THE WEB OF WAR

Warfare, weapon graves and technology transfer in Northern and Central Europe 200 BCE - 400 CE

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1. The web of war

1.1. Introduction

Weapon graves, defined as burials of deceased members of a society with artefacts developed for warfare, are not only associated with the period that will be examined in this publication. When this practice began and when weapons started being developed solely for the purpose of killing other humans are not questions that will generally be discussed in this study, although in Scandinavia, weapons specifically developed for warfare, such as battle axes and certain types of arrowheads, were furnishing graves from at least the Single Grave Culture of the Middle Neolithic (2800-2400 BCE). Spearheads of non-organic materials, as well as swords, began to appear in burials during the Late Neolithic and Early Bronze Age. Some weapons may have had ceremonial functions, but almost certainly because they were of symbolic value as weapons for warfare. In addition, it may be interesting to note for later discussion that the practice of furnishing burials with weapons was not a continuous phenomenon from that time until the period that will be examined here. In Late Bronze Age and the Early Iron Age Scandinavia, weapons are generally absent from graves, although they occasionally occur as miniatures in the Late Bronze Age. Instead, weapons are found as depositions or hoards in bogs.

During the first two centuries CE, at the time when the Roman Empire had established its northern borders along the Rhine and the Danube, the ritual practice of furnishing burials with weapons extended over large areas of Northern and Central Europe. Some areas had been practising this rite for a long time, other areas buried their dead with weapons for around 200 years or changed their rituals in a more symbolic direction, sometimes including miniatures, others maintained the practice of weapon burials for several hundred years, whilst some areas never practised the weapon burial rite at all. In prehistoric archaeology, military equipment in burials is often the only source for reconstructing military social structure, military technology, armies and fighting styles. However, graves are not a reliable source to use for such interpretations. This is debated in Chapter 1 of this publication. Examples of contemporary analyses of panoplies, military organisation and fighting styles from burial data are compared with the data from the large bog deposits of army equipment from Southern Scandinavia, which tells a different story.

Furthermore, the period in question is both blessed with and cursed by the literary sources of the contemporary writers of the Roman Empire, especially the *Germania* by Tacitus. Their writings have had, and still have, a great impact on the interpretation of history and archaeology in general, and especially on the interpretation of society, military organisation and the capabilities of the Germanic areas, where they often constitute the key to understanding the archaeology. Chapter 1 in this book also attempts to demonstrate why this is unfortunate. The 200-year window when many areas north of the Roman Empire interred some of the deceased members of their communities with complete or parts of panoplies of shields, spearheads, javelins and swords nevertheless provides a fascinating glimpse into a world that was apparently coherent. This impression is given by the written sources and it is supported by archaeology.

Just over a hundred years ago it inspired the German archaeologist Martin Jahn to write his groundbreaking dissertation on the weapons of the so-called Germanic peoples, which emphasised the uniformity in typology and chronology, from Norway in the north to the banks of the Danube and Rhine in the south (Jahn 1916). The coupling of Tacitus with ethnicity and archaeology was too strong a cocktail after World War II, which may be the reason why Jahn's work was never replaced by more recent work and why it has continued to have some influence in archaeology up until today. Archaeology retreated in its scope to introverted local or regional studies, or less contentious topics, such as typology and chronology. One such study is Norbert Zieling's study of Germanic shields in *Free Germania* (Zieling 1989).[1] Although not

1. The term "*Free Germania*" is an ill-chosen 19th century term, although it is often used in archaeology (Wiegels 2009: 12).

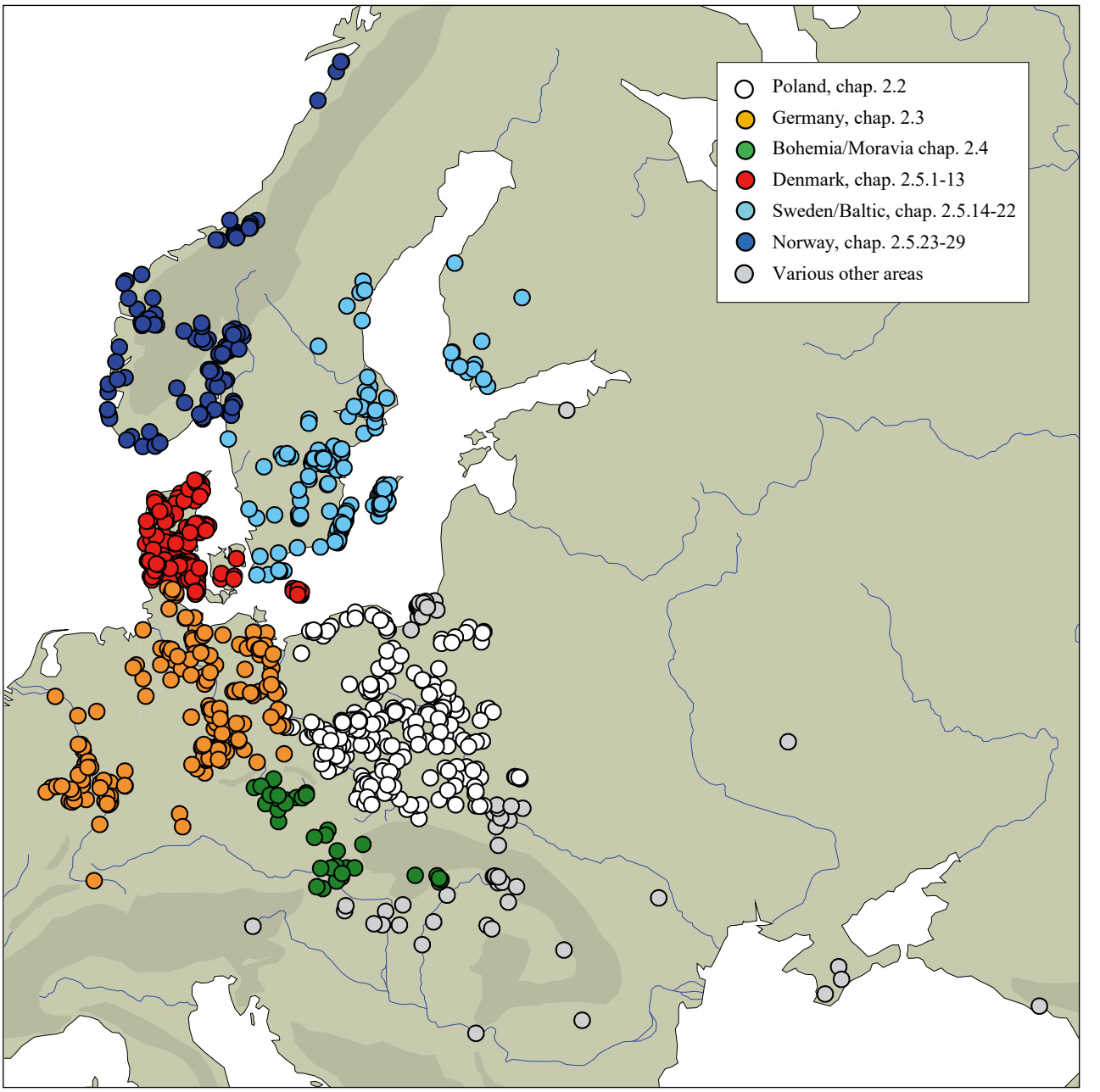

Fig. 1.1. Weapon graves and cemeteries with weapons in Europe 200 BCE-400 CE. The material constitutes the basis of 12 regional studies of weapon burial chronology. Grey dots represent scattered finds of weapon graves which correspondence analysis has not been undertaken on.

especially conclusive in terms of interpretation,[2] it demonstrated that the various metal fittings for shields were indeed very similar in all the areas north of the Roman Empire in which they were found. The typology, with its 62 types of shield bosses and 42 types of handles, represented a much more detailed typology than earlier (Jahn 1916; Bohnsack 1938) or later attempts (Ilkjær 1990; Adler 1993), although it has not been generally accepted. However, it suits the scope of this study almost perfectly and the extensive catalogue of 2,051 entries has been an invaluable source for this investigation.

The main chapter of this book presents the chronology of around 2,000 weapon graves from Northern and Central Europe in 12 regional areas (fig. 1.1). Scan-

2. Any discussion of the questionable title is avoided, no mention is made of the problematic past in the history of research (p. 15-26) and except for the title of the book, no thoughts are expressed in the conclusion concerning the implications of the widespread distribution of similar types (p. 375-400).

dinavia has been divided into the countries Norway, Denmark and Sweden, which makes some geographical sense, as most graves in Denmark are found in Jutland and the adjacent Islands of Funen and Langeland, although the island of Bornholm stands out geographically. The majority of Swedish graves are from the islands of Öland and Gotland in the Baltic Sea and the adjacent mainland region Östergötland, and most Norwegian weapon graves are found in the southeastern part of the country. Germany has been divided into five parts: Schleswig, the Lower Elbe, the Middle Elbe, the Rhine and Mecklenburg-Vorpommern/Brandenburg. Bohemia and Moravia have been analysed together, Poland as one and in a number of regional analyses: the Oksywie culture, the Przeworsk culture along the Oder River and its tributaries, the Vistula River and its tributaries, the regions of Masovia (Mazowieckie) and Greater Poland (Wielkopolskie), and in an eastern zone and a southern and central zone. In addition, a chronology of burials containing Roman tableware, an analysis of Roman swords, and a chronology of finds groups consisting of Roman swords and/or sword scabbard fittings are presented. All have been analysed and compared using correspondence analysis.

Although the chronologies and typologies have taken a great deal of time to produce, they are not the aim. As such, not only the method but also the ambition of this work differs from traditional studies after World War II. The detailed studies of martial material culture are used to evaluate the character of inter-barbarian relationships. It is assumed that warfare, not political nor ethnic unity, generated the similarities in martial material culture, and that these similarities can be expected to be closest between neighbouring areas which would have fought one another more often. There were such intensive efforts at imitation because warfare was too serious a matter to allow for experimentation. By equipping yourself with weapons like your most frequent enemy and organising your army and fighting style in the same manner, an equilibrium could at least be maintained, which ensured that no side would suffer devastating defeat due to technological inadequacies, although this probably also resulted in a greater number of indecisive outcomes of war. Such observations were made as early as antiquity (Rawlings 2011: 52-53). Livy, for example, described how (he imagined) Latin and Roman armies were organised in the same way:

> "They knew that maniple would fight maniple, the whole line of *hastati* match *hastati*, *principes* against *principes*, while centurions must engage each other while the ranks remained unbroken."
>
> Livy *Early Roman History* 8.8.15.

Diodorus describes imitation of military technology as an adaptation to new enemies:

> "…the Etruscans, who fought in phalanxes with round shields of bronze, compelled them [the Romans] to adopt similar arms and, consequently, were defeated. Then, when other peoples were using shields such as the Romans now use, and were fighting in maniples, they imitated both and so overcame the originators of such fine models."
>
> Diodorus 23.2.1.

Even the great 18th century philosopher Immanuel Kant noticed how warring powers copied each other's military tactics, strategies, weapon systems, technology and other elements (Harste 2016). Also in the modern theory of warfare, it has been claimed that "war represents the most imitative activity known to man" (van Crefeld 1991:174). Warfare has been described as a "xerox-machine which enables cooperation".[3]

Barbarian military technology gradually changed from generation to generation and was quickly adapted over vast areas. Therefore, it is not generally assumed here that these gradual changes can be attributed to an area of origin. The process can be understood as primarily an internal development within the northern areas outside the Roman Empire, although the empire played its part as a catalyst for communication and sometimes in the introduction of new technology like swords. As the Empire became established along the Rhine and Danube, this created a north-south division of Europe, but the unfortunate geography of the large rivers north of the Empire, all flowing south-north, enabled connections to exist between the north and the south. As Roman products were transported northwards to stimulate the prestige economy of the north, a constant flow of northern warriors travelled south to the borders of the Empire, either to join the Roman army or the societies that had established themselves close to the borders to attack the Empire.

3. G. Harste 2023: Fem fortrængte sandheder om krigen i Ukraine. Op-ed in Danish newspaper *Politiken*, 11 April.

1.2. History of research – a struggle for identity

A hundred years ago, the narrative in archaeology was different. For decades, archaeology had been used to illustrate a glorious past of the new European nation states, which sought and found an explanation for their ethnic peculiarity and intrinsic qualities in golden eras of prehistory and early history. One of the most important ages for such a background was the Roman period, as well as the following Migration period, which are still cornerstones of European identity today. Especially in Germany, the excitement over the ethnographic work *De Origine et situ Germanorum,* generally referred to as *Germania*, written by Gaius Cornelius Tacitus around 98 CE, created an illusion that would result in disaster. Because *Germania* and the Germanic tribes in Tacitus were confused with Germany, as very explicitly stated in title of the three-volume publication *Vorgeschichte der deutschen Stämme* (Prehistory of the German Tribes) edited by the declared national socialist Hans Reinerth (1940), Germany could claim its rights to territories once inhabited by German tribes (fig. 1.2). This perversion of the evidence had, however, begun some time before nationalism and racism merged into National Socialism. Reinerth was a pupil of the Berlin professor Gustaf Kossinna, who in a number of publications in the early 20th century laid the foundations for national socialist theories on archaeology and ethnicity, in which *Germania* became the cradle of civilisation (Kossinna 1911; 1914; 1919; 1926). Another pupil of Kossinna's was Martin Jahn, although he was never tainted by accusations of national socialist sympathies. His 1914 dissertation on Germanic weapons between 700 BCE and 200 CE was published while he served as a soldier in World War I (Jahn 1916). Jahn's aim was to describe the weapons of those *Germanen* who were "able to resist the formidable Roman military state" by studying the weapons found in the graves of those who had been killed in battle (Jahn 1916: 5). Both the aim and conclusion were certainly products of their time:

> "The comparison between the heavily armoured Romans and the unprotected *Germanen* is also a comparison between two main traits characterising these two peoples, a comparison in which the bold *Germane*, trusting in his skill, in fact, does not fall short." (Jahn 1916: 220).[4]

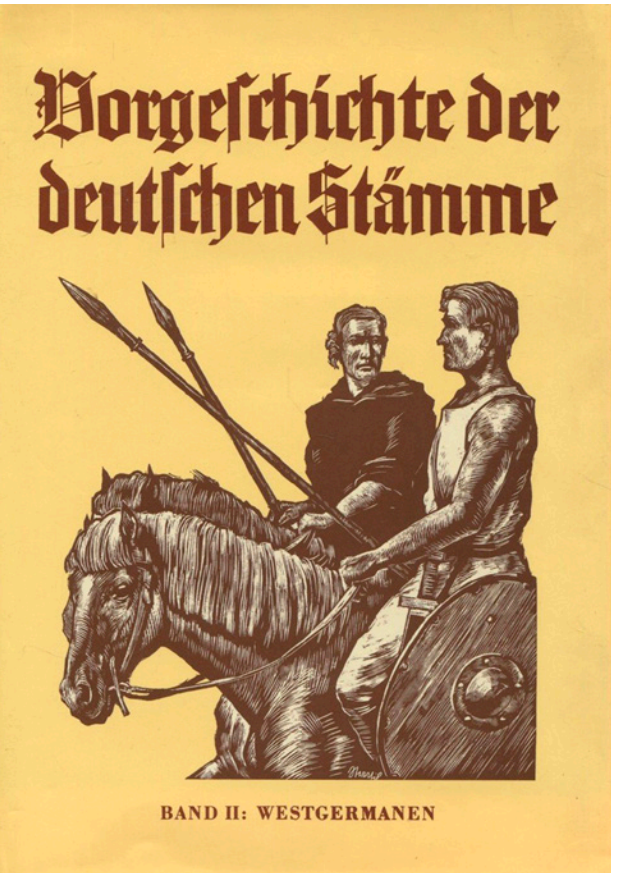

Fig. 1.2. The cover of the second volume of Hans Reinerth's 'The prehistory of the German tribes' from 1940 clearly illustrates the mistaken path of pre-World War II archaeology.

