

RESEARCH ARTICLE

The Amber, Metals and Masters: Origins of the Iron Age in North Pontic Region

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Abstract

The article is dedicated to the origins and establishment of the iron metallurgy in North Pontic region (primarily, the territories of modern Ukraine) – from the appearance of the earliest iron items to the beginnings of local crafting. Utilizing the archaeological data, this historical process is suggested in the following scheme: the initial iron artifacts were the imports from Asia Minor; later the iron and bimetallic incarnations of the bronze Middle Eastern weapons emerge; finally the production of the local iron forms began. The entire process was possible due to the migration of the Hitte descendants (among others) from the Asia Minor and Middle East, who would come into service of local chieftains and warlords, producing different kinds of weapons. Eventually these smiths would assimilate with the local populace, which in turn led to the emergence of the iron craftsmen native to the North Pontic region. In 9th century BC the nomads from the Central Asia (referred to in previous authors' studies as the proto-Scythians) arrive, becoming acquainted with the iron and incorporating the items, made of it, into their weaponry complex. Later the iron was spread west due to the nomadic raids on the territories of Central-Eastern Europe. Eventually such items serve as the foundation for the weapons of the Scythian time, while bronze becomes secondary raw material. Overall, the origins of iron metallurgy in North Pontic region seem somewhat unequal: it took three centuries from the earliest appearance of iron items to the emergence of local ironcraft, while the establishment and spreading happened within one. Also this entire process could not have been possible without interactions of three groups of peoples – local ones, originating from the Asia Minor/Middle East, and coming from the Eurasian steppe.

Keywords: Iron, North Pontic region, Asia Minor, Hurians, Hittites.

1. Introduction

The territory of Ukraine, spanning most of the northern coast of the Black Sea, is rich with the materials from all of the archaeological eras, due to its length, and location. Here the steppe east meets with forest north and west, numerous traditions of Asia Minor and Middle East found themselves there since the ancient times. Unfortunately, modern Ukrainian archaeology is in a post-colonial condition: the variety of aspects are either completely unknown abroad, or are represented by the scientists, who have little (if any) relation to Ukraine. Among such subjects is the beginning of the

Iron Age in North Pontic region. Despite this, there are enough evidence to reconstruct the transition from the Late Bronze to the Early Iron ages in the course of several centuries. This problem is what the article is focused on.

2. Hordiivka Gravefield and the Original Iron in Eastern Europe

An important source in this study is the gravefield near the village of Hordiivka, located in Vinnytsia region. Excavated in 1986-1988, it includes 40 mounds, 38 of which belong the 14-11 century BC (i. e. the finale of the Bronze Age, according to the accepted

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chronology). The results of the excavations had been published twice – in German (Berezanskaja, Kločko, 1998) and in Ukrainian (Berezanska, Kločko 2011). Our article utilizes the modernized chronology of the graveyard, established based on new C14 dates (Sliusarska 2011). Several of the mounds are of interest to us, due to their inventory.

The mound 26 (dated 1360 BC (Sliusarska 2011)) included a bronze knife of Middle Danube mound culture, amber beads (10 items) and two pieces of aroma resin (Berezanskaja, Kločko, 1998, Taf. 47; Berezanska, Kločko 2011, Rys. 47). Similar artifacts come from the mound 28: the knife belongs to the Noua culture, the piece of aroma resin is single, while there are one hundred amber beads (Berezanskaja, Kločko, 1998, Taf. 52-54; Berezanska, Kločko 2011, Rys. 52-54). The mound is dated 1370±60 BC (Sliusarska 2011). As both are dated to 14th century BC, allows to attribute them to the late period of Bilohrudivka culture and also places them among the

most ancient on the graveyard. This chronological group also includes the mound 6, the inventory of which also had the bronze knife, possibly of Asia Minor origin (Berezanskaja, Kločko, 1998, Taf. 11; Berezanska, Kločko 2011, Rys. 11).

The next group of mounds which interests us belongs to the 12th century BC – the early stage of Chornolissia culture. The mound 5 is rather peculiar, as it is the biggest for its time on the graveyard – 74x62 m, 3,9 m high. The inventory of its double grave included golden buttons, golden and amber beads of different types (similar golden beads are also found in mound 11), as well as the piece handle of the iron knife with bronze rivets (Fig. 1, 1). Also the remains of the chariot had been found, which (along with the size and the rich inventory) indicate the elite nature of this mound. The knife, however, deserves most of the attention, as it is among the very first iron items in Eastern Europe (Berezanskaja, Kločko, 1998, Taf. 5-8; Berezanska, Kločko 2011, Rys. 5-8).

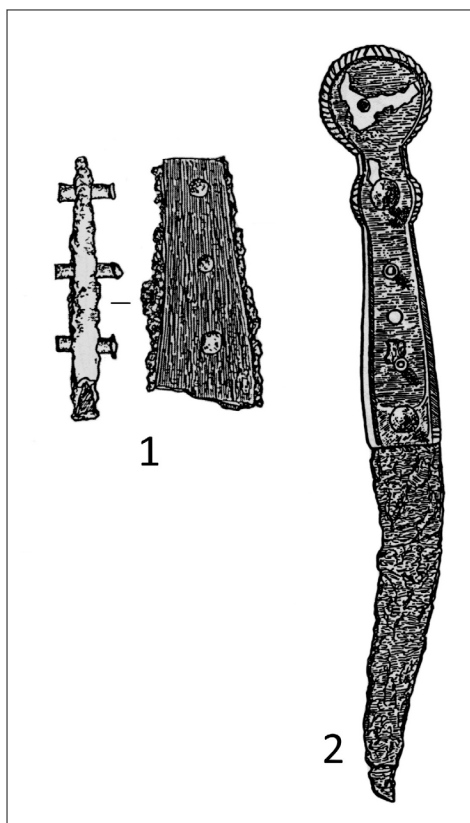


Figure 1. Iron knives from mounds 5 (1) and 38 (2) of Hordiivka graveyard (in Berezanska, Kločko 2011).

