

New technologies and transformations in the European Bronze Age: the case of Naue II swords

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Dedicated to Professor Janusz Czebreszuk on the occasion of his 60th birthday

ABSTRACT

In many aspects, the Bronze Age was a formative epoch in European history. It was a time of movement and change, of travel, contact, cultural transmission and social transformation. To a large degree, the shape of the Bronze Age network that connected the Aegean/Mediterranean regions with the interior of Europe was predetermined by physical geography. Nevertheless, during the Bronze Age cross-cultural connections became increasingly stronger and allowed trade and exchange, as well as other, less peaceful forms of social interactions, to become intensified across vast areas. The archaeological evidence clearly reflects this, and suggests multi-directional interactions, including technological co-evolution, between contemporaneous connected societies. A prime example of this is the diffusion of flange-hilted swords of type “Naue II”, a pan-European weapon technology that bears witness to profound changes in warfare and society. This article provides an evidence-based interpretational framework that focuses on the distribution pattern and archaeological contexts of Naue II, connecting historic events with transformative changes in the material and social fabrics of Bronze Age Europe.

KEYWORDS

Naue II swords, Late Bronze Age, Europe, Mediterranean, communication networks

Introduction

It has long been acknowledged that connections between the different cultural regions of the Bronze Age existed, but archaeological research has often been limited to local observations and long-distance relations have been portrayed as rare and dubious links. A selective focus on singular (often spectacular) artefacts has sparked a discourse on whether they represent evidence of direct cross-cultural relations or local emulations and imitations. However, the majority of the material evidence consists of less spectacular objects (such as amber and pottery) that indicate regular trade and interaction of considerable intensity. During the 2nd millennium BC, one can observe a concentration of wealth, involving a build-up of considerable demographic potential and socio-political control over settlement structures and developed long-distance contacts, both in temperate European societies as well as in those around the Mediterranean Sea basin. This suggests a significant social stratification and organisation, leading to advanced economic and political development. Well-organised elites existed across the continent, capable of initiating and managing complicated ventures such as expansion of long-distance trade, control over trade routes, administration and redistribution systems, craftsmanship supervision and the construction of sophisticated graves and fortified central settlements. In the Bronze Age, for the first time in European history, this upper class of society bears all the attributes of a fully developed

warrior aristocracy, and the great mobility of its members allowed new types of weaponry to spread across the continent.

The uniqueness of the Bronze Age is rooted in the fact that metals soon came to infiltrate all aspects of social life. The most significant of them, bronze, is an alloy made by mixing copper with other components, in particular tin, that has its own, distinct aesthetics and technological properties. The new alloy, which eventually took on a strongly standardised composition, represented a novelty and an invention in the truest sense. Its potential was increasingly understood and exploited during the Bronze Age, resulting in a range of new objects, of which some merely replaced older items in function and fashion, while others introduced new possibilities, and transformed the lives of people as well as the structure of society. An important feature of the Bronze Age archaeological record is the large number of artefacts that represent offensive and defensive weapons. The novel signature implement of this era was the *sword*, made possible by the new material that could be cast into blades which were both long and sharp. With the sword there was, again as a first in European history, a weapon that was designed exclusively for combat, unlike its predecessors that had been derived from tools or hunting equipment. These items of warriorhood and their associated symbols and monuments appear in large numbers across the continent, from Scandinavia to the Mediterranean.

Fighting and war were known to pre-bronze societies (e.g. Keeley 1996). But during the Bronze Age, warfare was professionalised, and brought with it technological as well as social transformations (Kristiansen, Larsson 2007, 26-30). Toward the Late Bronze Age, the new social stratum of the *warrior* emerged and left a spectacular imprint on the archaeological record, with its remains of burial architecture and weaponry. A closer look at these remains reveals another astonishing aspect of this new social role: Its representatives were of an early “international elite”, with strong similarities and shared characteristic features of material culture, symbols and technological inventory, culminating in a pan-European “warrior package” (Deger-Jalkotzy 2006, 169-173; Kristiansen, Suchowska-Ducke 2015, 373-376; Tarbay 2015). The lifestyle demands of this well-connected and distinguished warrior elite resulted in the exchange of prestige objects (engraved swords, daggers, corselets, chariots, metal and stone vessels, sophisticated jewellery, amber and glass) which spread in combination with ideological elements, symbols and rituals (such as symposia and the riding of chariots). Connections with distant places, access to prestige goods, knowledge and ideas, as well as an organised gift exchange are all important ingredients of the Bronze Age elite’s culture (e.g. Helms 1988; Kristiansen, Larsson 2007, 27-28; Kristiansen, Suchowska-Ducke 2015, 378-385).

Bronze Age Europe as networked communication space

There is no doubt that *networks*, with various degrees of connectivity, played an important role in all processes of socio-political and cultural transformations in prehistory. Archaeological evidence clearly indicates that periods of historic change coincided with times of intensified exchange and mobility, in which people, ideas and objects crossed cultural boundaries (e.g. Kristiansen, Larsson 2005; Vandkilde 2007; Suchowska-Ducke et al. 2015). Thus, cultural change, whether on a local or regional scale, cannot be understood by looking at isolated cases. Innovations and fashion trends, raw materials and refined products cannot travel from one group of people to another, unless they are in some way *connected*. For a long time, archaeologists have made use of the concept of networks when