Apart from the conclusion, his work has had a long-lasting effect and is still quoted today, especially for its typology of shield bosses and shield handles. To Jahn, the weapons were ethnically associated with the Germanic peoples, and although traces of short-term inspiration from Celts and Romans could sometimes be found, they were quickly developed to match the preferences of the Germanic peoples.

Before World War II, several other studies of weapons and weapon graves were published. All of these were of a narrower geographical scope, but still focused on ethnicity, as they attempted to describe the weapons of Germanic tribes, either Burgundians, Vandals or Langobards (Kostrzewski 1919; Tackenberg 1925; Bohnsack 1938; Wegewitz 1937; Pescheck 1939). Although not very different from those of Jahn, the typologies of Bohnsack and especially Kostrzewski have sometimes been preferred by contemporary and modern scholars.

4. The translation (by the author) is not straightforward: "Der Vergleich zwischen dem schwergepanzerten Römer und dem ungeschützten Germanen stellt gleichseitig zwei Hauptcharacterzüge der beiden Völker gegenüber, ein Vergleich, bei dem der offene, auf seine Tüchtigkeit vertrauende, wagemutige Germane wahrlich nicht schlecht abschneidet".

After World War II, the focus on weapons, warfare, universality and especially ethnicity naturally declined. Adversely effected by the repercussions of its recent, inflamed past, Roman period archaeology avoided such questionable subjects and shifted its focus to site analyses, regional studies, typology, chronology and trade. The widespread use of distribution maps was either not commented upon or explained using the less controversial terms of exchange and diffusion.

The theoretical paradigms of Anglo-Saxon archaeology never had a huge impact on German and Central European archaeology, which remained true to its roots in diffusionist archaeology. Scandinavia, especially Denmark, eventually positioned itself with a foot in each camp. During the 1960s and later, archaeology in Jutland focused on settlement archaeology, whilst on Funen and Zealand burial archaeology was emphasised. The wealth of Roman imports on both islands, and the scarcity of weapons on Zealand and from the 3rd century on Funen, as well as the discovery of the wealthy trade, power and cult centre at Gudme-Lundeborg on Funen, fitted the narrative of stable, peaceful societies (Hvass 1980; Thrane 1987; Thomsen 1993; Nielsen et al. 1994; Grimm & Pesch 2011; Sørensen 2011; 2022). It was the description of the preconditions for the Danish welfare state. New finds and excavations of large bog depositions of army equipment at Ejsbøl and Illerup Ådal undertaken during the 1950s and 1980s only had a limited impact on the interpretation of more peaceful societies of farmers and traders, until their publication from the late 1980s onwards (e.g. Ørsnes 1987; Ilkjær 1990). However, all these components came together and had a significant impact with Marxist archaeology in the 1980s, when social archaeology and state building once again came into focus. These approaches were often combined with an emphasis on neo-evolutionary theory and the military democracy, as described by Tacitus and conceived by Hermann (Hermann 1982; Jensen 1979; 1982; Hedeager & Kristiansen 1982; Mikkelsen 1989; Kristiansen 1991; Hedeager 1990; 1992). The tendency to describe the evolution of society in terms of closed and internal dynamics resulted in explanations of a somewhat nationalistic nature, as the teleological perspective of a Danish state and its dominant status in Scandinavia became the main focus (U.L. Hansen 1995; 2002; Storgaard 2001; 2003; Jørgensen 2001; Jensen 2003; Näsman 1999; 2006).

It is as if the fall of the Iron Curtain and the rise of a new, united Europe has stimulated two opposite directions that influence Iron Age archaeology. One is the dream of a Europe that goes further than a reunification of the Roman Empire. Flemming Kaul (2007: 327) refers to the 1980 exhibition on the Hallstatt period entitled 'Frühform europäischer Einhet' (early European unity) and goes on to describe the 1991 exhibition in Venice entitled 'The Celts. The Origins of Europe':

> "The 1991 Palazzo Grassi exhibition also included a video show […] At the end of this show a distribution map of Celtic oppida was shown where the dots representing the oppida then turned into stars, and these stars finally elegantly formed the circle of stars being the emblem of the EU!"

Another example is the 2000-year anniversary of the Battle of the Teutoburg Forest, which was celebrated in 2009 with exhibitions at three venues in Germany and a three-volume catalogue entitled 'Imperium, Konflikt, Mythos' (Kenzler et al. 2009; Burmeister & Derks 2009; Berke et al. 2009). The opening of the exhibition 'Konflikt' at Varusschlacht im Osnabrücker Land – Museum and Park Kalkriese was attended by the then German Chancellor Angela Merkel, who posed as the strong leader uniting the Roman and Germanic worlds in a new merged Europe.

However, the European Union has, however, also reinvigorated the interest in ethnicity in archaeology. This search for a specific identity in archaeology is especially evident in the new Central European member states of the former Eastern Bloc, which have abandoned descriptions of material culture in environments, cultures or settlement zones in favour of a return to the identification of material culture with the Germanic ethnicities of Tacitus (see discussion below, Nowakowski 2020).[5] The archaeology of the Roman period has again become the battlefield for identity.

1.3. The written sources

The border rivers, the Rhine and the Danube, which separated Roman civilization from barbarian societies to the north, were not exactly a boundary between literacy and illiteracy, but almost. Although a runic alphabet, known as the *futhark*, was introduced in the north during the 2nd century CE, possibly primarily to imitate Roman epigraphs, there was still an enormous gap between a society with written poetry, plays and laws, and which kept a written record, and the scratching of names and single lines onto artefacts (S. Fischer 2005; Imer 2015a-b). Only the Romans wrote long texts and some of the surviving

5. Although ethnicity is always latent in the cultures of Polish archaeology and Nowakowski points to examples by Kolendo identifying these with the tribes of Tacitus, dating back to the late 1970s, the approach has not been commonly adopted until recently.

sources include details of considerable length about the events and relations between Romans and barbarians, Celts, *Germani* and Scythians of the north and north-east, or about the ethnography of these peoples and the geography of the areas where they lived. These writings, one-sided and fragmented as they sometimes are, have had a major impact on both history and archaeology. Traditionally, many historians have described the barbarian societies outside the Empire solely based on these sources, with no or only very limited use of the archaeological evidence. E.A. Thompson's analysis of Germanic warfare is one such example (Thompson 1958). Other historians tend to quote fellow historians with a better knowledge of archaeology than themselves.[6] The reverse is equally the case, and the amount of work within archaeology that has been directly or implicitly influenced by these written sources, especially Tacitus' *Germania*, is so extensive that it is impossible to summarise and thus steer clear of this influence in archaeological research into the barbarian areas during the Roman period. In a comparison between the contradicting descriptions of the *Germani* of Tacitus and Caesar, B. Cunliffe is quick to conclude "the Germans were a people undergoing rapid social transformation" (2011: 382). *Germania* has provided a convenient refuge for many researchers who, like this author, have been more occupied with typologies and chronologies than archaeological theory. There are, however, many reasons to be extremely hesitant towards such an approach and even disregard *Germania* as a source for both the descriptions of society as well as military organisation and fighting styles, and many warnings have been issued in this respect by historians and archaeologists (for instance, Latouche 1961: 30; Lund 1991; 1993; Günnewig 1998; 2009; Skre 1998: 261; Halsall 2007: 45-57; Iversen 2010b; Burmeister 2020).

1.3.1. The written sources: the geography of the peoples of *Germania*

Both historians and archaeologists have put much effort into identifying the exact areas in which the many barbarian *gentes* or *nationes* of the written classical sources lived. Locating the peoples who lived close to the banks of the great border rivers, the Rhine and the Danube, would seem straightforward: the Romans knew them and gave them names, and many of the peoples apparently remained there for centuries. Although we do not know how and with what names these people identified themselves, and there is also a risk that the repetition of their names is a mere *topos*, a literary convention in classical writing, we can without much hesitation accept their location. Greater problems arise in the areas further away from the Roman borders. Many tribes are mentioned in the written sources as living next to previously mentioned peoples without any indication of the direction, and many names are mentioned by one author but not another. In other cases, the sources do not quite correspond with one another, whilst the literary conventions of others clearly make the written word less reliable.

One example might be the description of the Cimbrians, who caused great problems for the Romans between 113 and 101 BCE when they ravaged areas to the east of the Alps, as well as northern Italy, Gaul and Spain, and won several victories, before meeting their fate against the armies of Catulus and Marius at Vercellae in northern Italy. Especially in Denmark, in both literature and archaeology the Cimbrians have often been associated with Himmerland in northern Jutland (Brøndsted 1940: 66).[7] This is perhaps largely based on Pliny the Elder, who served as a cavalry commander at the mouth of the Rhine in his youth and in 77 CE wrote his *Naturalis Historia*, where in the description of the islands of the northern ocean, he mentions the Cimbrian promontory next to the *Gulf of Codanus* full of islands, one of these being Scandinavia. This promontory could be interpreted as the Jutland peninsula (4.13.96).[8] The location was confirmed some 70 years later by Ptolemy of Alexandria in his *Geography* (2.11.7) and is perhaps supported by the inscriptions on the bronze tablets on the *Monumentum Ancyraneum* in which Emperor Augustus commemorates his own deeds. Here, he tells the world how his fleet had sailed from the mouth of the Rhine towards the east (*ad solis orientis*), where no Roman had been before, and paid a visit to the Cimbrians, the *Charydes,* the *Semnones* and "other Germanic tribes in the same area".[9] However, the expedition did not necessarily go far, and Tacitus states that an attempt to explore the ocean led by Drusus Germanicus was abandoned due to the weather conditions and was not afterwards repeated (*Germania* 34.2). Furthermore, in

6. This can even be observed in the case of G. Halsall (2007), who has a far better grasp of archaeology than most of his colleagues working within late antique history.
7. Literature: novels by 1944 Nobel Prize winner Johannes V. Jensen (1923) *The Long Journey*. II: *The Cimbrians*, and Ebbe Kløvedal Reich (1977): *Fæ og Frænde. Syvenhalv nats fortællinger om vejene til Rom og Danmark* (not in English).
8. The descriptions in chapters 4.13.94-97 are otherwise extremely ambiguous. Pliny is obviously going beyond his own knowledge. See also Grane 2012, for an example of the speculation about this passage.
9. Regarding the *Semnones*, see below.

a passage 4.13.99, Pliny mentions the *Cimbri* as belonging to the race of the *Ingvaeones*, along with the *Teutoni* and *Chauci*. In Tacitus, the latter are located somewhere near the *Frisi* and the *Chatti*, and the *Chatti*, like the Frisians, lived on the banks of the Rhine (*Germania* 35.1 and 32). Another Greek, Strabo, who in the first decades of the 1st century CE wrote his *Geographiká*, mentions the homelands of the Cimbrians twice. The first description is unclear, although the Cimbrians are mentioned amongst a number of poor Germanic peoples in a geographical setting involving the Elbe and the Rhine, as well as other rivers identified as the German rivers Ems, Weser, Lippe and Saale (Geographiká 1.3.24-33; A.A. Lund 1993: 210). Later, the description is much clearer: the Cimbrians live near the ocean between the Rhine and the Elbe rivers (7.2.4.; A.A. Lund 1993: 214). Pomponius Mela is the next to mention the Cimbrians. His *De Chorographia*, written in the early 40s CE, may be influenced by Strabo, although he adds details not mentioned by Strabo: the Cimbrians live around a bay next to where a line of islands creates a strait of water between land and ocean. These islands could be interpreted as the West Frisian Islands (3.31-32; A.A. Lund 1993: 220). Finally, Tacitus suggests that the Cimbrians live somewhere along this coastline, perhaps not far from the Rhine, as he mentions fortifications on both sides of the Rhine belonging to a past, when the Cimbrians were much more powerful (*Germania* 37.1; A.A. Lund 1993: 268). The descriptions of Tacitus and Strabo of the Cimbrians as a small and poor tribe living near the Rhine may be derived from Caesar, who describes the tribe of the *Aduatuci* as "descendants of the Cimbri and Teutones, who, in their march to our province in Italy, had left on the west bank of the Rhine cattle and baggage they could not drive or carry with them, together with six thousand of their own people to guard it. After the destruction of the main body of the Cimbri and Teutones, these six thousand struggled for many years with neighbouring tribes" (Gallic Wars II.29).[10]

One could decide to trust Pliny the Elder, who after all was the only one of the writers who had actually been *near* and probably also *in* the barbarian areas quite close to where Strabo, Pomponius Mela and Tacitus claimed the Cimbrians lived. Caesar's account could be interpreted as propaganda, which added prestige from a great adversary to his own endeavours in Gaul, thus reducing the credibility of those who repeated his description. However, one could also choose to believe that at the time when Pliny was in *Germania*, the Cimbrians were already extinct or had been absorbed, and that Pliny could not identify their area and decided to locate it at the fringes of the known world. A third possibility is that the Cimbrians had already been extinct for a long time and that none of the writers knew exactly where they had come from.