Another such knife is also bimetallic (bronze handle with rivets and iron blade (Fig. 1, 2)) comes from the mound 38, where it was found alongside the 167 amber beads (Berezanskaja, Kločko, 1998, Taf. 75-80; Berezanska, Kločko 2011, Rys. 75-80), some of which made the necklace known as “Tiryns” type in Aegean region (Müller-Karpe, 1980, Taf. 245, 13) (Fig. 2, 3). Such necklace was also found in another

mound of this time – 31, along with two ivory pins (Fig. 2, 1-2). Radiocarbon dating of this mound gives 1140 BC (Sliusarska 2011).

Aside from the amber (which we will discuss below) all of these items (pieces of aroma resin, golden jewelry, ivory pins and knives) have one feature in common: they are not native to the North Pontic region. The analysis, conducted by the University of

Life Sciences in Poznań (Poland) had shown that the aroma resin is frankincense, which comes from the Middle East. The imported nature of ivory pins is also undeniable. The golden jewelry from the mounds 5,

11 and 34 have analogies in the complexes of Eastern Mediterranean, Asia Minor and Middle East, as well as the knives (Klochko 2011).

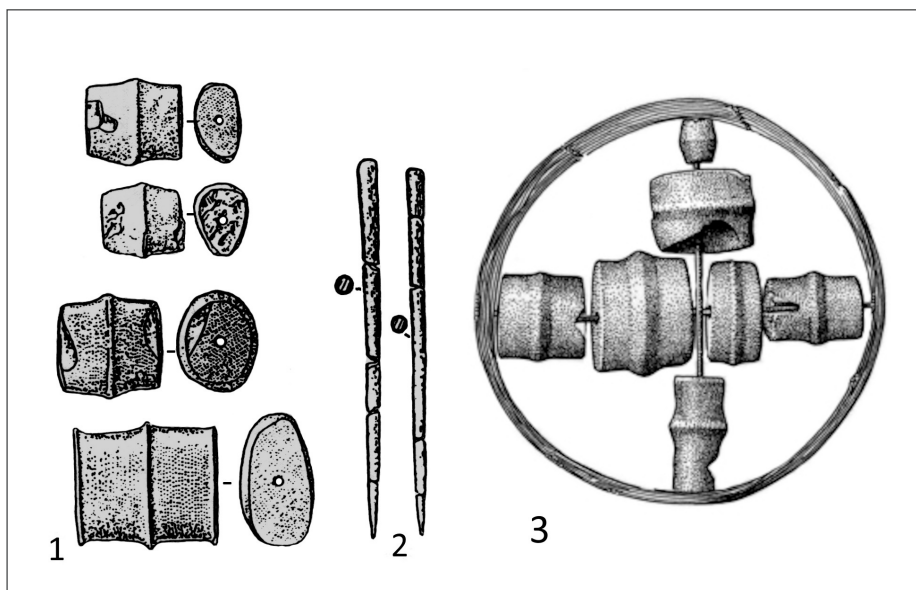
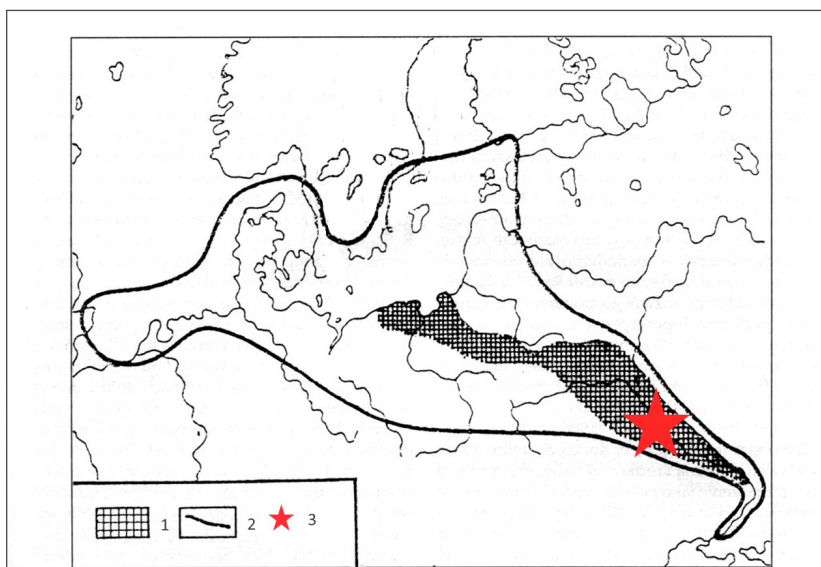


Figure 2. Tiryns type amber beads (1) and ivory pins (2) from mound 31 of Hordiivka gravefield. Amber beads from Tiryns, Greece (3) (1, 2 – in Berezanska, Klochko 2011; 3 – in Müller-Karpe 1980).