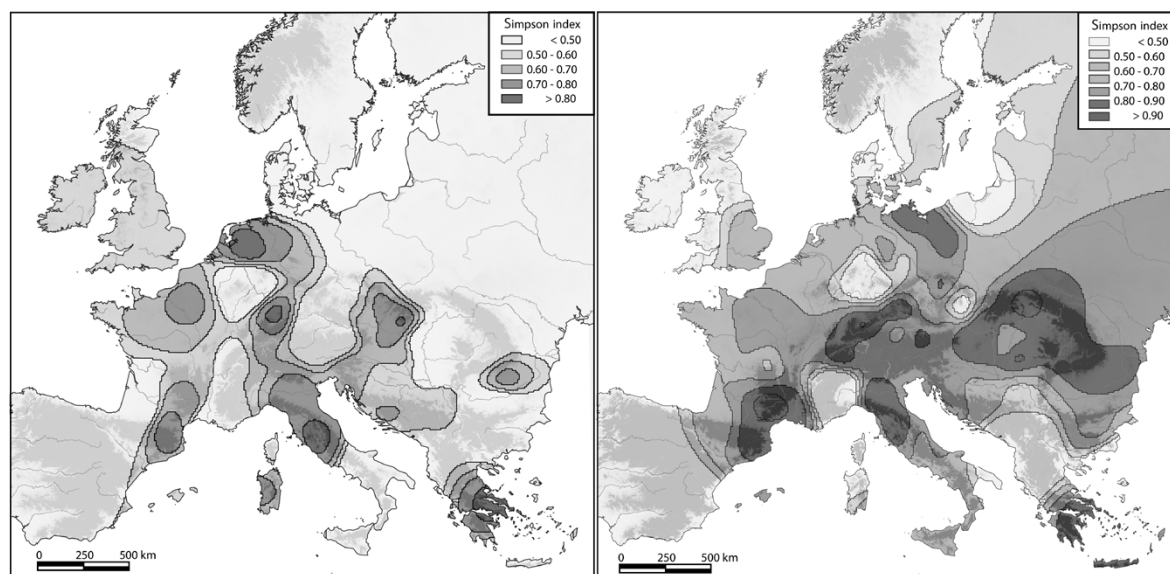


Fig. 1. Typological diversity of metal artefacts in the 3rd (left) and 2nd (right) millennium BC (reproduced with minor modifications from Ducke, Rassmann 2010)

Обр. 1. Типологично разнообразие на метални артефакти от III (ляво) и II (вдясно) хил. пр. Хр. (възпроизведени с малки модификации от Ducke, Rassmann 2010)

interpreting the pattern of material evidence from the past (e.g. Knappett 2011). In most cases, these networks are an implicit part of the interpretational framework, in others they are explicitly reconstructed and mapped to provide the basis of detailed observations and arguments (e.g. Evans et al. 2011).

From an abstract point of view, networks can be reduced to only two essential components: the *nodes* (places) and the *links* (routes) between them. Any network structure, be it a physical roads/riverine network or an immaterial network of social contacts, can then be characterised solely by the number of its nodes and the number of its links. Nodes with more in- and outgoing links are said to have higher *connectivity*. The overall connectivity of a network determines its flow capacity, i.e. how efficiently information (in less abstract terms: people, goods, etc.) can pass through it from one extremity to another. This is as true for prehistoric exchange and trade as it is for modern digital communication. The degree of connectivity directly determines not only the chances of novel ideas reaching people, but also the ability of people to spread ideas. In other words: networks shape societies just as much as societies shape networks. Over time, networks behave like living organisms: Smaller, regional networks connect with each other to form inter-regional systems that can span vast geographic spaces. They are also self-replicating in the sense that they may outlast their original creators. Networks can endure longer than individuals and entire societies (for more on these general concepts see Barabási 2003 or Christakis, Fowler 2011; for an overview of analytical concepts and methods see Collar et al. 2015).

Another important characteristic of networks, which is of special significance for prehistoric societies, is that the people who participate in them do not have to be in direct contact with each other in order to communicate. Instead, long-distance connectivity is maintained via intermediary nodes, such as central (market) places. Nodes that connect networks with each other (such as frontier settlements and outposts) have a certain duality in their nature. They can act as cultural bridges, but also as bottlenecks for the flow of people and ideas. In archaeology and related disciplines, they appear as “corridors” and

“gateways”. These concepts of network analysis enable a multi-scalar view that combines local, regional, inter-regional and global perspectives, providing great potential for a better understanding of the systemic (i.e. the non-individual or general) properties of social (e.g. Scott 2000, 82-89) and geographical (e.g. Haggett 2001, 394-419) systems, as well as a more comprehensive approach to the analysis of artefact distributions.

For example, the maps in fig. 1 demonstrate the use of typological diversity indices in archaeology (Ducke, Rassmann 2010). In this case, diversity serves as a proxy measure for the intensity of cultural contacts: The higher the material diversity, the more intense the assumed social interactions. Typological diversity is expressed using a simple measure of the variability of artefacts within assemblages (the so-called *Simpson index*, for an overview of the method see Simpson 1949, 688) at hundreds of find spots, representing thousands of bronze artefacts, across Europe. A spatial interpolation method is then used that permits the estimation of artefact diversity for the entire study area, while taking into consideration the cost of movement across the terrain. The result is a map of potential communication “hot spots” and corridors in physical, geographical space.

The map in fig. 1 (left) shows the modelled situation in the 3rd millennium BC. Several regional isolated communication spaces existed at that time, according to the diversity model. The map on the right shows a different picture for the 2nd millennium BC, where we see large, strongly connected communication spaces with high diversity of material culture. This is an indication, based solely on material evidence, of how the Bronze Age communication networks developed from regional to inter-regional, and how this increased the material diversity in large parts of Europe. One can see that at that time connections between central Europe and the Aegean ran via Italy and the western Adriatic or the Carpathians and Black Sea region. Within central Europe, the river network favours north-to-south connections. But the Danube and its tributaries form the single most dominant connection that crosses large parts of Europe from west to east.

It has long been speculated that the 16th to 13th centuries BC were a period of intensive socio-political development, connectivity and long-distance mobility. Just how well-developed and complex these cross-cultural relations might have been, is particularly visible in the Mediterranean Basin (e.g. Gale 1991; Cline 2009). There, trade appears to have been well-organised and diverse allowing producers and distributors to cater for a wide range of consumer demands. It was also standardised on the level of commodities exchange, such as the trade in pottery, wine and olive oil. A distinctive type of oxhide ingots was used for the transportation of large quantities of metal. The wide circulation of these, from the coast of the Mediterranean Sea all the way to the Black Sea and central Europe, clearly points out how strongly interconnected was the trade of the Late Bronze Age (Sabatini 2016, 45-50).

In the 13th century BC, long-distance communication between temperate Europe and the Mediterranean intensified and became more direct. A prominent example of this are the Mycenaeans who grew more interested in their northern frontier so that the Balkans, on the periphery of the Aegean world, became a destination for their political and economic expansion (Wardle 1993). From there, contacts with the societies of Italy were maintained and extended into the territories of the Terramare Culture in the Po Valley (Eder, Jung 2005). The Circum-Alpine region, on the other hand, was strongly connected with the important centres of the Carpathian Basin, and it was this hub of innovation and resources (Palincaş 2007) that allowed communications to extend further north, all the way into Scandinavia.

Find contexts from across the European continent bear witness to this early, “global” connectivity. For example, four fragments of oxhide ingots found in Baden-Württemberg

(Germany), made of Cypriot copper and dated to the 14th/13th century BC (Primas, Pernicka 1998), show that standardised metal trade crossed the Alps just as it crossed the Mediterranean Sea. Finished products were likewise traded over long distances. For example, glass and blue cobalt beads from Egyptian and Mesopotamian workshops have been recorded in Denmark, Germany and Poland (Varberg et al. 2015; Purowski et al. 2016), and Baltic amber reached the Aegean and Near East in significant quantities (Harding, Hughes-Brock 1974; Czebreszuk 2011).