Other examples are the descriptions of the Vandals, Burgundians and the Gutones. The Vandals are often associated with the Polish Przeworsk culture (for example, Kossina 1912; Kostrzewski 1919;[11] Tackenberg 1925; Pescheck 1939; Leiber 2003; Cunliffe 2011: 399; Nowakowski 2020[12]; Kontny 2023). However, the reasons for this assumption seem extremely debatable.[13] The Vandals, or rather the *Vandilios,* are mentioned by Tacitus, as one of several names of peoples that may once have existed (*Germania* 2.2). In other words, he has heard the name, but knows nothing about them. Pliny, on the other hand, names the *Vandili* as one of five races, which include the tribes of the *Burgodiones*, *Varinnae*, *Charini* and *Gutones* (Natural History 4.13.99). The *Gutones* are mentioned by Tacitus as the second of three tribes living as neighbours beyond an unbroken mountain range, perhaps the Giant Mountains of Bohemia and Silesia, whilst he mentions the *Lugii* first, as the tribe occupying most land, apparently followed by the *Gutones* and then by the *Rugii* and the *Lemovii*, who both lived by the Ocean, but also mentions the *Harios*, *Helveconas*, *Manimos*, *Helisios* and the *Nahanarvalos*, as amongst the tribes that live beyond that mountain range (*Germania* 43-44). On this basis, the *Gutones* did not live beside the Ocean and if they

10. The Cimbrians are not heard of again until they reappear as the *Cimbriani* on two 4th century tombstones of soldiers in Luceria, southern Italy, and a tombstone in Sitifis, North Africa, as well as in the *Notitia Dignitatum*, a unit name stationed under the command of the *comes Africae* and a palatial unit under the *magister militum* in Italy in the late western Roman army (Scharf 2001). These units should not be interpreted as consisting of barbarian recruits named after their tribal names, but like other unit names of past tribes (the *Medii*, the *Celtae*, the *Latini* and the *Sabini*), as appropriating the strength and ferocity of the names of these mythical and formidable opponents (Halsall 2007: 107-108).
11. Kostrzewski later favoured the Slavs as being one of the original peoples of Poland (1965; Martens 1994a: 60), but in recent years there has been a marked return to the theory that the Vandals were the tribe responsible for the Przeworsk culture.
12. Nowakowski admittedly lacks the definite proof, but is tempted to identify the entire ("gesamten") Przeworsk culture with the Vandals (2020: 475).
13. See also Martens 1994a, who thinks that the mythical Vandils and the Vandals dwelling north of the Roman border in the late 2nd century are not the same. He also provides a critique of another theory, mainly based on ethymology, that the Vandals originally came from Vendsyssel in North Jutland.

can be associated with the Goths, these people cannot be identified with the Wielbark culture of Pomerania.[14] Strabo writes that the *Gutones* were one of a number of tribes, including the *Semnones*, who were subjects of the Marcomannic king Marbod (A.A. Lund 1993: 210; *Geographiká* 1.3.12-16). It might be inferred from this, that the *Gutones* did not live too far away from this Bohemian kingdom. We can also conclude from Tacitus that many tribes lived in the area beyond the mountain range, an area which can be identified as present-day Poland. But what about the Vandals? In early sources they are only mentioned by Tacitus and Pliny, and the latter loosely associates them with the *Gutones*. The connection with modern-day Poland has been attempted in two ways. Firstly, this has involved replacing the *Lugi* tribe name mentioned by Tacitus. Some support for this can be found with the historian Wolfram, although in the sources that I have read, I cannot find any compelling reason to do so (Wolfram 1997: 42). Secondly, it has involved referring to the *Silingii,* who are associated with the Vandals in later sources and the Burgundians mentioned in connection with the Vandals by Pliny. The *Silingii* are mentioned by Ptolemy as living below the *Semnones*, and he also mentions the *Lugi Omani* as living to the south of the *Burguntas* and the *Lugi Diduni* to the south of them at the foot of the *Mt. Asciburgius.* This mountain is possibly also situated in the Giant Mountains. The *Semnones*, as previously stated, were described by Strabo as a tribe subject to King Marbod in the early 1st century CE. Tacitus mentions them as a tribe under the *Suevii*, who occupy most of *Germania* (Germania 38.1), and Strabo describes this area as being between the Rhine and the Elbe, and in terms of the Longobardian and Hermundurian branch of the *Suevii*, even beyond the Elbe (Geograpiká 3.1; A.A. Lund 1993: 210). Based on this evidence, it is perhaps more likely that the *Silingii* lived in southeastern Germany or perhaps Slovakia, or possibly even further to the southeast, in approximately the same area where we hear about the Vandals in the mid-late 3rd century CE, and where we also find them until they crossed the Danube in 406/407.

These discussions should suffice to emphasise how impossible and futile it is to link the tribal names of the classical sources to exact locations and even associate them with specific archaeological assemblages. The writers of classical antiquity only had very limited knowledge of the geography and demography of the barbarian hinterlands. Numerous names of tribes are mentioned by all authors; some are new and some are omitted, but the authors probably only knew a fraction of these, and how and why would they have known about them all? Many names may even have been invented to fill in the gaps. The cartographer Ptolemy was apparently precise, but that was because he had to be. He had to place the tribes somewhere.

There is also a tendency for the sources to supplement one another, both in naming new tribes and locating tribes that previous sources had not been precise about. The literary conventions of classical literature may also play a part. Firstly, the descriptions of tribes become more and more barbarian, the further away from Rome they lived. This is, for instance, illustrated by the description of the *Fenni* by Tacitus, who are poor and wild, without weapons, horses or homes, and who eat wild plants and sleep on the ground (Tacitus *Germania:* 46.3; Halsall 2007: 50; Günnewig 2009: 33). Pliny describes other tribes as even worse: the *Hippopodes* beyond the Ocean, who are born with horse's hooves, or the *Phanesii*, who use their huge ears to heat and cover their naked bodies (Pliny *Natural History* 4.13.96), and the *Blemmyes* in Africa, who have no heads but eyes and a mouth in the middle of their chests (*Natural History* 5.8.46; Halsall 2007: 52). Secondly, are the literary conventions of antiquity also responsible for the significant amounts of corresponding information we *do* find between the writers? After all, the texts were not written to provide information. They were not especially products of actual experience, but were instead written and read for amusement (Günnewig 1998: 116-120).

For these reasons, the forthcoming survey of the material culture in the weapon graves of Central and Northern Europe will only involve very restricted use of references to the tribes of classical writings and no material culture will be attributed to any of them.

1.3.2. The written sources: military and society

Germania consists of a number of incoherent descriptions of customs and peculiarities that apparently cover as many Germanic tribes as possible, to create the illusion that Tacitus knew much more about the subject than was probably the case. Some of the more coherent descriptions, however, seem to be more general, and are amongst the most influential of Tacitus' writings: his descriptions of the social structure and political system, as well as the Germanic style of fighting. I will address these subjects in more detail in the following.

14. G. Halsall (2007:51-52, note 54) points out that ancient writers did not use the term *Gutones* when writing about the 3rd century Goths, as might be expected according to the literary convention, but either Scythians or *Getae*.

As mentioned above, others have previously warned against relying upon Tacitus' descriptions of Germanic social structure. A.A. Lund states as follows (1993: 56):

"When, for instance, Tacitus in *Germania* describes Germanic society, he exclusively uses Roman terminology. If his description of Germanic society is summarised, it can be schematically divided into five hierarchical strata, which from the top down looks like this: *rex/princeps*; *proceres/nobiles*; *ingenui/plebs*; *liberti/libertini*; and *servi*. This picture of Germanic society is hardly reliable as it mirrors the structure of Roman society."[15]

Tacitus' descriptions of the military democracy played a major part in the archaeology of the former DDR (GDR: German Democratic Republic), but have also been regularly quoted in, for example, Scandinavia (Hermann 1982; Kristiansen 1991; Hedeager 1992: 185; von Carnap-Bornheim & Ilkjær 1996; Wikborg 1998; Ejstrud & Jensen 2000; Vandkilde 2006; Storli 2006; Stylegar 2009). A widely used excerpt from Chapter 11 of *Germania* is as problematic as the description of social structure. Political decisions, decisions to wage war and about punishment by death, as well as the election of military leaders, were conducted by an assembly of armed men. Tacitus also tells us that the Germanic armies were organised in units of 100 men, recruited from administrative areas called *pagii* led by *principes* (chapters 6 and 12). These descriptions also have striking parallels in the Roman world, more precisely in the time of the early Republic (Taylor 1966; Lintott 1999). The political system of the Roman Republic was extremely complex and even at the time was considered to be a product of organic growth (Lintott 1999: 27). It consisted of the senate, the tribal committee (*comitia tributa*) and the *concilium plebis*, an assembly with limited influence made up of citizens from the poor classes. The *comitia centuriata*, derived from *centum* (i.e. 100) was, however, the original political organ, created during the late monarchy, and which developed into one of the most important political institutions from the early Republic to the Principate (Forsythe 2011: 24). This assembly elected military commanders, made decisions to wage war, issued important new laws and decided on the death penalties (Taylor 1966: 86; Forsythe 2011: 26).[16] Regarded as an army, the assembly was not allowed within the city and held council at *campus Martius* (Forsythe 2011: 26-27). It was originally composed of 193 centuries, reflecting the organisation of the army in units of 100 men, although this was later reduced to units of 80. The structure was not at all democratic, however, as the upper social stratum, the *equites*, had the majority of votes, despite the fact that they constituted a numerical minority (Forsythe 2011: 29-30).

Even in the way votes were divided up, there is direct transferal from the Republic to the Germanic military assemblies, as described by Tacitus. The six most high-ranking centuries within the class of *equites* were named the *sex suffragia* after the original way of voting by making a noise (Taylor 1966: 2, 85; Lintott 1999: 47). The submission of vote, the *suffragium*, comes from *fragor*, the noise produced by armed men who are in agreement or disagreement, either by shouting or beating their weapons against each other (Ørsted 2006: 162). In Tacitus, there is the exact same description of the Germanic military assembly (Chapter 11):

"Then the king or the chief, according to age, birth, distinction in war or eloquence, is heard, more because he has influence to persuade than because he has power to command. If his sentiments displease them, they reject with murmurs; if they are satisfied, they brandish their spears. The most complimentary form of assent is to express approbation with their weapons."

It should also be added that in the original Roman Republic, before its organisation of the people and landscape into tribes, other organisational divisions were known as *vici* and *pagii* (Lintott 1999: 52). The 1:1 mirroring of the Roman Republic and the Germanic societies of the noble wilderness is described in the literature (for instance, Lund 1991; Günnewig 1998: 155-174; Halsall 2007: 50). Tacitus was basically opposed to the autocratic rule of his time and wished to return to the rule of the Republic. He disguised his political ideals by transferring them to a society of noble savages, who were underdeveloped in the eyes of Roman ethnocentrism, and therefore he could demonstrate the impurity and decadence of contemporary Rome without risk of persecution. For these reasons, I reject the descriptions by Tacitus of the structure of barbarian societies to the north of the Rhine.

But even in the case of the descriptions of military organisation, the way the barbarians fought and were armed in *Germania*, as well as the various, often short, passages describing the military encounters between bar-

15. Translated by Rasmus Birch Iversen.

16. According to Forsythe (2011: 26), there are indications in the written sources of some sort of nomination and ratification of kings involving the senate and *comitia curiata*, an even earlier institution of Roman citizens during the age of kingship.

barians and Romans, there may be reasons to be extremely sceptical. Unfortunately, many archaeologists studying weapon graves have, more or less consciously, used the written sources as a key to understanding the material culture. The written sources are approached in two ways: one which takes the sources at face value and another that involves cherry picking. The former approach, although involving awareness of the concept of *topoi* and a critical approach to some of the written information, is exemplified by W. Adler, who in the fourth chapter of his book on the weapons and the *Germani* of the Lower Elbe (1993) thoroughly analyses what the sources have to say about the weapons of the *Germani*, his fighting style and the status of the warrior in society. In his final chapter, he concludes that the sources are not quite detailed enough to provide a definite answer to the crucial question: is there correspondence between the written records and the archaeology of weapon graves of the Elbian area? (Adler 1993: 234-255; 256-263). Less ambitious publications involving a similar approach include A. Leube (1983), D. Kaldal Mikkelsen (1990) and M. Watt (2003).

The cherry picking approach is well illustrated by Polish archaeologist B. Kontny (2008a), who selects examples from the records of classical antiquity at will to support the interpretation of archaeology (see further below, Chapter 1.6). Both approaches inevitably reach the same conclusions, confirming the view from the written record that barbarian warfare was primitive and disorganised. The most commonly quoted passage is Chapter 6 in *Germania*, which is as follows (translation by A.J. Church & W.J. Brodribb):

"Even iron is not plentiful with them, as we infer from the character of their weapons. But few use swords or long lances. They carry a spear (*framea* is their name for it), with a narrow and short head, but so sharp and easy to wield that the same weapon serves, according to circumstances, for close or distant conflict. As for the horse-soldier, he is satisfied with a shield and spear; the foot-soldiers also scatter showers of missiles, each man having several and hurling them to an immense distance, and being naked and lightly clad with a little cloak. There is no display about their equipment: their shields alone are marked with very choice colours. A few only have corslets, and just one or two here and there a metal or leathern helmet. Their horses are remarkable neither for beauty nor for fleetness. Nor are they taught various evolutions after our fashion, but are driven straight forward, or so as to make one wheel to the right in such a compact body that none is left behind another. On the whole, one would say that their chief strength is in their infantry, which fights along with the cavalry; admirably adapted to the action of the latter is the swiftness of certain foot-soldiers, who are picked from the entire youth of their country, and stationed in the front of the line. Their number is fixed, – a hundred men from each canton (*pagis*), and from this they take their name among their countrymen, so that what was originally a mere number has now become a title of distinction. Their line of battle is drawn up in a wedge-like formation (*acies per cuneos componitur*). To give ground, provided you return to the attack, is considered prudence rather than cowardice. The bodies of their slain they carry off even in indecisive engagements. To abandon your shield is the basest of crimes; nor may a man thus disgraced be present at the sacred rites, or enter their council; many, indeed, after escaping from battle, have ended their infamy with the halter."

It is generally agreed that the reference to a shortage of iron is a *topos*, which can also be found in Greek ethnography (Günnewig 2009: 33). It appears again in a short passage in the *Annales*, in which Germanicus is giving his army a pep talk before an encounter with the *Germani* (II.14):

"For the huge shields and unwieldly lances of the barbarians cannot, amid trunks of trees and brushwood that springs from the ground, be so well managed as our javelins and swords and close-fitting armour. Shower your blows thickly, strike at the face with your sword's points. The German has neither cuirass nor helmet; even his shield is not strengthened with leather or steel, but is of osiers woven together or of thin and painted board. If their first line is armed with spears, the rest have only weapons hardened by fire or very short."[17]

Both B. Kontny and W. Adler seem to agree that the reference to the wedge-like formation, the *cuneus* or boar's head, perhaps the *svinefylking* known from the Viking Age, is an exaggeration. Adler notes that the *cuneus* is mentioned in several occurrences in *Historia*, all related to the rebellion of the *Batavi*. It is therefore likely that

17. The passage on wicker shields and fire-hardened spears is used differently by Adler and Kontny. It is dismissed by the former (Adler 1993: 245) but used by the latter to explain why certain weapons of iron are sometimes not present in graves (Kontny 2008: 122).

the *cuneus* was taught to the *Batavi* when they served in the Roman army (Adler 1993: 249-250). Kontny interprets the *cuneus* as resulting from a lack of discipline; an unintended consequence of the chief rushing towards the enemy with his followers trying to keep up with him in a competition of bravery (Kontny 2008a: 132).[18] However, the courage, lack of discipline and size of the *Germani*, as well as their strength, but lack of stamina, and inability to endure pain or abide to laws, are all *topoi*, based upon theories of the balance of the elements of nature, and variations of these human attributes are attributed to all barbarians in classical literature (A.A. Lund 1993: 63-78).