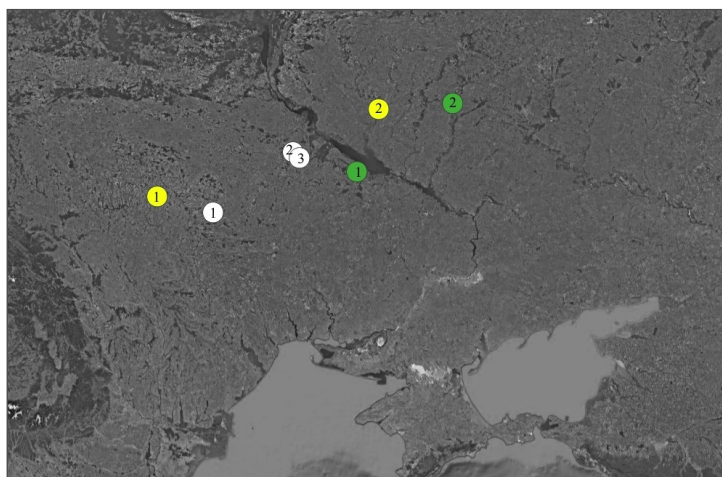
An important aspect of any trade at any era is the price. The finds from Hordiivka gravefield provide the answer to this question, although not as archaeological but rather geological one.

The amber of Baltic type (geologically known as succinite), despite its name spreads far beyond the Baltic region. For instance, it can be found in Right-bank Ukraine – Volhynia, Zhytomyr and also Podillia region, where Hordiivka gravefield is located (Map 1). Comparing to other kinds, the Baltic amber has high concentration of amber (succinite) acid (up to 8%), which is used in medicine. Also it is one of the most

known kinds due to its vast spreading and relative accessibility: on the coast of Baltic Sea it is washed by waters, in Ukraine it is situated close to the surface, making mining quite easy. Therefore succinite has been known since the ancient times – all of the amber beads from the Hordiivka gravefield are made of it, as evidenced by the laboratory analysies, conducted by the Geology Institute of Lithuania (Berezanskaja, Kločko, 1998); additionally, the amber in the classic “Tiryns” type jewelry, found in Mediterranean region (Klochko 2007, 2011), is also of Baltic origin, as examined by Curt W. Beck from Vassar College, United States (Beck 1966; Beck, Southard, Audrey 1968).



Map 1. Geological map of succinite distribution. 1. The core layers; 2. The water “distribution” of amber; 3. Hordiivka gravefield (in Berezanska, Klochko 2011).



Map 2. Archaeological objects mentioned in the study. Hoards (yellow): 1. Shargorod; 2. Poltava. Burials (white): 1. Hordiivka gravefield; 2. Stebliv; 3. Kvitky. Hillforts (green): 1. Subotiv; 2. Bilsk.

As such, it is safe to assume that the succinite was the “currency”, which peoples of Hordiivka gravefield paid with to their Mediterranean and Asia Minor neighbors for the jewelry and technology, for the most period of gravefield existence. Thanks to such trade in 12th century BC the iron items appear in North Pontic region for the first time – those being knives from mounds 5 and 38, which are close to the oldest iron knives in Aegean region, which had probably spread from Cyprus (Pare 2025, 77). These two knives should be considered the markers of the earliest stage of North Pontic iron age – the introduction of the new metal to the local elites.

3. The Beginnings of the Local Iron Metallurgy

The chronological group of 12th – beginning of 11th

century BC also includes mounds 32/2, 35, 37, which had the following iron items: the mound 32/2 had pieces of iron swords and the iron awl (Berezanskaja, Kločko, 1998, Taf. 61, 3,6; Berezanska, Kločko 2011, Rys. 61, 3, 6) (Fig. 3, 1, 3) the mound 35 – piece of iron knife with the handle, covered in gold (Berezanskaja, Kločko, 1998, Taf. 69, 1; Berezanska, Kločko 2011, Rys. 69, 1) (Fig. 3, 2), and the mound 37 – the iron knife with leaf-shaped blade (Berezanskaja, Kločko, 1998, Taf. 73, 2; Berezanska, Kločko 2011, Rys. 73, 2) (Fig. 3, 4). All of these finds imitate the forms typical for the local bronze items of Late Bronze Age. Therefore they can be considered the evidences of the beginning of local iron production.

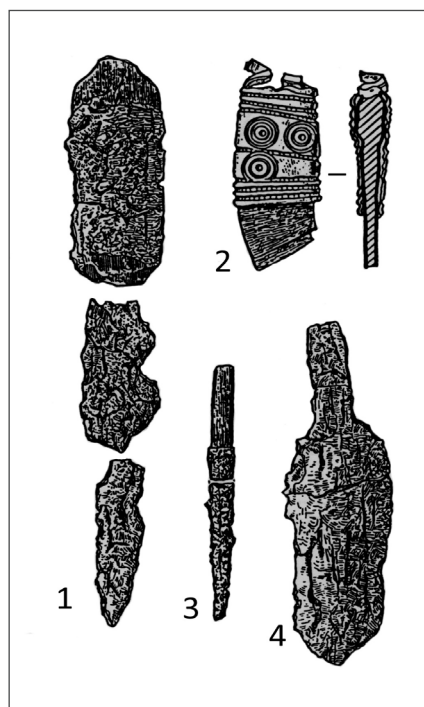


Figure 3. Iron items from mound 32/2 – pieces of sword (1) and an awl (3); from mound 35 – piece of knife with golden handle (2); from mound 37 – knife (4) (in Berezanskaja, Kločko 2011).