Such material evidence of imports provides a proxy for the study of socio-political organisation, cultural boundaries, networks and the movement of things, ideas and people. After all, cross-cultural communication, trade and exchange in their many manifestations (local, inter-regional and long-distance) are fundamental forms of social organisation and interaction. About 80% of the artefacts that suggest Aegean and Mediterranean contacts with continental Europe are found in the Danubian-Carpathian area and in Italy (Bouzek 1985, 240). It is possible to differentiate between an early (18/17th to 13th centuries BC) and a late (13th to 12/11th centuries BC) phase of objects exchange, representing a two-phased development of mutual relations (e.g. Bouzek 1985, 240-244; Kristiansen, Larsson 2005, 120-130; Suchowska-Ducke 2016, 177-188).

The early phase coincides with the beginning of the Mycenaean Culture. During this period, so called “Cypriot” daggers and metal vessels, bearing strong analogies with Mediterranean forms, appear in temperate Europe. Among them, the bronze cup from Dohnsen (Germany) remains a striking example of a possible Aegean import, despite its problematic retrieval context. Conversely, Carpathian horse harnesses, such as those found in the famous Mycenaean shaft graves, also fall into this period. Another class of markers indicating north-south relations, probably the most impressive in terms of volume, is Baltic amber and Mediterranean glass and cobalt beads.

The second, late phase of north-south contacts occurs at the time when Mediterranean societies experienced political and economic weakness, eventually leading to decline and collapse. During the transition from the 13th to the 12th century BC, a *koine* (“common market”) of weaponry (swords, helmets and hammered bronze sheet objects, especially parts of armour), dress fasteners (e.g. pins and fibulae), personal ornaments (e.g. rings made of wire, ear-rings, spoked-wheel models) and symbols (e.g. birds and bird protomes) develops between central Europe, northern Italy, the Balkans and the Aegean. It blends stylistic and symbolic elements derived from Mediterranean, Alpine and northern Italian societies of the Bronze Age. Many of these elements will later evolve into the material substance of the Early Iron Age communities of Geometric style in Greece, Villanova Italy and Hallstatt Europe.

The fundamental difference between the first and second phase is that during the first one, contacts were indirect while during the second they were mostly direct and involved the movements of people (e.g. craftsmen, artists, warrior aristocracy and women “exchanged” in marriage alliances). Furthermore, the Caput Adriae and the Northern Pontic region emerge as important areas of contact during this second phase.

Based on a comprehensive review of published archaeological material (mostly Harding 1984; Bouzek 1985; Cline 2009; Suchowska-Ducke 2016), it is possible to provide some statistics for central European items recorded in Aegean contexts. A substantial number of objects that represent markers of contact fall into the period of the Mycenaean Culture between c. 1700 and 1050/1020 BC. By far the most frequent type of item is amber. At least 3900 fragments of imported amber have been recorded in the Aegean (Harding, Hughes-Brock

1974; Czebreszuk 2011, see catalogue), and it needs to be emphasised that amber is a fragile organic substance prone to decomposition, so that the preserved and recovered quantities are certainly only a tiny fraction of the originally traded volume. Regarding metal artefacts, the currently published archaeological records from the Aegean count close to 500 bronze items found there with strong northern features, or of so called “northern origin”. These numbers are certainly striking when compared to the frequencies of *orientalia* and *occidentalia* recorded in Aegean contexts, the total for which is only about twice as high. Of course, it must be noted that the character and provenance of central European objects is often dubious, and that metallurgical analyses have shown some items characterised by northern features to have been manufactured locally in Greece. Nevertheless, these numbers must give an idea of the magnitude and considerable significance of the north-south interactions at the time.

The case of the Naue II swords

Certainly, peaceful trade and commerce are not the only forms of interaction among connected societies. As stated previously, the appearance of new metal weapons is a defining characteristic of the Bronze Age, an epoch during which a pan-European warrior elite dominated societies and shaped historic processes.

Among the metal artefacts of so-called “northern origin” that reached the Mediterranean (see above) are the preserved remains of at least 79 impressive bronze weapons that belong to the famous flange-hilted swords of *Naue II* type used for cutting and thrusting (Suchowska-Ducke 2015, 259). These weapons are characterised by their parallel-sided cutting edges and thickened cross sections, making them more resistant against bending and allowing them to deliver a higher amount of kinetic energy via the edge of the blade (Kristiansen 2002; Jung, Mehofer 2008; Molloy 2011). With these advantageous properties, Naue II swords spread rapidly and far, due to the high mobility of warriors and the great intensity of warfare as a form of social interaction. Indeed, these innovative new swords turned out to be so efficient in combat, that by the 12th century BC they were widely used in continental Europe, the Aegean and the Near East, often replacing local types of swords.

Naue II swords belong to the *Griffzungenschwerter* family of European swords that have been recorded across the continent, categorized and analysed by many authors, namely Naue 1903; Sprockhoff 1931; Cowen 1955; Catling 1961; Bianco Peroni 1970; Schauer 1971; Burgless, Colquhoun 1988; Kemenczei 1988; Bader 1991; Kilian-Dirlmeier 1993; Harding 1995 and Wüstemann 2004. For the Aegean/Mediterranean region the typologies by H. Catling and I. Kilian-Dirlmeier are in use.

H. Catling’s typology takes into account the shape of the hilt, particularly the pommel, the way the rivets are placed and their number, and the presence of so-called “blood channels” or ridges (fig. 2). The first group – Catling I – is characterized by a “fish-tail hilt”, with 5 to 8 rivets in different positions and a blood channel as a persistent feature of the blade. The average length in this group is 56 cm (Catling 1961, 119). Swords from Catling’s first group essentially correspond to the Nenzingen type of J. D. Cowen’s (1955) typology, Reutlingen according to P. Schauer (1971), Sprockhoff IIa (Sprockhoff 1931) and Cetona (Bianco Peroni 1970). In the second group – Catling II – two forms of swords are distinguished: early and developed ones, with an average length of 77.5 cm (Catling 1961, 120). Early examples have a hilt that closely resembles that of Catling I, with the difference that an additional spur appears in the middle of the “fish-tail”. In its developed form this is half