The elements of moralising in the description of the noble wilderness and the idealisation of the Roman past are also found in descriptions of military training and warfare. The description of the arming of young people who reach maturity, the notion of birthright and accomplishments of ancestors as a positive attribute and competition of the youths to reach the top in Chapter 13 seem like ideals from a Republican past. Even the reference to numerous missiles of the infantry, compared to the shield and *framea* of the cavalry (and other infantry soldiers), could be interpreted as such, if these *pedites* were the young men positioned in the frontline at the beginning of a battle, as the following description could imply (*Germania* Chapter 6.1 and 6.3). Such an interpretation would be reminiscent of the *peltasts* of ancient Greece and the *velites* of the army of the Roman Republic. Both are described as lightly armed, with short missiles and shields made of wicker (Warry 1980: 50; 111-113; Sage 2008: 87-92).[19] Even the peculiar description of the symbiotic fighting style between infantry and cavalry in Caesars *Gallic Wars* (48.4), which is repeated in Tacitus, *Germania*, Chapter 6, could be inspired by a description of a tactic used by the Roman army to defeat the Campanians during the Second Punic war in 211 BCE (Livy 26.4.3-10; Sage 2008: 89-90).

Finally, the descriptions of numbers may be incorrect and biased. This is due to propagandistic exaggeration of the sizes of enemy armies (Halsall 2003: 119ff.; 2007: 144ff.) as well as *topos*. Tacitus describes the *Semnones* as being a fraction of the size of the *Suevi* army. They live in 100 *pagi*, which means that they could muster an army of 10,000 warriors (*Germania* 39.1 and 39.3). This is, however, derived from Caesar, who described the whole tribe of the *gens Sueborum,* who lived in a hundred *pagi* and were by far the strongest and most warlike of the Germanic tribes (Caesar, Gallic Wars, 4.1.3-4, A.A. Lund 1993: 180). The enormity of the task of conquest was, it seems, further exaggerated by Tacitus, perhaps in the light of the failure of this being accomplished.

In late antiquity, the Holy Scriptures become a new literary source. The size of the retinue of the Frankish king Clovis has often been assumed to be 3,000 men, based on the description of his baptism in CE 508. However, this is a derived from the Bible, adding a divine element to the baptism of the king by quoting from the baptism of Christ: "Those who accepted his message were baptised, and about three thousand were added to their number that day." (Acts of the Apostles 2:41; Halsall 2003: 121). Due to their recent baptism, the Burgundians were able to crush 10,000 Huns with a force of only 3,000 in 430 CE.[20] Apart from this new literary source, the description of the barbarian remained unchanged for centuries, despite an increasing number of encounters (Halsall 2007: 50; Günnewig 2009: 34).

These were just a few examples which show that the written sources of classical antiquity cannot be trusted to provide knowledge of the barbarian world, without extensive source-critical considerations. Peeling off these layers leave us with very little information of a general kind which can be confirmed by archaeological investigation: the barbarians used spears and shields, most of were on foot and they used extremely small horses. However, were they undisciplined marauders and did they really remain so?

1.4. Gladiator: civilisation against the barbarian

The opening scene of the Hollywood film *Gladiator* directed by Ridley Scott from 2000 typifies the understanding of the difference between Roman and barbarian armies, as it has been perceived since the writings of classical antiquity and is still common amongst many contemporary historians and archaeologists.

18. This is described as courage with reference to Tacitus (*Germania* 14.1); although I cannot resist making reference to the 19th century French military concept: an irrational act of fear among undisciplined troops, known as the "flight to the front" (Halsall (2003: 196). A similar description is found in Polybius (History 2.30) of the Battle of Telamon between the cisalpine Gauls and the Romans in 225 BCE: "some of them in the extremity of their distress and helplessness, threw themselves with desperate courage and reckless violence upon the enemy, and thus met a voluntary death."
19. The round shields of the *velites* are referred to as *parma* by both Livy and Polybius (Sage 2008: 90; 91).
20. "[…] for the Burgundians were altogether but three thousand men, and they destroyed no less than ten thousand of the enemy" (Socrates Scholatius, *Historia ecclesiastica* VII.30).

The scene is set in the middle of the period which is examined in this publication, in the year 180, at the end of the Marcomannic wars. Two worlds are colliding: civilization and barbarianism. On an open, deforested plain within the forests of *Germania* we see a Roman army organised for battle and in perfect order; commands are shouted out and obeyed by highly disciplined legionaries who are uniformly clad in their 1st century armour, *lorica segmentata*, which is immediately identifiable as Roman. Catapults and *ballistae* are lined up ready to create shock amongst the enemy. This is a professional war machine that is prepared for battle. Out of the woods come the benighted, who are about to learn their lesson. A disorganised horde of barbarians with their leader, a bearded roaring brute clad in bearskin, step out into the open. The warriors are armed with all sorts of weapons, including swords and axes; only a few have spears and shields, some are round, some rhombic, and at least one is a Roman *scutum*. Heads on stakes attest to their level of barbarianism. They are unaware of their imminent fate and thus fearless. The battle is short and brutal and the outcome is obvious: a devastating Roman victory (fig. 1.3).

The outcome of the Marcomannic wars (CE 166-180) was indeed a Roman victory, as were most large-scale encounters between Romans and barbarians after the early Roman disaster in the Teutoburg Forest in CE 9 until the equally catastrophic defeat at Adrianopolis in CE 378. Throughout this time, Roman historians did not change their attitude towards the barbarians. They were repeatedly described as savages, strong but without stamina, brave but stupid, unable to organise themselves and unable to abide by the laws and regulations of a civilised society. Yet the western Roman Empire did collapse, and amongst a multitude of reasons for such a collapse of a society that was still regarded as a lighthouse of modern civilisation, was the pressure from barbarian invaders and an increasing barbarisation of the Roman army, which eventually led to the establishment of barbarian kingdoms through invasions and military takeovers of barbarised, regional Roman armies. The dichotomy between barbarianism and civilisation so vividly portrayed in *Gladiator* is a link between classical ethnography and present-day disasters in asymmetrical conflicts. It supports a narrative that prohibits answering the question of how dominance and power could be pass from mighty Rome into the hands of tribal societies that were at a much lower level? This narrative is still dominant amongst historians and many archaeologists who are still heavily influenced by the written classical sources.

1.5. Graves as a source of history and social organisation

The widespread perception of the written sources as a key to understanding barbarian societies has also led to reconstructions of barbarian societies being combined with the evidence from the burial record. One of the most obvious, relatively recent attempts to apply the Roman social structure from Tacitus to archaeology can be found in analyses of graves from the Late Roman Period in eastern Zealand (Ethelberg 2000; 2009; 2011; 2014; Boye et al. 2009). East Zealand, especially in the 3rd century CE, is characterised by many wealthy graves containing Roman copper alloy kitchenware and tableware, and glass, as well as presumably locally manufactured gold rings and fine

Fig. 1.3. Still from the Hollywood film Gladiator. The barbarians face civilisation.

jewellery, although weapons and artefacts made from iron are rare. The richest and most important site is the cemetery of Himlingøje on the Stevns promontory. This was supposedly the burial ground of kings in an early archaic state that ruled Zealand, but which controlled all Roman imports that came to Scandinavia, keeping some of the goods and redistributing others to allies all over the region (U.L. Hansen 1987; 1995). Some have even claimed that the kings at Himlingøje were allies of or even installed by the Roman Empire and were responsible for the warfare that there is extensive evidence for in the bogs along the east coast of Jutland and on Funen (U.L. Hansen 1995; Jørgensen 2001; Storgaard 2001; 2003).

The reconstruction of social structure from burial data is basically an expression of the belief that burials can be understood as an accurate reflection of past lives. This involves the idea that burial goods are the inalienable property of the deceased, as expressed by Reinecke (1925; Härke 2014: 5-6). The burial of the deceased individuals may have been staged, but the dead were interred with the tools to enable them able to cope with afterlife and the journey there, and with sufficient evidence for archaeologists to be able to state who they had been when they were alive. Their burials can be seen as biographies (Solberg 2004).

Such a view is associated with many innate problems. The burial ground at Himlingøje contains less than 50 graves, some of which are very richly furnished, whilst others contain only a few or no items. They supposedly represent the entire social pyramid of society, from kings to slaves, although it can be asked how a burial ground containing less than 50 individuals spanning a hundred years encompasses the entire entourage of kingship, from the royal family, to its retinue and even slaves?[21] Furthermore, the gold snake-headed rings, interpreted as tokens of social rank, were never worn (Andersson 1995: 73). They are most likely produced for the funeral rite alone.[22]

The recognition that far from all members of past societies were interred in a way which has left traces that have survived until today, basically involves the archaeology of absence. If we acknowledge this simple claim, then why would a community decide to bury some of their slaves yet not all members of the elite? In my opinion, most of the individuals that were buried during the Iron Age, or any other age for that matter, were though at different levels, leading or in some other way regarded as important members of their community. We should therefore look for reasons other than social rank in order to explain why some were buried with a display of wealth and others in apparent poverty.

A few examples demonstrating the lack of burial data might be useful. Without excavating adjoining settlement sites, it is sometimes difficult to determine whether a cemetery contains a small family or carefully selected members of a larger community. This is certainly the case on Zealand, where settlement archaeology has not played a major part in archaeological investigations for more than a few decades (Boye 2011). It also applies to most of the areas to the south of Scandinavia that are dealt with in this publication, although the number of settlement excavations has been steadily increasing in Germany for some time (Karlsen 2020; Schuster 2020). In Jutland, however, settlement archaeology has long been the most important element in reconstructing Iron Age societies and huge numbers of excavated sites and syntheses have been published (for instance, Becker 1965; 1968; 1971; Hvass 1979; 1983; 1985; Hansen 1988; Christiansen 1996; Rindel 1999; Ejstrud & Jensen 2000; Ethelberg 2003; Nørbach & Mikkelsen 2003; Webley 2008; Runge 2009; Holst 2010; Laursen & Iversen 2019, Nielsen et al. 2020). Recently, all known graves from the Late Iron Age (150-750 CE) in Central Jutland have been published (Iversen et al. 2021). Although there are more than 700 known graves from the region, and 75 % of the 204 burial sites belong to the Late Roman period, there is still a marked decrease in comparison with the Early Roman period. The cemeteries are small, with only six containing more than 20 graves, and there is only one grave at over 60 % of the sites (Christensen & Hansen 2021).[23] In some cases, cemeteries have been found close to or within contemporary settlements covering several phases, yet the number of graves does not come anywhere near what would be expected for the several hundred inhabitants (Kieldsen & Boddum 2021). The most striking example, however, is found outside the region, in South Jutland, at the famous Early Iron Age-Viking Age settlement at Vorbasse, still the largest known settlement site in Denmark covering 200,000 m^2 and several phases with up to 20 contemporary farmsteads. Despite the extensive settlements over a time span of 1,000 years, only four small

21. A similar approach was adopted in relation to the nine burials at the richly-furnished 3rd century burial site at Häven in Mecklenburg (Schach-Dörges 1960: 242). See Burmeister (2009: 49-50), for critique.
22. The same conclusion has been reached about the gold jewellery in the richly-furnished grave from Gommern, Saxony-Anhalt (Becker 2001: 132; Burmeister 2009: 53).
23. The proportion of sites with just one grave has been decreasing since the law regarding mandatory trial excavation and excavation was passed in 2001.

cemeteries, comprising a total of 28 graves, all from the late mid-3rd-early 4th century, have been uncovered.[24]

On Öland, a long, narrow island in the Baltic Sea, both settlements and burials are known and many can still be seen today, consisting of farmsteads with stone walls and fences, as well as cemeteries along the tracks, constructed of or marked by stone slabs (Stenberger 1933; Fallgren 2006). Here, the imbalance between burials and buildings is evident. The population around 500 CE is estimated at 15,000, but only 39 graves are present during the 150 years known as the Migration period (Herschend 2009: 33).

When archaeologists have long insisted on interpreting burials and grave goods as the remains of individuals and their personal belongings, in a direct expression of the individual's social standing in past societies, there are more reasons for this than just the mirroring of the written sources.[25] Graves are one of the main sources in archaeology and, in some areas of Europe, the most important one. It is in death that the individual is segregated from society and becomes visible to the archaeologist, and to abandon a straightforward mode of interpretation and replace it with something more abstract and illusive is probably unthinkable to some. But the idea of individuality is a Christian concept and, as opposed to community and sense of community, also a modern one (Maier 2013). I would even suggest that the expectation of finding all classes of society buried is paradoxically derived from a Christian mindset. Even though in Christianity burial is in principle egalitarian, contrary to the burial evidence from the Iron Age, it is precisely this egalitarian principle that encourages us to expect that all members of society were buried in the past as well.

As most burial archaeology in Europe during the Roman and Migration periods subscribes to the theory that grave goods are the personal belongings of the deceased, others are inspired by social anthropology's recognition that burial rituals were undertaken by the society that had been left behind by the death of one of its members (for example, Härke 1990; Ekengren 2009; Theuws 2013; van Haperen 2013). The main lesson from anthropological studies of death rituals, that society expresses its values through collective representation, came from Durkheim and was emphasised by Hertz (1960). The key words are renewal, regeneration and the "perpetuation of social cosmic order" (Taylor 2011: 93; Simpson 2018). The symbolism used to restore society after the death of a member would obviously have to maintain some sort of truth in order to be meaningful to the society which undertook the burying, as "the ways humans make sense of death are always deeply entangled with the question of how they live" (Simpson 2018). Although specifically focusing on the concept of founder's graves, some thoughts by F. Theuws can be more broadly applied in the statement that graves "were not manifestations of historical persons but played a part in creating ancestors who had protective or fertility functions" (Theuws 2013: 11). Here, the burial is not an accurate reflection of historical persons, but should instead be understood as a rhetorical strategy, expressing and creating social concepts and more abstract ideas, norms and values. Thus, the burial becomes a representation of the deceased person as society wanted them to be received in the afterlife, but also and perhaps as such, it also becomes a representation of society. Societies buried members that were somehow important to them or at crucial times the deceased were used as mediators between the living and the ancestors. Burials therefore tell us important stories about the societies of the past, but perhaps not so much about individuals.