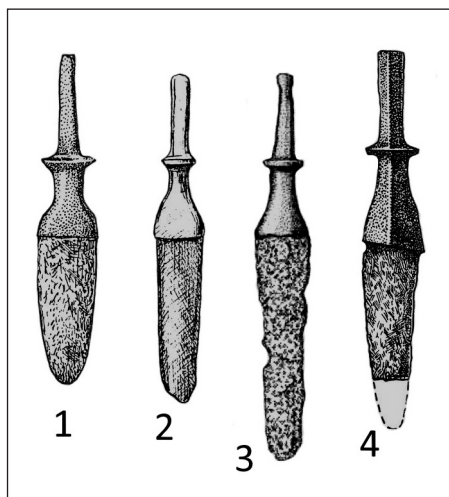


Figure 4. Bimetalllic daggers of Bilozerka type. 1. Stepovyi; 2. Zburivka; 3. Kochkuvate; 4. Hadjillar. (1 – in Otroshchenko 2003, 2 – in Otchet 1903, 3 – in Vanchugov et al. 1992, 4 – in Agulnikov 2008).

Although Hordiivka gravefield seems to be used in 11th century BC, its peoples did not vanish without a trace. Some of them migrate to the south east, as evident by the Stepovyi gravefield in Zaporizhia region (11th-10th century BC, Bilozerka culture). The similarities to the Hordiivka burial rituals are not in question, although the inventory is much more poor. The mound 5/2 had the bimetalllic dagger with bronze handle and iron leaf-shaped blade, which form is typical for the daggers of Sabatynivka and Bilozerka cultures (Otroshchenko 2003, Fig. 10, 7) (Fig. 5, 1). Such daggers are also found in other elite burials of Bilozerka culture — Zburivka, Kherson region (Otchet 1903: 155 fig. 310) (Fig. 5, 2), Kochkuvate, Odessa region (Vanchugov et al. 1992: 26 fig. 8: 6)

(Fig. 5, 3), Hadjillar, Ștefan vodă region (Agulnikov 2008: 42 fig. 3: 2) (Fig. 5, 4).

The group of iron incarnations of bronze forms also includes the following kinds of weapons: swords, spears, axe-adz and daggers.

The swords, initially originating within Gava-Holigrady and Luzhytsia culture, include: the sword of the chariot warrior from Hordiivka type grave in Slobodzeia, Moldova (Fig. 5, 1), from Khmelnytskyi region (found 08.08.2022) (Fig. 5, 2); Cherkasy region (found 28.03.2009) (Fig. 5, 3); Mykolaiv region (Klochko 2006, photo 22) (Fig. 5, 4); sword with bronze handle, found near the city of Kropyvnytskyi on 1.05.2016 (Fig. 5, 5).

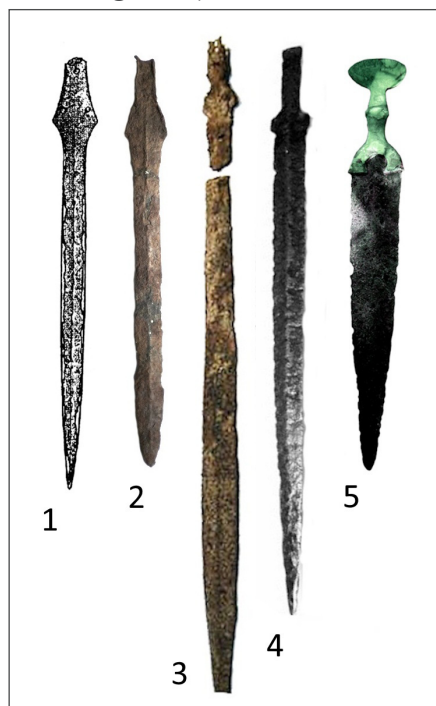


Figure 5. Iron swords from Slobodzeia (1), Khmelnytskyi region (2), Cherkasy region (3), Mykolaiv region (4). Bimetalllic sword from Kropyvnytskyi region (5). (1, 4 – in Klochko 2006, 2, 3, 5 – in Klochko 2025B).

The spears, coming from the same cultures, were found in Vinnytsia region (06.03.2015) and in Kropyvnytskyi region (30.05.2016 and 18.12.2018) (Fig. 6, 1-3). In addition, the Shargorod hoard, found

in Vinnytsia region, consisting mostly of the bronze items of early Luzhytsia culture also included an iron dart (Klochko 2016, Rys. 2; Klochko, Kozymenko 2017, Rys. 4.2.3.2) (Fig. 8, 8). The iron spears, which imitate the bronze ones of Noua and Sabatynivka cultures come from Tulchyn, Vinnytsia region (found 08.06.2022) and Poltava region (found 01.10.2020) (Fig. 6, 4-5). There are also iron spears imitating the bronze ones of Bilohrudivka culture – from Dnipro city (found 26.04.2023) and from Kyiv region (found 18.12.2018) (Fig. 6, 6, 7).

