an important element of official communication.<sup>25</sup> Undoubtedly, the use of the royal sign as an identifier and a text equivalent increased the “reach” of the message that the stone was meant to convey, whether it spoke of building activity or achieved victories. The royal tamga, appearing alongside the text alone or with wreaths and the figure of Victoria, constituted a clear and recognizable signal for the Bosporan population that was familiar with the epigraphic culture and for Sarmatian nomads.

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### Abbreviations

<i>CIRB</i>	Strauve, Vasily. 1965. <i>Corpus Inscriptionum Regni Bosporani</i> . Москва: Наука.
<i>CIRB-album</i>	Gavrilov, Alexander, Natalia Pavlitchenko, Denis Keyer and Anatolij Karlin. 2004. <i>Corpus Inscriptionum Regni Bosporani: Album Imaginum</i> . St Petersburg: Biblioteca Classica Petropolitana and the St. Petersburg Institute of History of the Russian Academy of Sciences.
<i>IJO</i>	Noy, David, Hanswulf Bloedhorn. 2004. <i>Inscriptiones Judaicae Orientis: Syria and Cyprus</i> . Vol. 3. Tübingen: Mohr Siebeck.
ВДИ	Вестник Древней Истории
ИАК	Известия Императорской Археологической комиссии
СА	Советская Археология

### Notes

<sup>1</sup> (Malkin 2001, pp. 1–28; Gruen 2011, pp. 251–76; 2020, pp. 1–41; Versluys 2015, pp. 144–67).

<sup>2</sup> For a detailed description of the changes in methodological approaches to the history of the Northern Black Sea area in antiquity, see Porucznik (2021, pp. 3–64).

<sup>3</sup> For a general discussion, see Hall (1997, pp. 111–42) and Jones (1997, pp. 106–27). For the Black Sea area, see Petersen (2010), Stolba (2011), and Porucznik (2021, pp. 91–95).

<sup>4</sup> In his work, Kreuz (2012) presents more than 1200 epitaphs with reliefs from the Bosporan Kingdom. Certain features are only a relief, as the text has not survived.

<sup>5</sup> Among nearly 1600 inscriptions carved in stone and metal from the Bosporan Kingdom, there are only three Latin or Greek-Latin texts and one Greek-Hebrew bilingual (Nawotka et al. 2020, Table 11.1, p. 217). For more on the quantitative aspects of the Bosporan habit, see Halamus (2020, pp. 107–13).

<sup>6</sup> For a detailed description of the history of research on the epigraphic habit in the Greco-Roman world, see Nawotka (2020, pp. 1–30) and Bodel (2023, pp. 1–8).

<sup>7</sup> See Nawotka (2020). For the Black Sea area, see Porucznik (2020) and Halamus (2020).

<sup>8</sup> An example is evident in the complete disappearance of Phoenician inscriptions or the small number of non-Greek inscriptions in heavily Hellenized Alexandria. See Głogowski (2020, pp. 166–75) and Wojciechowska (2020, pp. 187–88).

<sup>9</sup> Porucznik (2021, pp. 99–104); Braund (2008, p. 363); Stolba (1996); Herman (1990, pp. 357–60).

<sup>10</sup> CIRB 736; 746; 1225. Additionally, see two examples of reliefs from Tanais and Phanagoria: Böttger et al. (2002, p. 61) and Kuznetsov (2008, p. 15). Początek formularza.

- 11 There is a rich literature dedicated to tamgas, predominantly in Russian. See the monographs, primarily Yatsenko (2001), Dračuk (1975), Jänichen (1956) (in German), and Solomonik (1959). Additionally, see, for example, among the numerous articles, Kozlenko (2018), Treister (2011), Olkhovsky (2001), Boardman (1998) (in English); Nickel (1973) (in English).
- 12 Treister (2021, p. 86); Olbrycht (2004, p. 336).
- 13 (Rostovtzeff 1922, pp. 97–98; Sulimirski 1979, pp. 80–86; Vinogradov 2003, pp. 217–23; Olbrycht 2004, pp. 323–32; Mordvintseva 2013, pp. 212–13; 2015, pp. 121–31; 2017, p. 279).
- 14 Examples of inscriptions with signs placed without a clear connection to an object from the Bosporan Kingdom are, for example, the following epitaphs: CIRB-album 424, 529, 565, and 838.
- 15 Many scholars have debated whether the coins with the tamga of Dynamis were minted by her. The sign could also be a monogram composed of the letters Δ, Υ, M. However, it should be noted that this sign is found in the company of other tamgas. See Bjerg (2013, pp. 179–80), Frolova and Ireland (2002, pp. 6–7), Yatsenko (2001, p. 30), Parfenov (1996, p. 98), Nawotka (1989, pp. 328–29), Frolova (1978, p. 51), Rostovtzeff (1919, pp. 101–3).
- 16 This period is described in the monograph by Saprykin (2002). However, in his papers, Coşkun (2019a, 2019b) presents several alternative and interesting ideas regarding the chronology of events in this period.
- 17 The first attested Bosporan ruler with *Tiberius Iulius* as a *praenomen* and *nomen gentilicium* is Aspurgus' son, Cotys I (45/6–67/8 CE). It is clear, however, that he could not have received this honour, as Tiberius died in 37 CE. Therefore, it must have been his father, who ruled until 37/8 CE. See CIRB 69.
- 18 Examples of royal tamga with inscription are as follows: CIRB 1053 (Figure 3), CIRB 1241 (Figure 4), CIRB 1248 (Figure 5), CIRB 1249 (Figure 6), CIRB 1250 (Figure 7), and CIRB 1251. Additionally, the lost CIRB 1237 = Solomonik (1959, Figure 12, p. 59), might have been another case. Uninscribed stelae with royal tamga are as follows: Böttger et al. (2002) (Figure 8), CIRB 738 (Figure 9), Kuznetsov (2008) (Figure 10), Solomonik (1959, Figure 3, p. 51) (Figure 11), and Solomonik (1959, Figure 4, p. 52) (Figure 12). Also, there is now one plate in Kerch (Solomonik 1959, Figure 5, p. 53) and one lost plate from Krasnaya Batereya (Solomonik 1959, Figure 6, p. 54).
- 19 A similar pair of tamgas also appears on several bronze buckles. See Treister (2011) and Solomonik (1959, Figures 84 and 85, p. 134).
- 20 “Nike on the prow” was present on several of King Asander’s coins and was linked with his supposed naval victories. See Saprykin (2002, pp. 73–75) and Gajdukevič (1971, p. 326).
- 21 For the Bosporan *thiasoi* and list of names within the Bosporan epigraphic habit, see Halamus (2020, pp. 110–11), Harland (2014, pp. 14–39), and Zavoikina (2013).
- 22 The onset and further development of epigraphic activity in the Bosporan Kingdom have been detailed in another publication. See Halamus (2020).
- 23 Both charts presenting the epigraphic curves (Figures 14 and 15) are enhanced versions of those published in Halamus (2020), as they incorporate newly found texts.
- 24 To read more about how the Bosporan rulers shaped their Greek image over the centuries, see Dana (2021).
- 25 Bodel (2023, p. 6); Domingo Gygax (2016, pp. 221–22). Additionally, both scholars indicate that the reach of a given inscription was extended through its public reading aloud.

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