The study of burials as a ritual phenomenon should thus be undertaken from a more regional or local starting point, considering the differences in living conditions, landscape, economy, building traditions, organisation of settlement structure and other types of ritual activities, which may all be signs of societies with differing organisational structures and/or belief systems. I very deliberately do not include material culture here, as I believe that material culture tends to blur these differences. This publication is about this rather than about ritual.

1.6. Weapon graves as a source of information about barbarian armament and military organisation

In the following, four examples of attempts at reconstructing armament and fighting styles based on combinations of weapons in weapon burials will be discussed (Adler 1993; Kontny 2002; 2008a; Stylegar 2009; Ystgård 2015). Common to all of these is an unconscious

24. There is also a Late Pre-Roman burial site at Vorbasse as well as Early Iron Age settlements in the immediate vicinity, but very little has so far been published about these. There are only a few burial sites in Denmark that may cover several generations of an entire population: Sejlflod, North Jutland (Nielsen 2000); Møllegårdsmarken, Funen (Albrectsen 1973); and Slusegård, Bornholm (Klindt-Jensen 1978).

25. Although Tacitus writes that the dead are buried with their weapons and occasionally their horse, he also clearly states that the funeral rites are modest and without monumental display (*Germania* 27.1). None of these statements can be said to be universally true in the areas that were supposedly inhabited by the *Germani*.

acceptance of Reinecke's theory of grave goods as inalienable property. Finally, the classic example which raises doubts about these cultural-historical explanations, the studies of Anglo-Saxon weapon graves by Heinrich Härke (1990; 1992; 1997), will be summarised.

Bartosz Kontny has presented two works on the Przeworsk culture in central and southern Poland dealing with the Pre-Roman and the Roman period respectively (Kontny 2002; 2008a). His theoretical approach is most clearly explained in the latter: weapon sets "found in burial features" can with some limitations and tentatively "be used to reconstruct the weapon sets used in actual combat…". Some reservations are associated with the process of transformation from living culture to dead culture to unearthed culture as proposed by Eggers (Kontny 2008a: 207; Eggers 1951). In other words, mainly taphonomic processes prevent us from understanding graves as accurate reflections of past individuals. In his explanations, Kontny often refers to Roman written sources and/or the deposits of weapons in bogs from Scandinavia. Metal parts of shields are not present in graves and are only found in 25-49 % of graves from the Pre-Roman period and 52-79 % of those from the Roman period, even though Tacitus states that shields and spearheads were the basic weapons of the *Germani*. This is most likely because many shields were made from organic materials like wood or wicker, and Kontny supports this view using examples from Tacitus (see above) as well as wooden shield bosses in the bog deposits from Hjortspring, Als and Vimose on Funen, and a wicker shield boss from Thorsberg, northern Germany (2002: 60, 61, 62; 2008a: 122, 126, Diagram 12). The presence of wooden spearheads might also explain the slightly lower than expected numbers in graves, with their percentages fluctuating between 92 to 66 % and even to as low as 51 % in the later part of the Late Roman period. The archaeological support for this comes from the bone spearheads from Danish bogs Hjortspring and Krogsbølle (Kontny 2002: 63). The possibility of a *pars pro toto* ritual, as in the cemeteries of Großromstedt and Schkopau in the Middle Elbe region, where incomplete shields or shield rivets alone constitute between 46 and 51 % of the weapon graves, is dismissed as being unlikely. Parallels can only be found at the Zagorzyn cemetery in Małopolskie and Kontny concludes: "I believe that the model of military equipment known from the Przeworsk culture reflects the actual weaponry possessed by the deceased warriors to a greater extent than that from the Großromstedt horizon" (Kontny 2002: 66-67). Evidence supporting the theory of a *pars pro toto* burial ritual is only accepted in the case of swords. In some graves, scabbard fittings are found without swords. The possibility that wooden swords replaced iron swords in the burial ritual is, however, discussed.[26]

Burials containing weapons *can* be interpreted as burials of warriors and the weapons found within them *can* be used to directly reconstruct a barbarian army, at least in the Przeworsk culture. Kontny's description of the Przeworsk armies is one that broadly confirms the classical written sources, as primitive and disorganised bands of warriors with weaponry that was largely determined by the individual warrior (Kontny 2008a: 111).[27] He illustrates this view with a photograph of a group of Polish reenactors with diverse equipment, one holding a stick, in a wild, disorganised charge (Kontny 2008a: fig. 17). Nevertheless, Kontny describes the development of the Przeworsk armies based on combination groups in the Pre-Roman Iron Age (fig. 1.4). In the first phase, A1, warriors equipped with spearheads alone constituted 24.1 % of the army. They may, as mentioned above, have been equipped with wooden or wicker shields, and be added to the 20.7 % equipped with spearheads and shields with iron fittings. 17.2 % of the graves contain swords alone and another 13.8 % a sword and spearhead. These four combinations only account for 75.8 % of the graves; the remainder are distributed within five other combinations, with examples containing only a shield constituting 6.9 % of the graves. In phase A2, a group involving a fifth combination is added to the list of four from the previous phase: sword, spearhead and shield (12.9 %). This and the other four groups make up 89.3 % of the graves (spear 42%, spear and shield 7.5 %, sword 8.6 %, and sword and spear 18.3%). The remaining 10.7 % are found in 10 different combinations. In the final phase of the Przeworsk culture, A3, the percentage of warriors fighting with only a sword has dropped to only 2% and is thus no longer a significant group. In fact, the number of double-edged swords falls from 58.6 % of all weapon graves in A1 to less than 23 %

26. The wooden swords from Vimose and Thorsberg are not mentioned in the discussion (Engelhardt 1863: pl. 9.3; 1869: pl. 6.7; Matešić 2015a 125-126; 2015b: pl. 51). Their function as real weapons is obviously doubtful and would adversely affect the discussion of weapons made from organic materials. Their possible function as dummies for practising or as a victor's sacrifice is discussed by Pauli Jensen (2003: 234) and Coulston (2008: 310-311) respectively. They may also have been used in a reenactment prior to the ritual deposition in the bogs.
27. A late 2nd century spearhead fitted onto a presumed complete, yet very short spear shaft from Vimose measuring only 50 cm is regarded as evidence of an, he admits, unusual variation in the length of spear shafts (2008:115; fig. 5a). The find could, however, be interpreted differently: not as a spear shaft but as a ritually-inserted branch, slightly curved and still with the bark on it, intended as one of many ways to render the sacrificed weapons useless when they were disposed of in the bog.

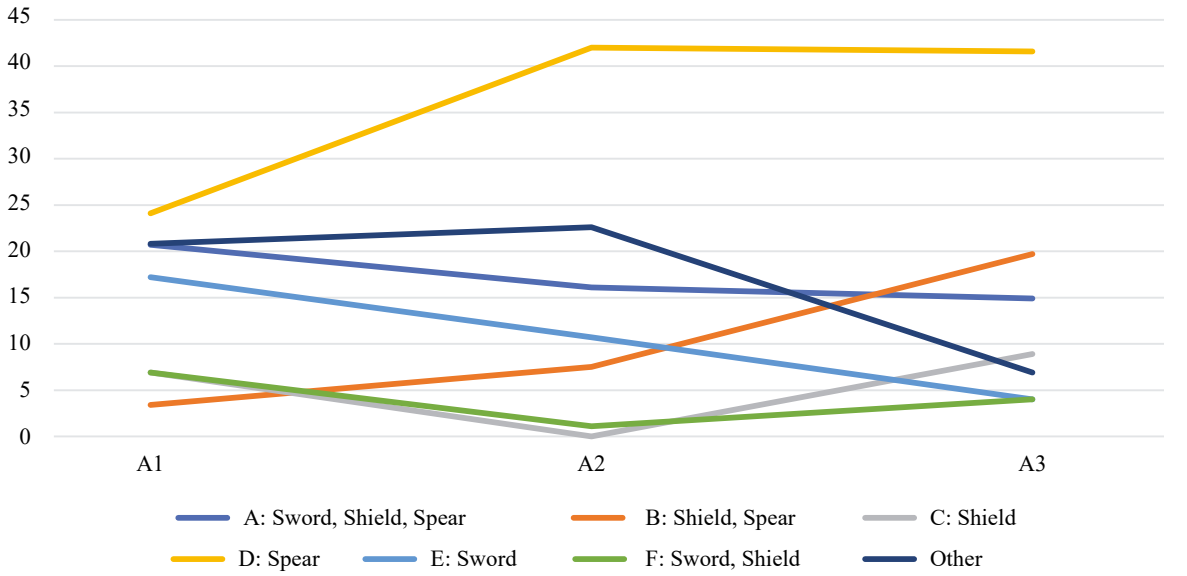

Fig. 1.4. The development of the panoply in the pre-Roman period Przeworsk culture according to B. Kontny (2002).

in phase A3. Only 65.3 % of the weapon combinations are accounted for in his four combination groups (spear 31.7 %, shield 8.9 %, shield and spear 14.8 %, and shield, spear and sword 9.9 %). The remaining 34.7 % are distributed amongst 16 other combinations (Kontny 2002: 61). The singled-edged sword and the javelin (barbed spear) are introduced in phase A2, but with a 6.5 and 1.1 % presence in phase A2 and 5 and 4 % in phase A3 they remain insignificant until the Early Roman period. Instead of the barbed javelin, the percentage of graves with two or more spearheads has increased from just over 3 % in phases A1 and A2 to 16.8 % in phase A3. Kontny sees a significant change in fighting style between phases A2 and A3. This was from an early phase under Celtic influence, in which the sword was the most important weapon, to a 'Germanic' fighting style in which the spearhead and shield were the most essential weapons (Kontny 2002: 67).[28] No combination groups are presented for the study of the Roman period (Kontny 2008a). The documentation shows that the number of graves with more than one polearm steadily increases from 20.8 % in phase A3 to a peak of 70.9 % in phase B2b (late 2nd century), and falls to 24.7 % in Kontny's "late stage of phase C1a-C1b" (early 3rd century) with none after this. Of these, the javelin peaks in phase B2a (early 2nd century), appearing in 27.7 % or more than half of the 52.3 % of graves with two polearms (Kontny 2008a: diagrams 2 and 4). Kontny demonstrates that there is some significance in the difference in length between the first and the second polearm, which supports the notion that the second polearm, irrespective of the presence or absence of barbs, could have been used for throwing. During the Roman period, the single-edged sword declines in importance, from almost 18 % in the early 1st century to then disappearing altogether, and is completely replaced by the double-edged sword at the transition to the Late Roman period. The frequency of spurs fluctuates, although generally in the Roman period it is above 20 % and even almost a third in the early Late Roman period (Kontny 2008a: diagrams 10-11 and 16). Despite generally trusting the burial data, Kontny finds no reason "to assume that the possible increased use of horses resulted in creating cavalry troops following the Roman model", in fact "the horse played a small part in combat and was rarely used in direct encounters" (Kontny 2008a: 131). The description of the Przeworsk army is unreliable, as Kontny skips back and forth between written sources, bog deposits and graves. In the end, the description is static: the armies and the fighting styles of the *Germani* never really developed from their original, disorganised state, as Tacitus remains the key to understanding barbarian warfare over time. Although Kontny admits that the data from the Scandinavian bog finds in the Late Roman period represents highly organised armies, the same level of organisation cannot be found in the Przeworsk culture (Kontny 2008a: 119, 120, 126, 127, 132). In making this claim, Kontny seems unaware that he is comparing completely different phenomena, i.e. bog finds and graves, and that a similar result would be reached by studying any other burial material involving weapons, including Scandinavian graves that contain weapons.

28. Note the ethnic designation long before Caesar referred to the northern barbarians as Germanic.

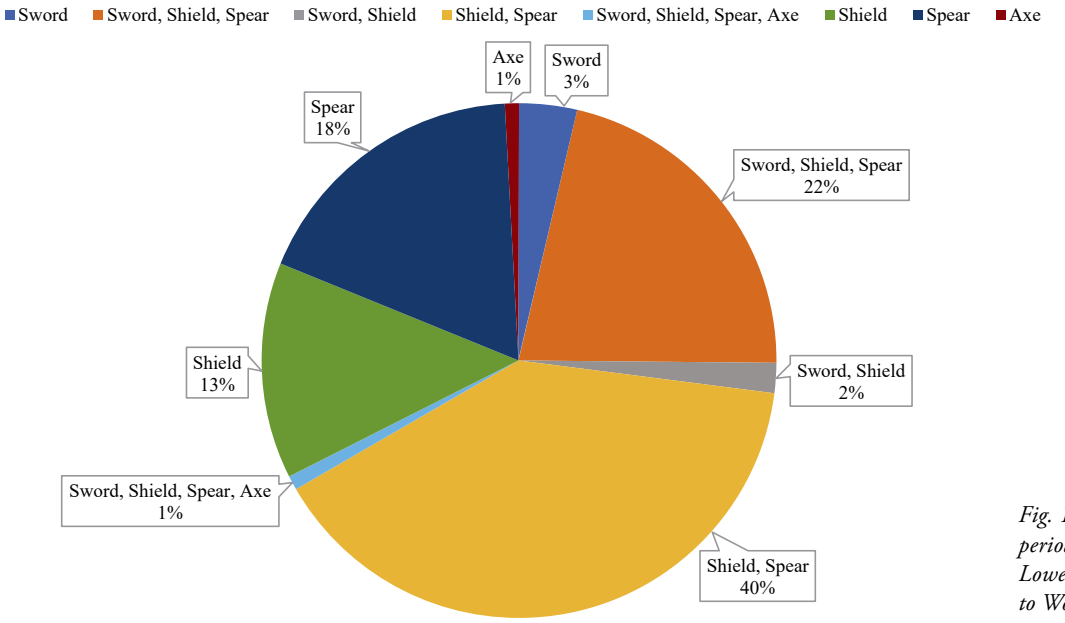

Fig. 1.5. Early Roman period weapon sets in the Lower Elbe region according to Wolfgang Adler.