This group of items also includes flat “winged” axe-adz of Hitte type from Kropyvnytskyi region (14.09.2016) (Fig. 6, 8). Two similar ones were found in Cherkasy region (Klochko, Kozymenko 2017, rys. 4.2.3.9, 4.2.3.10). Such items are common in Asia Minor. Two iron double-bladed labrys type axes (common in Aegean region) were found in Khmelnytskyi region (01.11.2016) and Poltava region (19.06.2019) (Fig. 6, 9, 10). These items can be considered the markers of ethnic affiliation of the first “ironcraft” masters in North Pontic region, as the migrants from Eastern Mediterranean.



Figure 6. Iron spears from Vinnytsia region (1, 4), Kropyvnytskyi region (2, 3); Poltava region (5) and Kyiv region (7). Bimetalllic spear from Dnipro city (6). Trunion axes from Kropyvnytskyi region (8), Khmelnytskyi region (9) and Poltava region (10). (1-6 – in Klochko 2025B)

The bimetalllic and iron daggers of “Hurian” type are another such marker. The currently available finds allow to trace their path from Asia Minor to the Middle East, and then – to Caucasus during 13-12 century BC. Eventually they appear in North Pontic region, as evident by the finds from Poltava, Kropyvnytskyi,

Kyiv and Lviv regions (Fig. 7, 1-6). This type of daggers exist up until the 7th century BC, as evident by the dagger from Sophiivka, Cherkasy region, which has features typical for the cold weapons of Scythian time (Fig. 7, 7) (Klochko 2021A).



Figure 7. “Hurian” type daggers. 1. Poltava region; 2. Kropyvnytskyi region; 3, 5. Kyiv region; 4. Cherkasy region; 6. Lviv region; 7. Sophiivka (1-6 – in Klochko 2021A; 2025B, 7 – in Terenozhkin 1976).

Another route of iron metallurgy spreading to the North Pontic region would be directly from northern

coast of Asia Minor to Crimea. Here at Uch-Bash hillfort of Kyzyl-Koba culture of pre-Scythian time

the traces of ironcraft using local raw materials were discovered (Kravchenko 2014). Also two bimetallic swords of Middle Eastern type had been found on the southern coast of the Crimea (Fig. 15)

In the previous part we provided the arguments that the initial iron items come to North Pontic region via trading connections. The materials, provided above, allow to assume, that at the end of 12th century BC the smiths from Asia Minor come, establishing the local ironcraft. Such situation would not be unique for the North Pontic region: after the fall of Hittite empire at the beginning of 12th century BC as the result of “Sea peoples” invasion, the weaponsmiths had spread all over the Middle East and Mediterranean. Eventually most of them found themselves in service of local

kings, offering the knowledge of iron crafting, and thus – expanding it. All of this is clearly known from the historical records (Pare 2025). The North Pontic region would be another of such directions, although not mentioned in other sources. The local societies of that time had been led by the military elites, which explains why most of the early iron items in the region are weapons. We can assume that the descendants of the Hittite masters (and thus – the inheritors of their craft) initially produced weapons, according to the models and templates, which they knew from their historical motherland, but also imitated local bronze types. These masters would eventually assimilate with the local populace, also losing the monopoly of ironcraft – both in North Pontic region and elsewhere. This explains the next stage of the iron weaponry crafting.



Figure 8. *Shargorod hoard (in Klochko, Kozymenko 2017).*

4. The Spreading of Iron in North Pontic Region

The spreading of iron in North Pontic region during 10th-9th century BC is related to the Chornolissia

culture of Middle Dnipro region. The most widely spread cold weapons of that time are the bimetallic swords and daggers with cross-shaped handle, which are found all over Ukraine (Fig. 9).

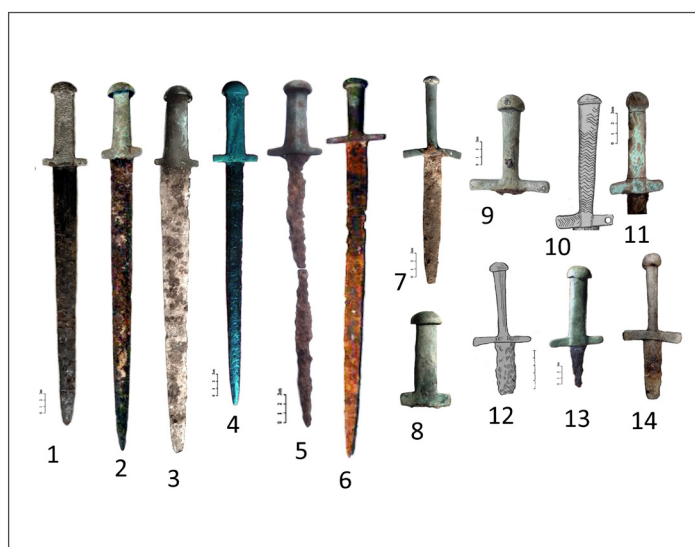


Figure 9. *Cross-shaped bimetallic swords (1-6), dagger (7) and handles (8-14) of early to classic variants. 1, 10, 12. Odessa region; 2, 4. Vinnytsia region; 3. Cherkasy region; 5, 14. Kropyvnytskyi region; 6, 11. Kharkiv region; 7. Poltava region; 8. Kherson region; 9. Mariupol; 13. Dnipro. (10, 12 – in Terenozhkin 1976, the rest – in Klochko 2025B).*