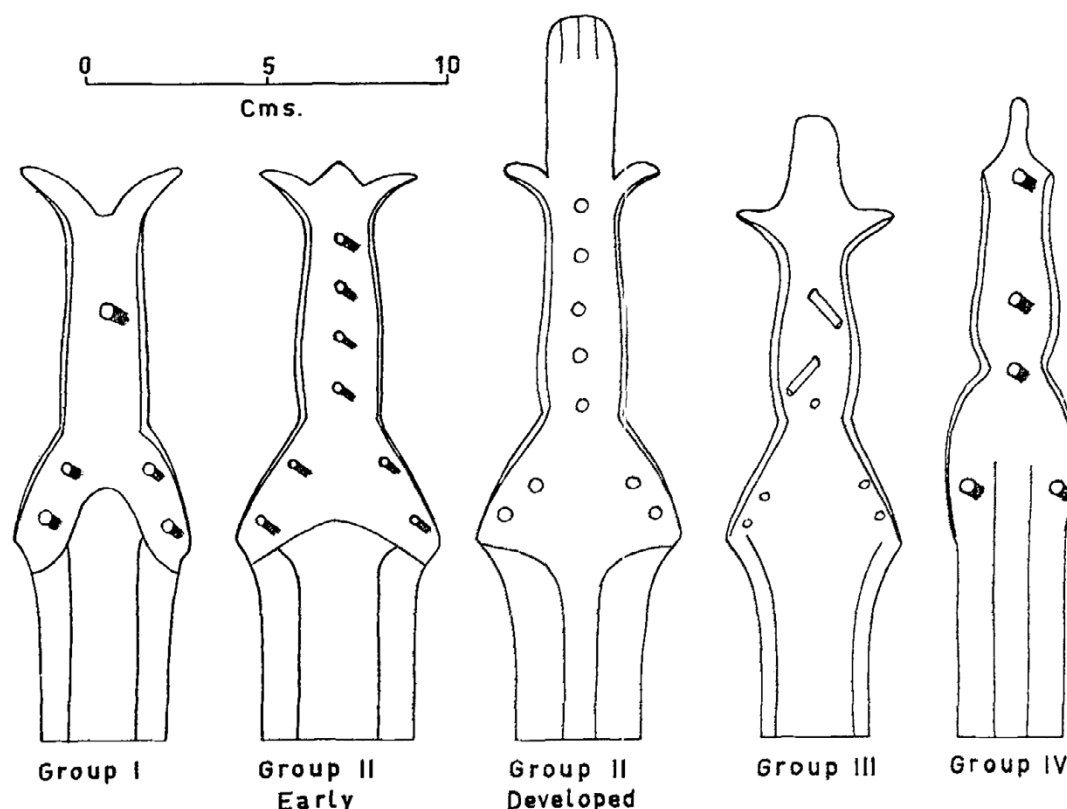


Fig. 2. Naue II subtypes as represented by the four typological groups of Catling (reproduced from Catling 1961)

Обр. 2. Подтипове на мечовете Naue II, представени в четири типологични групи от Catling (възпроизведени от Catling 1961)

as long as the handgrip (Catling 1961, 119) and indicates significant differences between the pommels of Group I and II. All Group II swords have ridges in the place of Group I's blood channels. The rivets vary between 7 to 10 in number. This weapon corresponds to type Erbenheim according to the typology of J. D. Cowen (1955). The third group of swords – Catling III – was a smaller and shorter version of the previous one (Catling 1961, 120). Some Catling III specimens feature a slightly leaf-shaped blade. Blood channels replace the ridges of Group II and rivets vary between 5 and 7 (Catling 1961, 120). The third group corresponds to type Letten(er) according to J. D. Cowen (1955), Stätzling according to P. Schauer (1971) and Sprockhoff IIb. Swords of the fourth group – Catling IV – are comparatively short (all measured less than 50 cm) and the number of rivets varies between only 2 and 5. They are characterized by a spike at the end of the hilt, which tends to become narrower in relation to its length. The pommel ears, present in all previous groups, diminish in size and eventually disappear (Catling 1961, 120).

According to I. Kilian-Dirlmeier, this classification of the Naue II swords, based on the design of the hilt and blade, is inaccurate, because many items may belong simultaneously to more than one group. In order to distinguish the basic types without overlap, Kilian-Dirlmeier considered solely the shape of the sword's hilt (Kilian-Dirlmeier 1993, 94). The morphological characteristics of the blade then serves to distinguish individual variants within a given group of swords. The A group of this topology encompasses swords with so-called "fish-tail" hilts, corresponding to Catling I. Within this group, five variants are