By simplifying weapon combinations Wolfgang Adler reaches a result in his study of the weapon burials of the Lower Elbe which at first glance seems much more convincing than that of Kontny in relation to the Przeworsk culture (Adler 1993: 140-161). Adler only examines graves containing weapons that he considers to be complete and undisturbed: a total of 110 graves (Adler 1993: 140). No such source-critical condition can be found in Kontny's work. Simplification is achieved by combining some of the weapon types that are regarded as separate by Kontny. Single-edged and double-edged swords are counted as swords; the category spearheads is used for both spearheads and javelins, irrespective of whether they are found as one polearm or in sets of two or more. Spurs are not at first regarded as a variable in the combination groups. In this way, Adler ends up with only eight combination groups, which is considerably less than the 9 to 19 groups identified by Kontny during the Pre-Roman Iron Age in the Przeworsk culture. Furthermore, four groups are not well represented and should be considered insignificant or, for taphonomic reasons, to belong to one of the larger groups. The latter also applies to two of the largest groups: the 13 % graves containing only a shield boss and the 18 % graves with only a spearhead (fig. 1.5). Like Kontny, Adler interprets these graves as originally containing spears or shield bosses of organic material. They thus belong to the group of 40 % graves with a standardised weapon set, 'Regelbewaffnung', consisting of one or more spearheads/and or a javelin and a shield. Between two thirds and three quarters of the army were armed like this, the remainder with a full weapon set, 'Vollbewaffnung', one or more spearheads and/or javelins, a shield and sword. Adler even considers the "painful" possibility that the large number of graves at the male burial sites within the Lower Elbe area without weapons could have been completely furnished with weapons of organic material (Adler 1993: 157-158).[29]

When viewed over time, the variation of the weapon groups is relatively static and small fluctuations must be regarded as statistically insignificant. This could support Adler's interpretation of two panoplies in the Early Roman period armies of the Lower Elbe area (fig. 1.6).[30]

29. This line of thought could be followed to an absurd degree, even in relation to the question of when the weapon burial rite began as well as the widespread use of weapons made of organic materials in areas with no apparent weapon graves.
30. The three phases ("Zeitstufen") in Adler's chronology are described on pages 106-126 and summarised on page 126. His Phase 1 corresponds to late A3 and early B1 in the conventional relative chronology, Phase 2 to a developed B1 and Phase 3 to B2 and early C1. The phases are, in other words, not of equal length, with Phase 1 and 2 lasting three-four decades each, whilst Phase 3 lasts for a hundred years or more. However, the number of graves attributed to each phase of the 110 well-preserved graves used in this part of the study is almost the same. This would indicate that around two thirds of the graves can be dated to within the first 75 years and only a third to the last hundred years or so. But this is not consistent with the statistics based on the chronology presented below (Chapter 2.9.2), and since the weapon combinations are static, it cannot be explained by the fact that this chronology is based on well-equipped graves. It must either mean that there is something wrong with Adler's dates or that more graves dated to the late period of the Lower Elbe cemeteries are less well preserved and therefore not included in his study.

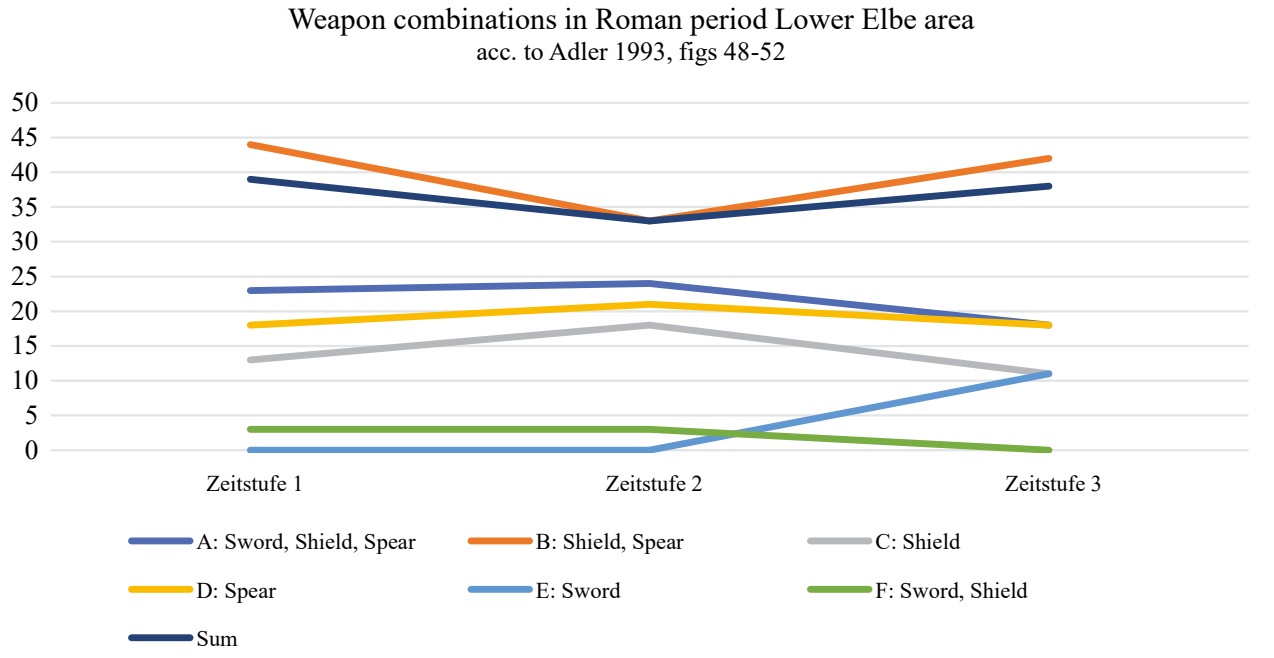

Fig. 1.6. The fluctuations in weapon sets over time are minor and statistically insignificant. Numbers are given in percentages. All graves dated by Adler to phases 1-2 and 2/3 (fig. 48; 50; 51-52) have been recorded within phase 2.

The simple split between standardised and full weapon sets is now complicated by adding spurs and wealth to the equation (Adler 1993: 156-161). This results in four groups with full weapon sets and three with standardised weapons. The following tendency is however clear: all weapon graves containing spurs are interpreted as moderately well-off or rich individuals based on their grave goods, whereas those belonging to the infantry are poor or moderately well-off, but never rich. All groups are interpreted as fighting units. Adler then proceeds to describe some tendencies in the development of armament during his three stages (Adler 1993: 187-193). At the beginning of the Common Era, in Phase 1, the mounted warrior was typically equipped with a spearhead for thrusting, in other words a lance, and a long double-edged sword of La Tène-type for slashing. The infantry with full weapon sets were, on the other hand, equipped with single-edged swords for hacking, and none of them possessed spearheads small enough to be interpreted as spears for throwing, although such spears could have been made of organic materials (*ibid*.: p. 188). The infantry with spear and shield is normally equipped with only one spearhead, which is usually small, but because they are present as single objects, they were probably not for throwing, but again spears for throwing may have been made of organic materials.[31]

A few decades later, in Phase 2, there are a number of changes in the technology of warfare. The large thrusting spear has disappeared as well as the long, double-edged sword. The single-edged sword is now relatively rare, and both infantry and cavalry with full weapon sets are now more often equipped with short, double-edged swords of the *gladius* type, even though they must not have been especially effective as a slashing weapon when on horseback. Nevertheless, none of the weapon groups involve armament with two or more polearms. These small changes probably did not alter the way of fighting in the Lower Elbe region. More significant changes can be observed during the 2nd century CE, in Phase 3, when there is a clear tendency towards equipment involving two polearms, either in the form of two spearheads or a spearhead and a javelin, or more, both amongst infantry and cavalry. The long spearhead is reintroduced, mainly amongst the cavalry, whilst the sword is sometimes absent. Those armed with a standardised weapon set are divided into the following three groups: cavalry with a set of spears or just one spearhead, infantry with one double purpose spearhead (medium length) and infantry with a set of spears (heavy and light spear or heavy spear and javelin). According to Adler, there is a development towards a greater emphasis on missiles in the 2nd century CE.

31. On p. 189, Adler considers the possibility that missiles were not used as grave goods because they were not personal weapons.

Although some tendencies may be associated with the division of the weapon graves between those containing swords and those without swords, I have two major objections to this study. My main concern is that variations in weapons and other furnishings are purely social or influenced by changing rules of grave furnishing, rather than mirroring changes in fighting styles and military organisation. In some cases or at certain times, a spearhead may possibly represent a full weapon set. It would have been more convincing if Adler (and Kontny, for that matter) could have demonstrated a connection between weapon sets or types of weapons and age groups, like the famous studies by Roy Larick of spearheads and age groups in East Africa (Larick 1986; 1991). Age is briefly discussed by Adler (1993: 156-156) with reference to studies of the relationship between spurs and maturity (Aner 1971; Gebühr & Kunow 1976; Kunst 1978), although he also refers to T. Weski (1982: 91-92) criticising the statistical value of the data and J. Wahl (1982) regarding the uncertainties of age and sex determination of cremated bone.

My second objection concerns the number of units involved in Adler's study. Although there are fewer groups with different panoplies than those identified by Kontny, Adler still proposes an army that would have been difficult to employ in an organised manner. Thus, the chaotic and disorganised fighting that was suggested as being associated with the Przeworsk culture by Kontny, may have unintentionally resulted in Adler's rigid interpretation of the graves.

Ingrid Ystgård's analysis of graves containing weapons in central Norway is the only example without any references to Tacitus (Ystgård 2015). Ystgård's aim is to reconstruct changes in fighting styles by analysing the contents of weapon graves from the Early Roman period to the Migration period. Her main observations are that the Early Roman period is characterised by defensive weapons (shields in 86 % of the graves), which then decrease throughout the subsequent periods (48 % in the Late Roman period and 23 % in the Migration period). Within the same time span, between the Early Roman period and the Late Roman/Migration period, there is an increase, from 40 to 60 %, in the percentage of distance weapons (javelins and arrows). This development is seen as reflecting the conduct of warfare turning into open, pitched battle (Ystgård 2015: 89). The introduction of arrows and axes in the Migration period is interpreted as evidence of increased specialisation of the warrior role as well as fragmentation of standardised and organised warfare. Her dataset is small, however, and only consists of 45 burials which are divided into six phases.[32] Furthermore, the decrease in the number of shields is not what would be expected from a change to warfare in pitched battles conducted by organised armies. The introduction of arrows and axes in burials of the Migration period could also be understood in a more symbolic way, as accentuating an aristocratic ideal, and not necessarily as representing the warrior's equipment in warfare, but rather the range of weapons that an aristocrat was expected to master.[33] Ystgård is aware of and agrees with the post-processual view, that social and religious practices determined the form of burials and the artefacts that were placed in them, and her view that the frequency of weapon graves has little to do with warfare accords with Härke (1997) and Näsman (1994). Yet she states that both the shape of weapons and the combination of these in graves are functional. In most cases, the former is probably true, but at least one of her 19 combinations, a shield as the only weapon found in two graves, would indicate that the latter is not always the case (Ystgård 2015: 92-93; fig. 8.16).

The second of the two studies of Norwegian weapon graves, by Frans Arne Stylegar (2009), is not an attempt to observe changes in fighting over time. It instead compares the furnishings of weapon graves in Southeast Norway with the structure of armies suggested by the study of bog sacrifices of weapons in Jutland, especially Illerup Ådal, but also Ejsbøl (see the discussion of bog finds below). Surprisingly, Stylegar believes there is agreement between these two archaeological groups of finds and the well-known descriptions of military organisation and armament in *Germania* by Tacitus. Unfortunately, his conclusions are based upon misunderstandings, contradictions and a lack of consideration of source-critical aspects.

The army of Illerup Ådal, Site A, can be divided into three hierarchical levels, primarily based on the quality and material of the shield bosses and secondarily on belt-related objects, swords, equestrian equipment and other items. Stylegar identifies the same three levels in the grave material from Southeast Norway. This is not something new, as these levels have also been demonstrated by J. Ilkjær (1997; 2001c; 2001e). Stylegar's Norwegian army thus firstly consists of a top level, referred to as *principes*. The secondary level is made up officers or retinue (*opti-*

32. For example, her 86 % Early Roman period graves equipped with shield bosses constitute 6 out of 7 graves.

33. Fine examples of this aristocratic ideal from the Scandinavian Migration period could be the Norwegian graves from Skåra, Holmegård, Snartemo, Hodneland, Kvåle, Nerhus, Raknes, Rongve, Kvamme and Veiem (Bemmann & Hahne 1994: cat. nos 166; 195; 199-200; 266; 269; 278; 283; 284; 318; and 407), or the grave from Högom in Medelpad, northern Sweden (Ramqvist 1992). All contain full weapon sets (sword, spear, javelin, shield, axe and arrows) and many of them display wealth, for instance, in the form of gold, glass, copper alloy cauldrons and/or belt equipment.

mates), who are armed with either a) full weapon sets and spurs or b) full weapon sets without spurs. The third level, referred to as soldiers or *pedites*, are divided into three groups. They are equipped with: a) spear or javelin (and sometimes a shield); b) sword, spear and javelin (and sometimes a shield, i.e. a full weapon set); and c) spear and javelin (and sometimes a shield).

The first misunderstanding is, in my opinion, due to directly transferring the interpretation of graves to the bog deposits, as well as an interpretation of weapon graves that is influenced by post-processualism,[34] whilst still insisting that armies can be reconstructed based on finds from graves. This is achieved by reconstructing the army structure from the information from all 150 graves dated to the Late Roman period in Southeast Norway, and thus ignoring the possibility that the organisation of armies could have changed over a period of 250 years. However, the most serious criticism is that Stylegar choses to ignore a source-critical aspect which he actually does mention (*ibid*.: 251). Only a small percentage of the Norwegian weapon graves have been excavated by archaeologists, and the majority have been found by non-professional members of the public and the finds submitted to the museums in Norway, with 70% consisting of single finds without a known context. This criticism can also be directed at Ystgård's study, and the implications can be easily demonstrated by simple statistics (fig. 1.7). Norwegian weapon graves dated to the Late Roman period have been sorted into two groups according to their find circumstances and five chronological groups according to their given date in J. Bemmann & G. Hahne's catalogue (1994: 500-558).[35] Find circumstances consist of A: graves that have been excavated by an archaeologist and B: graves and probable graves that have not excavated by an archaeologist. A third group of weapon finds, in which the find context is uncertain or no association with a grave-like context has been recorded, have been omitted. The weapons in each grave have been sorted into six categories of weapons and counted, the maximum average sum therefore being six.[36] The table demonstrates just how few weapon graves have been properly excavated, a total of 26 (of 123) definite or probable, relatively securely dated graves.