One of the production centers was located at the Subotiv hillfort of Chornolissia culture. Located in Cherkasy region, it was excavated in 1950-1970s by Soviet scientists and later – in 1994-1995 by joined Ukrainian-Germany expedition (Gershkovich 2016). The hillfort was established by the peoples of Bilohrudivka culture in 14th century BC. At the end of 13th – beginning of 12th century BC it was inhabited by the peoples of Chornolissia culture. In 820-814 BC (according to the radiocarbon dating) (Klochko et al. 1998) the hillfort was raided and seized its functioning. The proto-Scythian tribes are most likely to blame, as indicated by the finds of “eastern” arrowheads (Klochko 2001, 299, Fig. 112, 1). The number of items was found within two hoards, indicating that they belonged to the inhabitants of the hillfort. They include: bronze socketed axed of Chornolissia culture, iron trunnion axe, long bimetalllic sword with cross-shaped handle and the bronze sheath-end of the

eponymous type (Gershkovich 2016, Fig. E1-2; E8) (Fig. 10). It can be assumed that they were crafted in this very hillfort. The metallurgical production here is evident by the number of found casting molds, as well as certain amount of copper raw materials (Demchenko, Klochko, Manichev 2000). A number of pits, containing the fragments of iron fragments was discovered on the hillfort, indicating that local metallurgy included iron along with the copper and bronze. Unfortunately these finds are known only from the vocal reports of the archaeologists and was not reported in the official reports. The bimetalllic longsword was analyzed in the laboratory of natural methods of the Ukrainian Institute of Archaeology. It was discovered that the steel for the item was made of Kryvyi Rih raw material (with small admixtures), the surface was hardened (Bidzilya, Voznesenskaya, Nedopako, Pan'kov 1983).



Figure 10. Bronze bracelet, socketed axe, trunnion axe from the hoard №4 (1) and bimetalllic longsword from hoard №1 (2), discovered in Subotiv hillfort (in Gershkovich 2016).

The role and strength of the Subotiv metallurgical center may be indicated by the fact that the sheath-ends of the eponymous type are the most common and spread for the 9th – beginning of 7th century BC. Thirty items are known as of now, including several sculptural depictions. Most come from Ukraine, one – from Czech Republic, stand-alone finds appear in Caucasus and Volga region (Klochko 2025A).

The weaponry of late Chornolissia (also called Novochoerkask group), which should be attributed to the 9th century BC (based on the end of Subotiv hillfort) is represented mostly by iron items (Klochko 2001, 320-324, Fig. 123). An examples of it are: the spear and sword pieces from the Nosachiv mound in Cherkasy region (Fig. 11, 1), the sword from Zolne mound in Crimea (Fig. 11, 2), the spear from Medvin

mound in Kyiv region (Fig. 11, 3) and the spears from the Butenky burial in Poltava region (Fig. 11, 4). The peoples of Chornolissia had also attempted to create iron arrowheads, as evident by the finds from Zolne mound (Fig. 11, 5). The iron arrowheads from Zolne are almost the unique finding and may be considered an experiment. It can be assumed that forging (the only way to process iron at the time) turned out to be much more difficult than casting. As the result, the arrows, even in Scythian time were made solely of bronze, unlike many other kinds of weaponry.

The burial of the chariot warrior in the Kvitky mound in Cherkasy region belongs to the same time period. Discovered in 1979, it was severely damaged by the agrarian works, which obstructs clear dating. It is

assumed that the burial appeared in the middle of 8th – first half of 7th century BC. The iron items in the burial inventory included: six arrowheads (initially there seem to have been more), two spearheads of different length, trunnion axe and several items too damaged to determine (Fig. 11, 6) (Kovpanenko, Gupalo 1984). The identified items have their analogies in the Novocherkask complex: similar trunnion axe was found in Subotiv hillfort, the arrow- and spearheads are the evolved forms of the Novocherkask type. Also, the tradition of using two spears of different length (one as projectile, second – for middle-ranged combat) by one warrior is quite ancient in North Pontic region (Klochko 2001, 289-296).