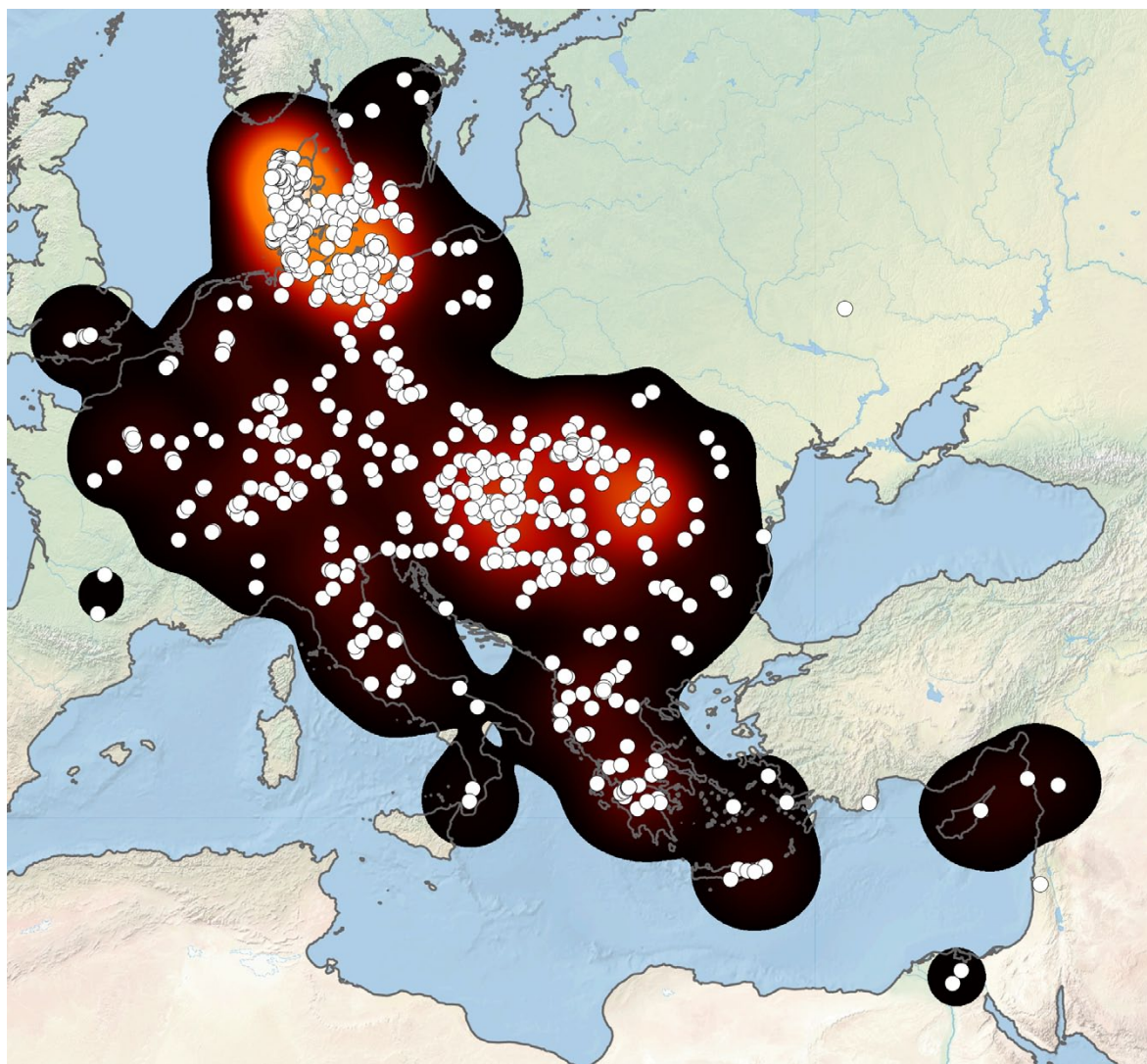


Fig. 3. Kernel Density Estimation of Naue II find spots in the study area
 Обр. 3. KDE (Kernel Density Estimation) анализ на находките в изучавания район

distinguished (Kilian-Dirlmeier 1993, 95-96). In group B, Kilian-Dirlmeier places swords with the hilt finishing in a small spike, basically referring to the early Catling II type. The characteristic number of rivets is stated to be only 2 to 4. However, the figures show that the count ranges from 2 to 8 or even 10 (Kilian-Dirlmeier 1993, 96, Taf. 35-36). There are no variants in this group. In group C, the hilt of the swords ends in a long spike, as is also the case for Catling II and Catling III. Based on the morphology of the pommel, Kilian-Dirlmeier distinguished four variants here (Kilian-Dirlmeier 1993, 96-98).

For the purposes of this article, Catling's simpler, non-hierarchical system was chosen, as it provides for a clearer picture of basic typological differences in much of the studied area, regardless of the fact that Catling's groups are not without overlap in their definitions.

The geographical distribution pattern of Naue II swords shows interesting spatial variability that can be hard to see on classic distribution maps with many points, but which can be revealed using appropriate computational tools. The map in fig. 3 shows the density of Naue II finds, computed within a radius of 250 km from each find spot. Significant clusters or "hot spots" can be seen in Northern Germany, Southern Denmark and in the Car-

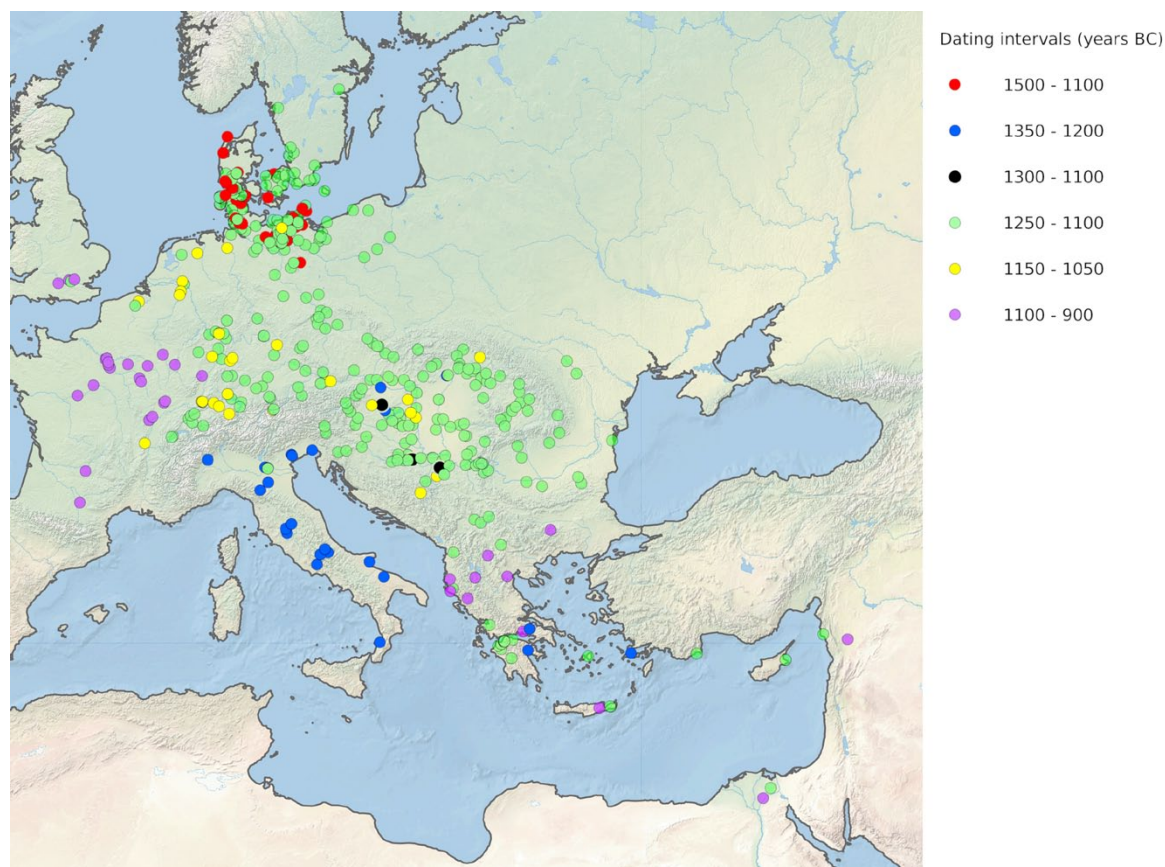


Fig. 4. Dating of Naue II type swords within its distribution area.

These are almost exclusively relative dates derived from find contexts

Обр 4. Датировка на мечовете Naue II в зоната на тяхното разпространение.