Although many of the graves belonging to category B are likely to contain complete grave furnishings of full weapon sets (maximum score), there is a very clear tendency: graves excavated by archaeologists are generally furnished with more weapons than category B graves. The average number varies, however, perhaps indicating that weapon combinations collected across periods cannot be used to reconstruct armies, either because armies changed or else rituals did. Despite the fact that the statistical basis is unacceptably limited in the Gutteberg (late 2nd century CE) and Vøien (early 4th century CE) groups, the average number of weapons is always higher in excavated graves of group A than those of group B. The conclusion is obvious: artefacts are absent to a much greater degree in group B and we should expect an average of 4.3 and an additional 138 weapons if these two groups were completely comparable. However, they may not be entirely comparable, which is why armies cannot be reconstructed solely based upon securely excavated burials. These may to a greater extent have been selected by archaeologists because of their enticing visible features, such as a large mound or a large stone setting. This obviously may also apply to many excavations conducted by amateurs and treasure hunters, although probably fewer examples from group B, as many finds in this group seem to have been found accidentally. This demonstrates why weapon combinations in Norwegian graves cannot be used to reconstruct the structure and panoplies of Iron Age armies.[37]

The abrupt change in the weapon burial custom along the Elbe River in Germany is also a warning against the interpretation of weapons and grave goods in general as the inalienable property of the deceased individual. As was observed from Adler's study, weapons are commonly found at large cemeteries, probably often only containing a male population. This picture changes completely towards the end of the 2nd century CE. From the 3rd century onwards, weapons are most often found as a single weapon, and arrowheads and axes are common. This undoubtedly reflects some change in fighting styles, but it would be absurd to regard these weapon graves as the remnants of fully-furnished warriors. One example should suffice, although further examples of the new burial custom in the Elbe region are mentioned later on in this publication. At the Wechmar site in Thüringia (Kleemann 2007), only 19 of 272 graves were furnished with weapons. In most cases, only one weapon is present:

34. 249: "Thus, while a male weaponless grave does not rule out the warrior status of the deceased, a grave with weapons is indeed a reflection [of the] military status of the deceased."
35. Where there is uncertainty between two adjacent chronological groups, the earliest has consistently been chosen. Graves dated with a lesser degree of certainty or by absolute years have not been counted.
36. The six categories are: sword, sword scabbard fitting(s), shield boss, shield handle, spearhead and javelin. Axes and arrows are extremely rare and have not been counted.
37. The same find circumstances, involving a significant proportion of amateur excavations and finds without contexts, are found in Sweden.

Late Roman period weapon graves in Bemmann & Hahne 1994	A. Excavation by professsional	A. Total of weapons	A. Average total	B. Not excavated by professional	B: Total of weapons	B: Average total
Gutteberg group	1	4	4	13	40	3.1
Vennolum/Skiaker group	7	36	5.1	43	150	3.5
By group	8	34	4.3	34	103	3
Vøien group	2	9	4.5	12	40	3.3
Mollestad group	8	28	3.5	21	58	2.8
Total	26	111	4.3	123	391	3.2

Fig. 1.7. Statistics for the number of weapons found in Norwegian Late Roman period graves according to their find circumstances.

a spearhead, a shield boss, an axe, even as a miniature, or one or more arrowheads. One grave is furnished with a combination of a spear, axe and arrow, and two others with an axe and arrow.

No study of Iron Age weapon graves can be undertaken without taking into account the work on weapon graves by H. Härke (1990; 1992; 1997). In his 1992 study of Anglo-Saxon weapon graves, Härke demonstrated that 47 % of all male individuals in inhumation graves had been given weapons. However, weapons were also found in 13 % of the burials containing the interred bodies of children, 8 % of whom were below the age of 14. The age range of weapon burials was between 12 months and 60 years. There were also examples of burials of individuals with various types of handicaps, some of them congenital, which would have meant that it was impossible for them to function as warriors. Härke also identified 17 examples of burials of people with injuries which had most likely been inflicted in battle, but only five had been furnished with weapons. Finally, 25 % of the graves with weapons contained weapon combinations that could not be considered functional.

In an earlier study, Härke demonstrated that graves containing weapons were unlikely to represent warriors who had actually died in battle (1990). He found a negative correlation between the number of weapon graves in a given phase compared to the degree of warfare mentioned in the Anglo-Saxon Chronicles. When the weapon burial custom peaked in the early-mid 6th century, for example, it was apparently against a background of relative calm and stability. He concluded that weapons in graves are symbolic representations of conquest and dominance. They are the result of the staging of the deceased by the living society, rather than the items constituting the inalienable property of those who were buried. These views were further supported by studies of contemporary Northern Ireland and South Africa, where a ruling majority justified its dominance through rituals and violent imagery (Härke 1997). It will become apparent in the following that this publication is heavily influenced by Härke's studies.

A final argument against the idea of grave goods as inalienable property, the idea of an overall social structure or military organisation being encoded in the graves in more than a tentative way as well as the idea that Germanic societies were basically organised in the same way, is supported by comparing the size and proportion of a selected number of cemeteries containing 10 or more weapon graves (fig. 1.8). The size of the cemeteries varies greatly, from 43 to almost 1,400 graves, with the percentage of weapon graves ranging between 3 and 62 %. Even within regions, there are no obvious patterns. In Poland the size of cemeteries in the given examples varies from just above 60 to less than 500 graves, although cemeteries consisting of a few hundred graves are most common, with an average number of 236. The percentage of weapon graves varies between 6 and 43 %. The three Slovakian (Moravian) cemeteries on the list are generally smaller than the Polish cemeteries, but the percentage of graves containing weapons is about the same (8, 19 and 41 %). In the Middle Elbe region of Germany, in Saxony, Saxony-Anhalt and Thüringen, the cemeteries vary in size between 110 and 579 graves and the percentage of weapon graves between 7 and 30 %. The average number of graves is 285 and the average percentage of graves containing weapons is 20 %. In the Lower Elbe area, Hamburg and Lower Saxony, and in Schleswig-Holstein, cemeteries are generally larger, often reaching over 1,000 burials, with an average of 788 burials. This area is, however, the most difficult to estimate numbers in, as the weapon burial rite does not usually cover the whole history of the cemeteries. At Hamburg-Marmstorf, Willi Wegewitz estimated the number of burials from the Late Pre-Roman and Early Roman periods as 103, out of a total of 362 graves, including graves from the Pre-Roman Iron Age (Wegewitz 1964: 24). The 64 weapon burials constitute 62 % of the burials from Late Pre-Roman and Early Roman periods. In Hamburg-Langenbek, Ehestorf-Vahrendorf and Putensen there are also significant numbers of graves from before the weapon burial custom began, although

Country	Area	Cemetery	Date range	No. of Burials	Weapon burials	%
Poland	Opolskie	Chorula	B-C	183	45	30
Poland	Wielkopolskie	Wesółki 1	A-B	70	30	43
Poland	Wielkopolskie	Wymysłowo	A-C	367	29	8
Poland	Wielkopolskie	Młodzikowo	B-C	263	30	11
Poland	Wielkopolskie	Domaradzice	B-C	162	15	9
Poland	Podlaskie	Krupice	A-C	375	28	8
Poland	Kujawsko-Pomorskie	Podwiesk	A	459	32	7
Poland	Pomorskie	Pruszcz Gdański 10	A	355	37	11
Poland	Świętokrzyskie	Błonie	A	180	39	22
Poland	Świętokrzyskie	Chmielow-Piaskowy	B-C	63	22	35
Poland	Mazowieckie	Kamieńczyk 1	A-B	396	69	17
Poland	Mazowieckie	Korzén	C	65	13	20
Poland	Mazowieckie	Oblin	A-B	299	74	25
Poland	Mazowieckie	Karczewiec	A	186	12	6
Poland	Łódzkie	Ględzianówek	B	122	14	12
Slovakia	Trnava	Abrahám	B	238	18	8
Slovakia	Trnava	Sládkovicovo	B	86	16	19
Slovakia	Bratislava	Kostolná-pri Dunaji	B-C	68	28	41
Germany	Sachsen-Anhalt	Schkopau	A-B	289	89	28
Germany	Sachsen	Prositz	B	110	18	16
Germany	Sachsen	Bornitz	B	177	36	20
Germany	Thüringen	Wechmar	C	272	19	7
Germany	Thüringen	Grossromstedt	A-B	579	173	30
Germany	Mecklenburg-Vorpommern	Wiebendorf	A-B	718	29	4
Germany	Hamburg	Hamburg-Marmstorf	B	103	64	62
Germany	Hamburg	Hamburg-Langenbek	B	221	37	17
Germany	Niedersachsen	Ehestorf-Vahrendorf	A-B	1122	38	3
Germany	Niedersachsen	Putensen	B	982	191	19
Germany	Schleswig-Holstein	Hamfelde 4	B	829	50	6
Germany	Schleswig-Holstein	Husby	B-C	1264	61	5
Denmark	Mid Jutland	Lønhøjvej	A-B	150	20	13
Denmark	Mid Jutland	Hedegård	A-B	200	31	16
Denmark	South Jutland	Erritsø	B	70	13	19
Denmark	South Jutland	Over Jersdal	B	62	10	16
Denmark	Bornholm	Slusegård	A-C	1395	55	4
Denmark	Langeland	Harnebjerg	A-B	50	23	46
Denmark	Langeland	Bukkensbjerg	A-B	43	17	40

Fig. 1.8. Selected cemeteries with more than 10 weapon graves, their size, date range and proportion of graves with weapons.

Wegewitz is not specific (Wegewitz 1962; 1965; 1972). The proportion of weapon burials at these sites in fig. 1.8 is therefore too low. At the adjacent large cemeteries in Schleswig-Holstein, at Hamfelde and Husby, the proportion of weapon graves seems comparable, with 5 and 6 % of the graves respectively, although a large number of the burials at Husby date to the Late Roman period, in which the weapon burial custom dramatically declines. Given the large number of undated graves, it is hard to give a precise figure, but the proportion of graves from the Late Roman period is probably around 40 %. However, quite similar to the 6 % for weapon graves at the Hamfelde cemetery, the percentage of weapon graves at Husby is probably closer to 8-10 %, not counting the graves from the Late Roman period. The Hamfelde cemetery also continues into the Late Roman period, but ends earlier than the cemetery at Husby, and the number of graves from after the period of the intensive weapon burial tradition is smaller. Urn types regarded as dating to the Late Roman period with a consistent lack of weapons are found in the southern quarter of the cemetery as well as its northernmost part (Bantelmann 1970, Karte

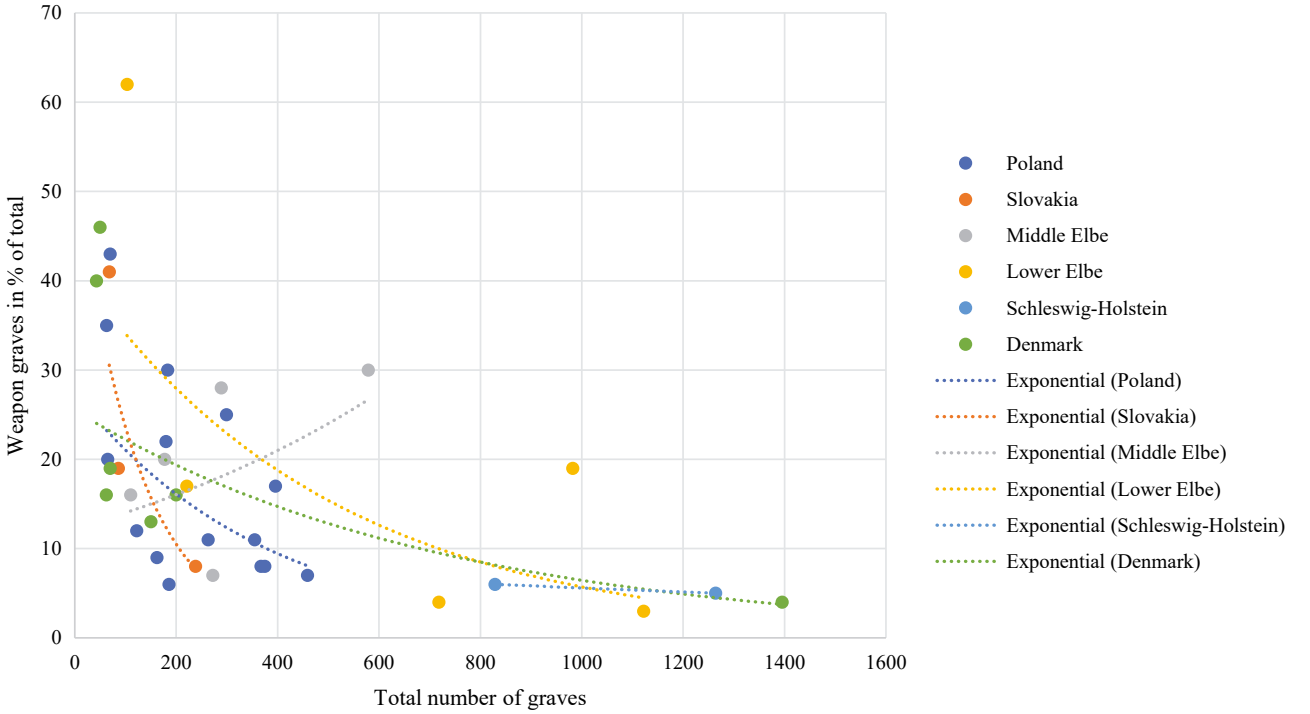

Fig. 1.9. The data from fig.1.8 generally shows the following tendency: the larger the cemeteries are, the smaller the proportion of weapon graves, except for the Middle Elbe region.

6),[38] although in an area intermixed with other types of urns that do contain weapons (Karte 3-5 and 12). An estimate of the number of graves from a later part of the Late Roman period C1 does not exceed 200, and the percentage of weapon graves is still less than 6 %. Given the generally single sex character of these cemeteries, it is surprising that the range and average of weapon graves in Schleswig-Holstein is among the lowest in fig. 1.8.

The impression from Danish cemeteries containing weapon graves is even more heterogenous. The two early cemeteries on the island of Langeland are, like the cemeteries in the Lower Elbe region, apparently cemeteries that only contain male burials. They are much smaller, however. A warrior ideology is nevertheless more obvious, and is reflected by between 40 and 46 % of the graves. The size of the Slusegård cemetery on the island of Bornholm, containing almost 1,400 graves, is an exception in Denmark, along with the even larger cemetery at Møllegårdsmarken on Funen (not shown). Slusegård contains many graves with weapons, although the percentage of weapon graves is only 4 %. The general number of graves per cemetery in Denmark is usually below 100 and very often much less than this. The average in the four examples from Jutland is 96 graves, with the average range of weapon graves between 13 and 19 % and the average 16 %. Jutland, along with Langeland and Schleswig-Holstein, is thus the most homogenous area in fig. 1.8.