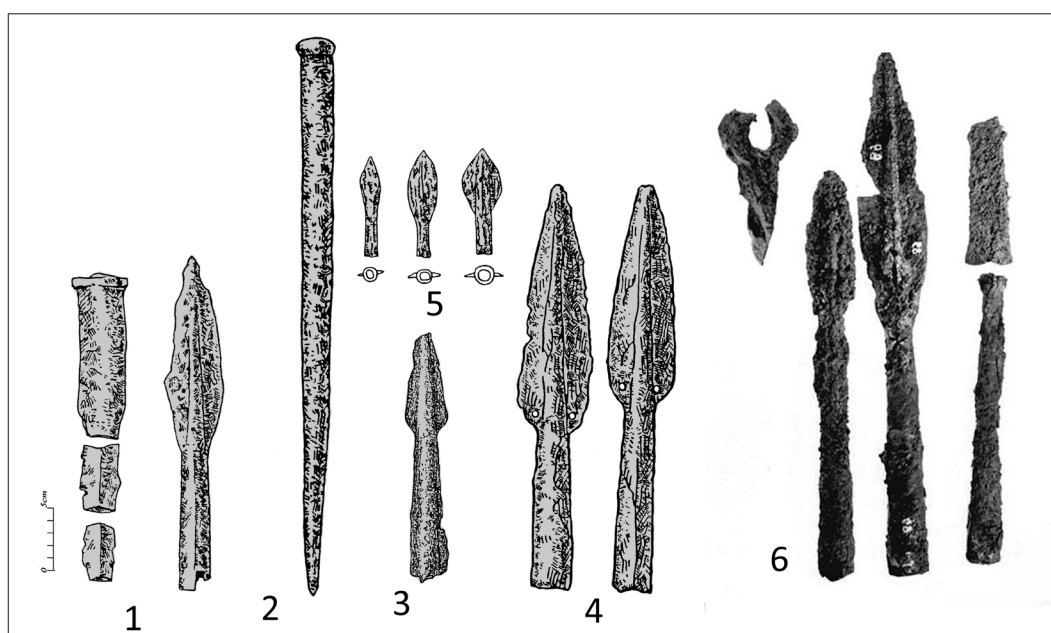


Figure 11. Iron weaponry from the burials of late Chornolissia. 1. Nosachiv; 2, 5. Zolne; 3. Medvin; 4. Butenky; 6. Kvitky. (6 – in Kovpanenko, Gupalo 1984, the rest – in Klochko 2006).

The beginning of mass iron weaponry production in North Pontic region coincides with the arrival of the very first nomads in the ancient European history. It was the conglomerate of tribes, the core of which were the peoples of Karasuk and Begazi-Dandybai cultures from Southern Siberia and Central Asia respectively. This society also included parts of Anan'ino and descendants of Zrubna cultures. Archaeologically these nomads are known as Chornogorivka group and placed opposite to the Novocherkask group of the cultures of North Pontic region – Chornolissia and Bilozerkha. The word “proto-Scythians” is also used to describe them, as it is evident that this nomadic wave is related to the later ones, which create classic European Scythia. The evidence include types and kinds of weaponry and the animalistic ornamentation – all of it has signs of inheritance (Klochko 2001,

325-326; Klochko 2006, 280-288; Klochko 2009; 2020; 2021B; 2021C).

As a marker of iron being used by the nomads in North Pontic region, the burial inventory from the Stebliv-15 mound (Cherkasy region) should be mentioned. It included quite remarkable complex of iron items: pieces of horse harness, parts of scale armor, a knife, a spear and a battle hammer (Fig. 12) (Klochko, Skoryi 1993). The bronze arrowheads should also be mentioned, as they belong to the Begazi-Dandybai culture, as well as the hammer, one analogy of which comes from the Uiharak graveyard in Kazakhstan (Klochko 2001, 307-308; Klochko 2006, 268; Klochko 2021B; 2021C). The radiocarbon dating points to 802±32 BC (Klochko, Kovaliukh 2002), which is close in time to the end of Subotiv hillfort.

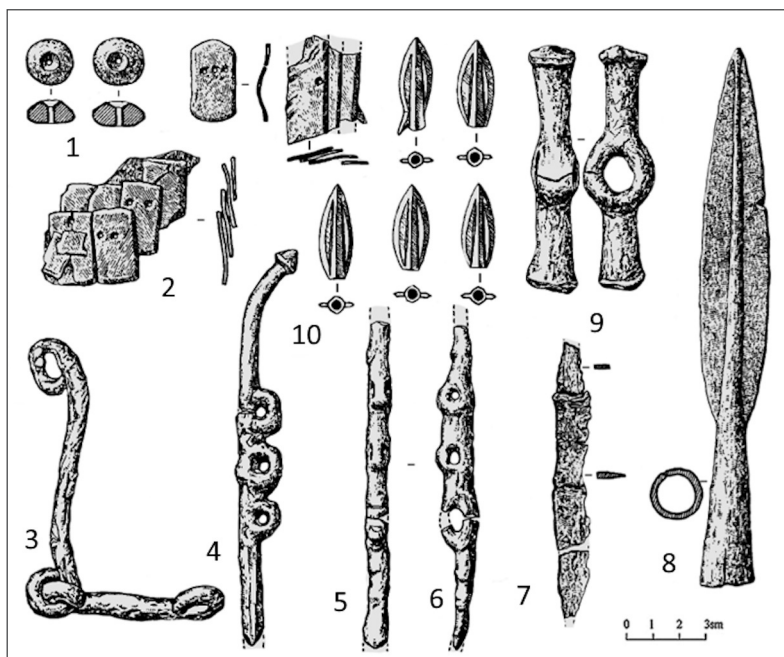


Figure 12. Items from mound Stebliv-15. 10 – bronze, the rest – iron (in Klochko, Skoryi 1993).

Therefore it is safe to say that the buried warrior was one of the invaders, and also at the end of 9th – beginning of 8th century BC the eastern nomads in North Pontic region actively transitioned from using bronze to using iron.