Датировките са относителни, основани на контекста на намиране

pathian Basin. The statistical method used here is called Kernel Density Estimation (KDE: O'Sullivan, Unwin 2003, 85-88). It works by moving a circular "window" in small steps across the map and, for each step, counting the number of finds within the window's area. The result is a smooth statistical estimate of find density across the entire map that makes it much easier to identify (potential) clusters than a classic distribution map that shows individual find points. The sensitive and highly subjective aspect of KDE, which is strictly an exploratory tool, lies in choosing the radius of the search window. Smaller sizes will suggest more and smaller (local) clusters, larger sizes will suggest fewer and larger (global) clusters. Choosing an appropriate search radius is a problem that is directly related to (one might even say identical with) choosing an appropriate scale of analysis to support interpretations and arguments. In this case, the density of Naue II swords was computed using a KDE with a radius of 250 km. Ducke and Rassmann (2010) argue convincingly that such a radius matches a common interaction scale in prehistory.

Chronologically (fig. 4), the earliest flange-hilted swords have been recorded in Italy and in the Carpathian Basin, where one can find clear typological predecessors of Naue II in the form of Sprockhoff Ib type swords (Cowen 1955; Foltiny 1964, 247-258; Jung, Mehofer 2008, 134, fig. 3). The very early dates that have been published for Naue II finds from Scandinavia result from the comparatively long dating intervals of the relative chronology units "Period II" and "Period III" used in that geographic area. This relative dating represents a

later boundary for the age of these artefacts, rather than an average date. From the point of view of technological evolution (see below), it is more plausible that Naue II appeared in these northern areas around the 13th century BC. The spatial distribution of finds also indicates that the process behind the spread of the earlier Naue II swords did not cross the Balkans into Greece as frequently as one might expect. This is perhaps a result of the physical geography which lacks high-capacity connections, such as main rivers, between those regions and central Europe. Instead, the most important links appear to have passed through Italy.

As already mentioned, Naue II swords found in the Mediterranean Basin were divided by Hector Catling (Catling 1961) into four main groups (fig. 2). In doing so, Catling argued for the original invention of this weapon to the north of the Greek cultural sphere, rejecting a derivation from the Near East due to clear predecessor forms occurring in continental Europe and nowhere else. He also introduced other, more far-reaching ideas about Naue II, most notably the concept of northern mercenaries being personally responsible for spreading the sword in the Mediterranean area.

Intriguingly, Catling already perceived typological confirmation for bi-directional influence on the evolution of Naue II. The first three of his groups have parallels in other parts of continental Europe. Of these three, Catling considered his Group I to be of clear European origin. His Group II, however, has some distinct characteristics (a spur on the handle and ridges instead of “blood channels”), which he considered to be Aegean modifications. Group III in turn was interpreted to be the result of a “second northern influx introducing a northern modification of Group II” (Catling 1961, 120). This argument is based on the observation that some Aegean features had been removed, while others had been reworked into new aspects. Looking at the features of his Group IV, Catling once more found its members to be “clearly developed out of Group III in the Mediterranean without any interference from the north” (Catling 1961, 121). So far, examples of Catling’s Group IV have only been found in the Mediterranean Basin, mostly in its eastern part.

This pattern of complex, bidirectional or even multidirectional, influences and local variations illustrated here only in the narrow context of the flange-hilted swords, can be seen as representative for the Bronze Age communication and technological co-evolution and shows that simplistic, unidirectional concepts of cultural transmission are of little explanatory value. Catling (Catling 1961, 122) also points out the fact that the technological evolution of a weapon with an impact such as that of Naue II must be examined with an eye on objects that represent technological responses (in this case defensive weapons such as bronze greaves). As a final note, it is also worth mentioning that soon after, Aegean smiths began casting iron versions of Naue II, thereby creating the template for the most widely adopted flange-hilted weapon of the European Iron Age (Snodgrass 1964, 93).

Catling’s typological reasoning remains convincing but a variety of factors, such as travelling smiths and craftsmen, make it difficult to distinguish clearly between locally manufactured and imported items. This problem is felt particularly when debating the origins of Naue II swords and has led J. Bouzek (Bouzek 1985, 241) to claim that “more than 95% of the European-type weapons found in the Aegean were locally made, and knowledge of type was only transmitted by few items *in corpore*”. Yet some convincing examples of locally (in the Mediterranean Basin) produced weapons of foreign (European) types are striking evidence of cultural affiliations and creative interpretations. This suggests that a realistic model of contacts and exchange between northern and southern Europeans of the Bronze Age needs to include various processes of different magnitudes and directions.

As a concrete example, admittedly outside Europe but within the larger connected world of the Mediterranean, four Naue II swords from the city of Ugarit show how Mediterranean smiths worked to produce longer flange-hilted swords based on the Naue II type. They range from 63 to 73 centimetres in lengths and their blades have parallel edges. The blades' widths measure 2.5, 3.0, 3.3 and 4.0 cm, respectively, at the midpoints (Schaeffer 1956, 167-177; Drews 1993, 205). These characteristic features and dimensions are very similar to the genuine, earliest Naue II swords (Catling's Group I, Nenzingen, Reutlingen). But because their tangs are not flanged and are instead extended into a pommel spike, the examples from Ugarit do not qualify as classic Griffzungenschwerter. Instead, they belong in Catling's Group IV, the type of Naue II swords known only from the Mediterranean Basin. The swords from Ugarit were cast but never made into finished products, as their blades were never sharpened and their tangs bear no traces of rivet holes. They were buried as part of an assemblage of 74 bronze objects (Schaeffer 1956, 167-177). A strongly related artefact, less well-preserved but with strikingly similar characteristics, is the "Merneptah sword" found buried in the courtyard of another house in Ugarit, along with several other bronze objects and a clay figurine of a goddess (Schaeffer 1955). It measured 74 cm and, with a very long and slender (to the point of being fragile) hilt of 15 cm (Drews 1993, 205), was also never sharpened and made into a finished product. Nevertheless, the fact that it bears the cartouche of the Egyptian pharaoh opens room for speculation about the owner (or intended customer) of this weapon, bringing back into focus the people behind swords such as this.

The new Bronze Age warrior aristocracy

By and large warfare has always been about resources. It provided an important source of revenue from the plunder and spoil of conquered cities and territories, and the subsequent flow of tribute from dependent communities. Armed forces serve to protect food-producing land and guard routes for essential goods from depredations by enemies. And it provides the victor with a regular source of manpower, in the form of prisoners-of-war or "booty-people", transported back to the homeland. Such enslaved human resources were used as a labour force on farming estates, recruits in the "royal militia", temple personnel, and as settlers to populate or repopulate sparsely inhabited areas.