The decline of bronze, as the main raw material of nomadic weaponry complex is indicated by the Lubny hoard, discovered in Poltava region in 2002. The bronze items of this hoard can be divided into three groups in respect to their origin: local (cauldron, two spears, two pins), western (two spears, diadem, small cauldron, six mugs, Kurim type greaves) and eastern (Karasuk culture sword, axe-hammer, five pickaxes, twelve spears). The hoard was interpreted as the

trophies from proto-Scythian raids on the settlements of North Pontic region and its western neighbors. It is indicated by the items of Chornolissia culture (Fig. 13, 1) and those of peoples of Danube and Alpine regions of Central Europe (Fig. 13, 2). Interestingly, the hoard also included weapons of raiders' culture, despite its good condition (Fig. 13, 3) (Klochko 2006, 2009). This leads to assumption that by the time of Lubny hoard, the bronze swords and spears were considered inferior compared to iron ones, which would also be quite accessible. Therefore, the Lubny hoard may be considered the decline of bronze weaponry; instead it could be have considered a “currency” or bartering item alongside other bronze items.

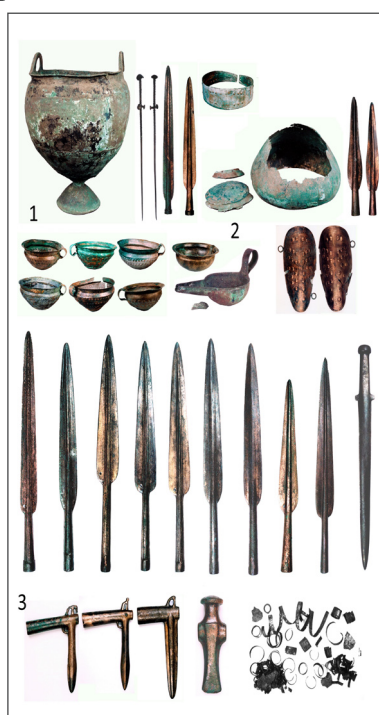


Figure 13. Lubny hoard (in Klochko 2003).

The nomadic acquaintance with iron in North Pontic region was rather swift, as indicated by the clear diversity of the cross-shaped swords and daggers from prototypes to early, then classic and then evolved forms. Aside from construction differences, it can be seen on the relation of the used raw materials: the prototypes are made solely of bronze; early and classic forms are mostly bimetallic (bronze handle

and iron blade), the evolved ones – mostly of iron. The handle of the evolved form somewhat resembles that of the early Scythian cold weapons. As with early and classic ones, the evolved cross-shaped swords and daggers are found in Ukraine (as of now), but some are also found to the west – for example, in Moldova and Bulgaria (Fig. 14).



Figure 14. Cross-shaped swords (1-7) and daggers (8-25) of the evolved form. 1, 8. Kharkiv region; 2. Ternopil region; 3. Kropyvnytskyi region; 4, 7, 18. Kyiv region; 5, 9. Khmelnytskyi region; 6, 12. Cherkasy region; 10, 17. Poltava region; 11, 13, 19. Sumy region; 14. Ptychata Mohyla (Bulgaria); 15. Vysoka Mohyla (Zaporizhia region); 16. Berizky (Moldova); 20-21. Vinnytsia region; 22. Odesa region; 23. Luhansk region; 24-25. unknown (9 – bronze; 13, 24-25 – bimetallic; the rest – iron) (in Klochko 2025B).

Taking Ukrainian geography into consideration, the nomads (coming from the east) could first acquire iron on the left bank of Dnipro river, although the exact location is currently hard to determine. However we assume that it could have happened somewhere near Vorskla river (Poltava region), where Bilsk hillfort was later established – one of the biggest from Scythian time, believed by some to be a city of Gelonus, mentioned in the fourth part of “Histories” by Herodotus (Bilsk Hillfort in scientific papers of B. A. Shramko, 2016). According to the accepted chronology, the Western fortification of Bilsk hillfort (which is its oldest part) was established by the end of 8th century BC, although radiocarbon dating suggests,

that it in fact could have happened a century prior. Traces of metallurgy had been found in the area, which had to have certain origins. The region itself was occupied at least since the Middle Bronze Age, and by the Finale of the Bronze Age it was inhabited by the peoples of Bondarykha and Chornolissia cultures (Kovpanenko 1967). Therefore the tradition of ironcraft could have spread to the Left-bank Ukraine in 10th–9th century BC either directly with Chornolissia migrants from Right-bank, or via their trade with Bondarykha peoples. Considering that the fortifications (hence the hillfort itself) appeared later, capturing the ironcraft masters and their tools (and thus acquiring the technology) by the nomads was simple.



Figure 15. Middle-eastern bimetallc swords found at the south of Crimea (in Klochko 2025B).

5. Conclusion

To sum up, the material presented above allow to reconstruct the appearance and spreading of iron in North Pontic region as follows: the very first iron items appear circa 12th century BC due to trading contacts with Asia Minor; later the wandering smiths (the descendants of Hitte masters, who knew early ironcraft) come to serve the local chieftains. They begin crafting the iron weapons, commissioned by the local warrior elites, initially imitating weaponry from Asia Minor and Middle East, and later – local types. Such items quickly spread all over the North Pontic region. The nomadic tribes from the east, incorporate iron into their military complex upon arrival and distribute it to the west of North Pontic region via their raids. The bronze becomes secondary raw material in most of the weaponry kinds, although remains in some due to its qualities.

Therefore it can be noted that the beginning of the Iron Age in North Pontic region was unequal: it took three centuries from the earliest appearance of iron items to the emergence of local ironcraft, while the establishment and spreading happened within one. The entire process could not have been possible without interactions of three groups of peoples – local, from the Asia Minor/Middle East, and from the Eurasian steppe.

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