The wide-spread appearance of Naue II is indicative of the rise of a warrior aristocracy in European continent during the Late Bronze Age. There is no doubt that it was the weapon of a professional warrior with sharp edges that were frequently re-sharpened after use in combat. Naue II swords were used for both thrusting and cutting, and were suitable for close hand-to-hand combat. Undoubtedly, their emergence must have brought about a significant change in the fighting techniques of the Late Bronze Age.

The expansion of this new warrior aristocracy, especially after 1300 BC, coincides with the emergence of the Urnfield Culture characterised by intensive development and great mobility. This must be explained in the context of the region's position on the periphery of the more advanced and richer centres of the Mediterranean Basin. The challenging question is how these processes in the European peripheries were related to contemporaneous developments in the palatial centres of the Mediterranean, and whether there are any links with the influx of the so-called "Sea Peoples" into the south and the eventual destruction of its centres after 1200 BC.

Indeed, the presence of mobile warriors must have had profound social and political

implications. This becomes clear if one looks at the role of mercenary forces throughout history. They occur solely in conflicts that involve political corruption, civil strife and the downfall of kingdoms and empires. Most famously, N. Machiavelli (1532) has stated that a ruler who employs disloyal foreigners to fight for him has already lost the war, and that his domain must be in a desolate condition. His view is affirmed by past and modern conflicts and events that involved foreign hired troops, such as the collapse of the Western Roman Empire, the Thirty Years' War, and the current conflicts in the Arab world. Thus, it must have been desperate Aegean/Mediterranean rulers that called in foreign warriors, and the fall of the great palaces and the devastations caused by the so-called "Sea Peoples" around the Mediterranean fits this picture well. Therefore, the rapid spread of efficient weaponry, used to equip mercenaries across Bronze Age Europe, should speak a lot about the social and political conditions of the time. It is not a far stretch to assume that the local production of weapons was supported by the employers of mercenaries, who resided in the rich cultural centres of the Aegean and Mediterranean.

Written sources confirm that rulers in the Near East used mercenaries of foreign origin. For example, the prince of Babylon had Sherden from the Sea Peoples in his service (Moran 1992, 201-202). It is very likely that other rulers in the region also used warriors for hire. Especially since, as Ramesses II states on one of the inscriptions attributed to him, no one was able to withstand Sherden warriors (Kitchen 1996, 120). In the iconography of that time one can also find evidence for the presence of foreign warriors in the armed forces of the Near Eastern kings. For instance, on the relief from the Great Temple of Ramesses II at Abu Simbel, Sherden mercenaries are guarding the pharaoh's tent and are fighting for him (also against the other Sea Peoples). Similarly, the depiction of the famous battle of Qadesh presents Sea Peoples in both armies, that of the Egyptians and that of the Hittites (Porter et al. 1972, 304-305, 518-519), and among them, many carry long swords. Moreover, a depiction of a nautical battle scene at Medinet Habu suggests that at least a part of the Sea Peoples could have been of central European origin, as the profile of the Sea Peoples' ship looks very similar to the "bird boat" (Vogelbarke) motive associated with the Urnfield Culture. It seems also plausible that the Italian sword found in the Uluburun shipwreck, as well as the Naue II find from Cape Gelidonya belonged to such foreign mercenaries.

There is also evidence in temperate Europe that warriors could have been hired by foreign chiefdoms. Namely the cemetery at Neckarsulm in southern Germany dated to 13th BC, where one third of the buried males were of non-local origin, according to strontium isotope analysis (Wahl, Price 2013). Three of these burials, that contained swords, may be identified as "chiefly commanders".

Flange-hilted swords and their derivations have been found in many different contexts that make this group of artefacts very informative when it comes to reconstructing the evidence for Bronze Age cross-cultural contacts and transfers of technology. The different archaeological contexts of Naue II finds show an interesting spatial distribution. In the Carpathian Basin, Naue II swords are almost exclusively known from hoards. In central Europe, the Western Balkans and particularly in Scandinavia, they have also been found in burial contexts. In Western Europe, they are mostly river finds.

The majority of archaeological finds comes from graves and suggests largely canonical burial rituals and standardised inventories, confirming that the buried warriors formed a coherent social group characterised by common identity, behaviour and lifestyle (Kristiansen, Suchowska-Ducke 2015, 367-378). Apart from Naue II, this "warrior package" is composed of further types of weapons and armour, tools, drinking vessels and toiletries

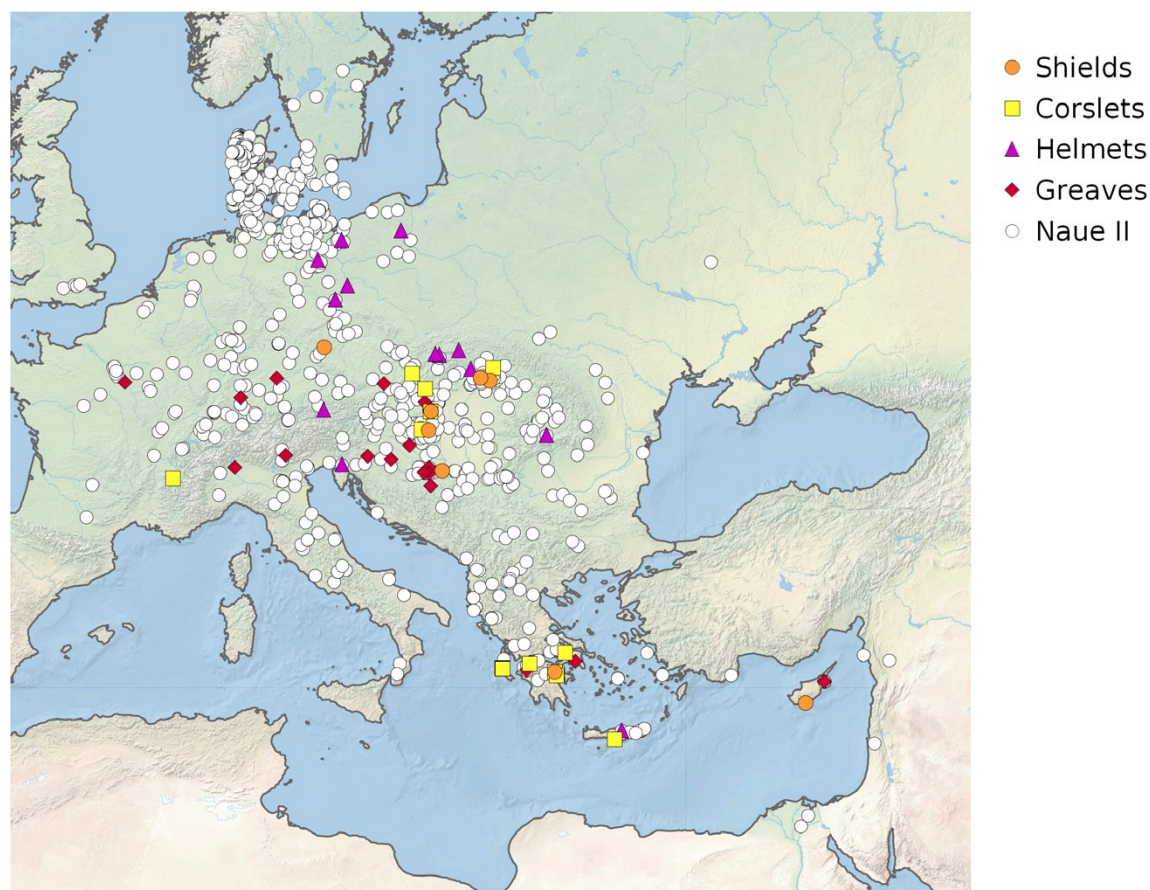


Fig 5. Distribution of selected types of weapons within the diffusion area of Naue II swords
 Обр. 5. Разпространение на избрани видове оръжия в зоната на разпространение на мечовете Naue II

(such as razors, tweezers, combs and mirrors), as well as campstools (Deger-Jalkotzy 2006, 169-173; Kristiansen, Suchowska-Ducke 2015, 373-376; Tarbay 2015). Fig. 5 shows a map of some types of defensive and offensive weapons dated to the Late Bronze Age.

Conclusions

Long-range contacts, the exchange of goods and organised forms of trade have been part of human life since the beginning of what is commonly perceived as culture. The main reason for this has always been the unequal geographic distribution of desirable resources and raw materials such as obsidian, flint or metals. This driving force of connectivity became increasingly significant during the Bronze Age, when societies across Europe began to trade raw materials, skills and products with each other on a commercial scale. Eventually, these societies started to exchange an increasing variety of commodities such as amber, fur, leather, olive oil, wine, honey, salt, spices and perfume oils, few of which survived in the archaeological record. This brief discussion has focused on one particular marker of contact, swords of the type “Naue II”, and on extracting indicators of fundamental social processes from its geographic distribution pattern. Such artefact-based reasoning is, of course, fraught with difficulties.

Nevertheless, the bulk of archaeological evidence indicates that what happened

around the Mediterranean during the 13th and 12th centuries BC was not just a local chain of economic and social disruptions, but rather a sequence of events that eventually affected most of the continent, albeit in very different ways. The stability and growth that initially characterised the Aegean and Mediterranean Late Bronze Age vanished, giving way to the decline of the palatial societies. The appearance of mercenaries and migrants from temperate Europe, inferred from the archaeological remains, was contemporaneous with dramatic political, social and economic changes in the Mediterranean Basin that culminated in the decline and collapse of many city-states in the region. Although far from conclusive, the known archaeological evidence makes it tempting to suggest that these phenomena were closely linked.

In a strongly connected world, events in one part of the network must affect other, even remote parts. And so it is that the echo of the upheaval in the south can be seen in the north: numerous burial mounds with rich inventories appear in Northern Germany and Scandinavia, testifying to the emergence of a rich elite of warriors who perhaps found their fortunes as mercenaries in the Mediterranean Basin.

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Нови технологии и трансформации в европейската бронзова епоха: пример с на мечовете Naue II

Паулина Суховска-Дуке

(резюме)

Широкообхватните контакти, обменът на стоки и организирани форми на търговия са част от човешкия живот от самото начало на това, което обикновено се възприема и дефинира като култура. Основната причина за гореизброените явления се крие в неравномерното географско разпределение на желаните ресурси и суровини като обсидиан, кремък или метал. Широката обвързаност и обмен между човешките групи прогресивно се задълбочават през второто хилядолетие пр. Хр, когато обществата в цяла Европа започват да осъществяват истинска търговия в широк мащаб. Важна особеност на археологическите данни от бронзовата епоха е големият брой артефакти, изработени от нова сплав, която в крайна сметка придобива силно стандартизиран състав и представлява иновация и изобретение в истинския смисъл на думата. Потенциалът на новата сплав все повече се усвоява и използва през този период, което води до появата на редица нови предмети. Някои от тях заменят по-старите като функционалност и мода, докато други отварят нови възможности и преобразяват както живота на хората, така и структурата на обществото. Голяма част от тези метални предмети представляват нападателни и отбранителни оръжия.

Сражения и войни са известни и в пред-бронзовите общества, но по време на бронзовата епоха войната се професионализира и води както до технологични, така и до социални промени. Към края на бронзовата епоха се появява новата социална прослойка на война, който факт остава впечатляващи следи в археологическите данни под формата на гробна архитектура и оръжия. По-внимателното вглеждане в

тези останки разкрива и друг удивителен аспект на тази нова социална роля: нейните представители обособяват един ранен „международен елит“ със силни сходства и общи характеристики на материалната култура, символите и технологичния инвентар, които кулминират в паневропейски „военен пакет“. Житейските потребности на този надрегионален, обвързан и изявен военен елит води до обмен на престижни стоки, които се разпространяват в съчетание с идеологически елементи, символи и ритуали. Връзки с отдалечени места, достъп до престижни стоки, знания и идеи, както и организиран обмен на дарове са важните елементи на културата на елита от бронзовата епоха.

Несъмнено новият и основен атрибут на елита от бронзовата епоха е мечът – оръжие, предназначено основно за бой. Настоящата кратка дискусия е фокусирана върху един тип мечове, наречен „Naue II“, и върху извличането на показатели за значими социални процеси, на базата на географското му разпространение. Тези мечове са двуостри, със специфични дълги и тежки дръжки и дебело напречно сечение. Техните технологични характеристики предопределят здравината, твърдостта и устойчивостта им на огъване, като същевременно им дават по-голяма проникваща мощност. Мечовете от този тип се използват както за промушване, така и за съсичане и са подходящи за ръкопашна битка. Тяхната поява несъмнено довежда до значителна промяна в бойните техники през късната бронзова епоха, а разпространението им е масово и в широк общоконтинентален мащаб – от Скандинавия до Средиземно море.