There is, however, a general tendency that can be observed in the table: the larger the cemeteries are, the smaller the proportion of weapon graves (fig. 1.9). The least obvious difference is found in Poland. Cemeteries with more than 300 graves contain an average of 13 % weapon graves, whilst in cemeteries with less graves than this, the average is 21 %. The difference is also evident from the three Slovakian cemeteries. In Germany, cemeteries with more than 600 graves have an average of 6.4 % weapon graves, and cemeteries smaller than this as much as 19 %. The difference in the Lower Elbe area is almost the same, with 7.1 % for large cemeteries and 17 and 62 % respectively for smaller cemeteries. Only the Middle Elbe region does not follow this pattern, as the highest proportion of weapon graves is found at Großromstedt, the largest of the cemeteries. In Denmark, there is a massive difference between cemeteries with less than and more than 100 graves, with 30 and 14.5 % weapon graves respectively, although in Jutland the difference is much less significant, with 17.5 and 14.5 % respectively.

The interpretation of these differences is, however, dependent on whether the differences in cemetery sizes within the individual areas are seen as reflecting small

38. Except for an axe in grave 543 with a "Bauchiges Trichterhalsgefäß" (pl. 83).

and large communities, or communities with different approaches to how many of its members received a proper burial in the communal cemeteries. Both scenarios are possible. If the size of the cemetery relates to the size of the burying community, it is hard to explain why large communities buried fewer warriors, unless these large communities were less competitive than small communities. If, on the other hand, we decide to believe that different communities had different rules concerning the rituals which were associated with who was buried and who was not, we can still maintain the illusion that all communities, at least within their respective regions, had a similar military structure. Both explanations, however, have inherent consequences that render social and military structures beyond the cemetery level problematic. Moreover, the variations in figs 1.8-1.9 cannot all be explained by one of these two factors. We probably cannot escape the conclusion that the militarization that is evidenced by burials is situational. It is associated with local circumstances and changes over time. This is merely suggested in the table above, but will be elaborated upon later on in this publication.

1.7. The Scandinavian bog deposits

The Scandinavian category of bog finds containing sacrifices of army equipment is another and more direct source for understanding how warfare was conducted and armies were organised during the Iron Age.[39] They are therefore very useful as they can correct the misleading burial data. The largest of the finds contain weapons for hundreds of warriors, spearheads and javelins, swords, shields and shield handles, spurs and horse harnesses, as well as belts and personal equipment, such as knives, combs and strike-a-lights, and even a few tools for the manufacture or repair of weapon parts, and in some cases, whole or fragmented boats or wagons. Although it can be suggested that these finds only represent Scandinavian armies, they do shed some light on the interpretation of weapon graves as a source about armament and military organisation. An absolute precondition is obviously that the bog finds are interpreted as sacrifices of the entire equipment of defeated armies, as well as that none or very little of the equipment of the winning side has been mixed into the offering, either deliberately or by mistake. We do not know this for sure.[40] Many weapons have been destroyed before their ritual deposition. Spears and swords have been bent or ended up with notches from repeated blows with other weapons, and shield bosses have been cut or stabbed repeatedly or destroyed with the sharp or butted ends of axes. However, it is not known how much of such damage, if any at all, occurred in battle, and certainly many examples are best interpreted as having happened as part of rituals. Traditionally, scholars have referred to passages in classical literature describing the ritual of post-battle sacrifice, but given my critical attitude towards these writings, they cannot be regarded as reliable, except that they may be an indication of a widespread attitude towards the spoils of war.[41]

The find history, however, also determines the suitability of the individual finds of army equipment for this type of study. Some finds are small and can be interpreted as evidence of small-scale conflict, whilst others have been found during peat digging, or in some cases, after years of finds being submitted to the National Museum in Copenhagen, when an excavation was eventually undertaken. These excavations were unfortunately conducted at a time when documenting the find circumstances was not prioritised. This, for instance, applies to the classic big four, Nydam, Thorsberg, Kragehul and Vimose, which were published by Conrad Engelhardt during the 1860s (Engelhardt 1863; 1865; 1867; 1869). Furthermore, the state of preservation of the bog finds is not always the

39. See Chapter 2.5.31-51 for a more detailed description of the find group.

40. A pilot project on the provenance of iron may indicate that knives in particular were mixed up during the collection of equipment from the battlefield and the subsequent deposition in the bog. Five of ten analysed knives from Illerup Ådal, Site A, indicated a local origin for the bog ore, whereas the remainder, as well as two spears and one javelin, were likely to be have been made from Norwegian iron, corresponding with the archaeological theory of the provenance of the find. The analysis also included two spearheads from the late 4th century deposit C. One was made from Norwegian iron and the other of iron from Jutland (Jouttijärvi in llkjær et al. 1994: 31-53). More recent studies have complicated matters. Thomas Birch focused on 12 late 4th century spearheads of the Havor type, especially from Ejsbøl in South Jutland, although his more refined studies also included the same material from Illerup Ådal that was analysed by Jouttijärvi (Birch 2013). Birch concluded that "the technical manufacture of the Havor lances [spearheads of type 5 Havor] is uniform and representative of centralised production; highly standardised manufacture in a single workshop drawing its iron from multiple sources", whereas knives were of "local manufacture" by "local workshops using locally sourced iron" (Birch 2013: 337). The results could point towards armies of mixed origin that fought with centrally made weapons or an organised trade in iron.

41. Caesar: Gallic Wars: 17.3 and 17.5, although this description refers to the Gauls. He later states that the Germans are not interested in sacrifice (21.1). Tacitus *Annales* 13.57, however, writes specifically about the *Chatti*, and Orosius *Histories against the pagans* V.16 (Grane 2003:145), writes in the 5th century CE about the Cimbrians.

same. Some, such as the one from Thorsberg, have almost no preserved iron, which is obviously a serious limitation when assessing the size and organisation of an army. The excavations at Nydam in the 1990s revealed that iron was not always well preserved, but wood was. The opposite seems to be the case in the valley of Illerup Ådal. Although many wooden objects were also found here, they were not as well preserved as those from Nydam. In addition, some of the deposits have been burnt before being deposited in the bog. Thus, in two of the large depositions in Illerup Ådal, sites B and C, artefacts of materials other than iron are rare. Although other finds may provide supplementary evidence, the large deposit A from Illerup Ådal and the largest of the offerings at Ejsbøl provide the most straightforward access to Iron Age warfare and military organisation. As the two finds were deposited approximately 100 years apart, around 200 and 300 CE, they also provide an opportunity to study if and how Scandinavian warfare evolved.

1.7.1. Armament and technology

The basic panoply of the Scandinavian warrior of the 3rd to 5th century was the combination of a shield, a spearhead and a barbed javelin.[42] The spear is believed to have been designed for close combat and perhaps throwing at close range, whilst the javelin was designed for throwing from a greater distance. Both were attached to a stake made from ash wood, which was approximately 2.5 m in length. It is debatable whether the Roman double-edged sword, the *spatha*, was only reserved for certain individuals or was carried by every warrior in the army (see discussion below). Neither graves nor war booty finds indicate that helmets, chain mail or any other kind of armour were generally used by warriors of Scandinavia. However, a few chain mails are known from Thorsberg and one from Vimose, but none from any other bog finds. Three of four chain mail suits from Thorsberg were probably produced in the Roman Empire, but were subsequently altered (Matešić 2015: 208-224). The same find includes fragments of two Roman helmets of type Niederbieber, variant Heddernheim, and a silver face mask for Roman cavalry parades, which has been completely remodelled into a barbarian design (Matešić 2015: 187-207). The famous Roman griffon from Vimose could be interpreted as an added decoration on a pseudo-Corinthian cavalry helmet (Pauli Jensen 2003: 235-237; Fischer 2012: 212-214). No other remains of helmets have been found in the bog depositions, and both chain mail and helmets must be considered a rare prerogative of the elite.

All sword blades were probably made in Roman workshops and factories, and the hundreds of swords from Illerup, Vimose, Nydam and Ejsbøl are the world's largest and most important source of information about Roman sword blade technology. They are often pattern welded and occasionally have workshop stamps or inlaid figurines on or near the hilt (Biborski & Ilkjær 2008). The number of sword blades in graves and war booty finds seem to indicate that swords were acquired by actual trade rather than having been purchased by individuals returning from Roman military service (von Carnap-Bornheim & Ilkjær 1999).

Spearheads and javelins, on the other hand, were produced locally in Scandinavia. They are made using impressive technology. The study of spearheads indicates that they have been welded from two different types of iron. This combination of soft and hard iron gives the spearhead strength, flexibility and sharpness. Many spearheads also have engraved, geometric patterns on the blades or small, inlaid gold or silver dots, circles or concentric circles on the blade or the socket. Similar adornments are only rarely present on javelins.

1.7.2. Spearheads and javelins

One striking feature of the heads of the spears and javelins is the great uniformity in design in each of the large synchronous offerings as well as the typological development, which are immediately recognisable attributes of the spear and javelin heads deposited a few decades apart (fig. 1.10). However, in reality, the typological development was probably more gradual. The advantage of studying large contemporary deposits as opposed to single finds from graves of different dates is that it underlines exactly how standardised weapon production was at these frozen moments in time. It is reasonable to assume that the weapon smith was a specialised artisan and was not the same individual who worked as the Iron Age village blacksmith. The weapons in each of the large offerings may also have been mass-produced in just one or a few workshops. It has even been suggested that the weapons were manufactured upon the orders of a chief and then kept in an arsenal and distributed to the warriors of the army, when there was a call to arms immediately before military engagements (von Carnap-Bornheim 1992: 50; Ilkjær 2002; Stylegar 2009). However, this suggestion conflicts with the general assumption that there was a professional warrior class and is contradicted by the fact that the very same spear and javelin head types are found distributed in graves all over Scandinavia, with few regional variations in design (see below).

42. Javelin i.e. German Speer; Spear i.e. German Lanze. Definition from Jahn 1916: 49, footnote 1.

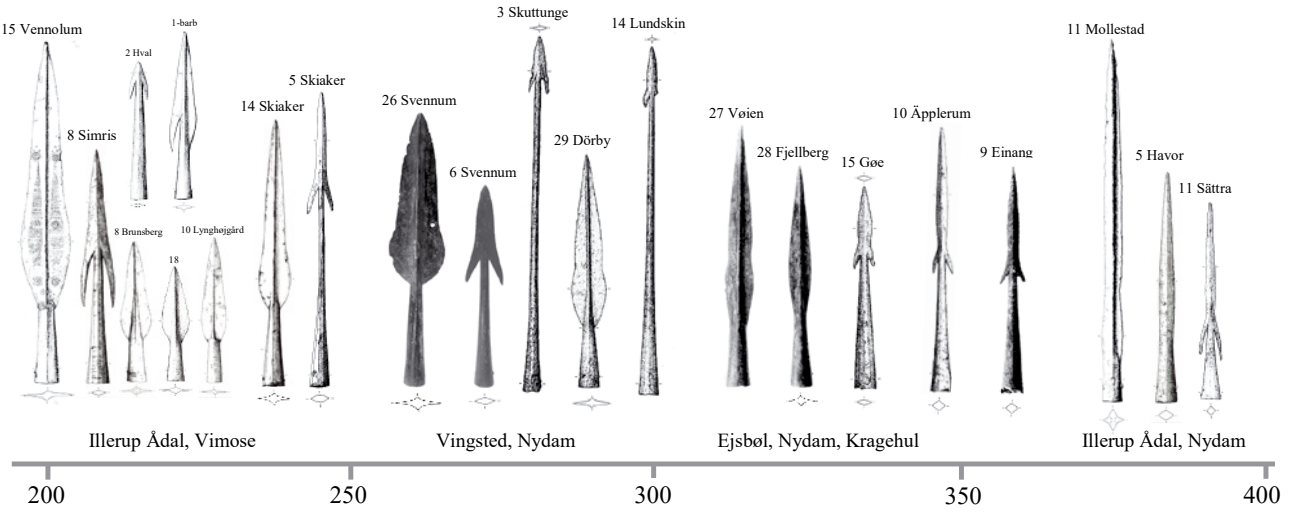

Fig. 1.10. The development of spearheads and javelins as found in the bog deposits in Jutland and on Funen. Only the largest of the deposits are given in each time interval, although combinations of the same types are found in other bogs as well.

The functional difference between javelins and spearheads has never been tested. It is an assumption that is based on the difference in shape and perhaps the descriptions by Tacitus. The spearhead with its sharp edges, would fit the descriptions of the Germanic *framea*: a multifunctional polearm for stabbing, thrusting and throwing. However, it is a weapon type with a far longer history than the Roman encounters with barbarian peoples north of the Rhine and Danube and has a much wider distribution. Tacitus does not mention the javelin, with its barbs pointing backwards on both sides or occasionally on just one side of the blade, although he ought to have recognised it. The javelin is probably derived from the Roman *pilum*, which in its earlier versions was barbed, as described by Polybius, and is archaeologically known from at least since the 3rd century BCE (Jahn 1916: 213[43]; Bishop & Coulston 2006: 50-53; Fischer 2014: 198-200). Barbed versions of the *pilum* are known from the mid-1st century BCE Battle of Alesia dating to around the same time, when javelins began to appear in barbarian graves.[44] The javelin may not have had the same penetrative effect against shields as the bodkin-headed and long-shanked Roman *pilum,* but it must have had a terrible effect when it penetrated human flesh. It may also have been associated with the same result as the *pilum*, and became bent when it struck hard surfaces, thus making it useless for firing back.[45] No studies have been published which examine the effect of spearheads and the distance they could be thrown, but in time the length of the javelin socket increased so that it resembled the *pilum*, reaching a maximum in the late 3rd and early 4th century CE. The development of the javelin may reflect a continuing search for optimum effect, but currently too little is known about the interaction between physical attributes and effect.

Weight might be a way to demonstrate, if not function, then at least a difference in function between spearheads and javelins. The main spearhead and javelin head types at Illerup Ådal, Site A, spearhead type 15 Vennolum and javelin head type 8 Simris, are both represented by approximately 300 examples, with each appearing as a standard polearm set in the early 3rd century army. There is great variation, however, with both length and weight differing between these two types: spearheads are longer and heavier than javelins (fig. 1.11). The weight of the spearheads does not indicate any functional differences, but a few abnormally heavy spearheads may reflect social stratification (fig. 1.12). Amongst the few other spearhead and javelin types that are attributed with reasonable certainty to Illerup, Site A, there is also a general difference in weight, especially amongst the javelin heads (fig. 1.13). The one-barbed javelin heads weigh almost exactly the

43. According to Jahn, the javelin developed amongst the Burgundians in the Pre-Roman period and was only later on influenced by the *pilum*.
44. Most known examples from the Republican period, however, did have the pyramidal bodkin-head that is usually associated with the *pilum* (Bishop & Coulston 2006: 52).
45. 83% of the 285 javelins of type 8 Simris being bent compared to 69% of the 305 spearheads of type 15 Vennolum from Illerup Ådal, Site A, does not, however, represent a conclusive difference and the damage to the weapons may have been caused by post-battle rituals.

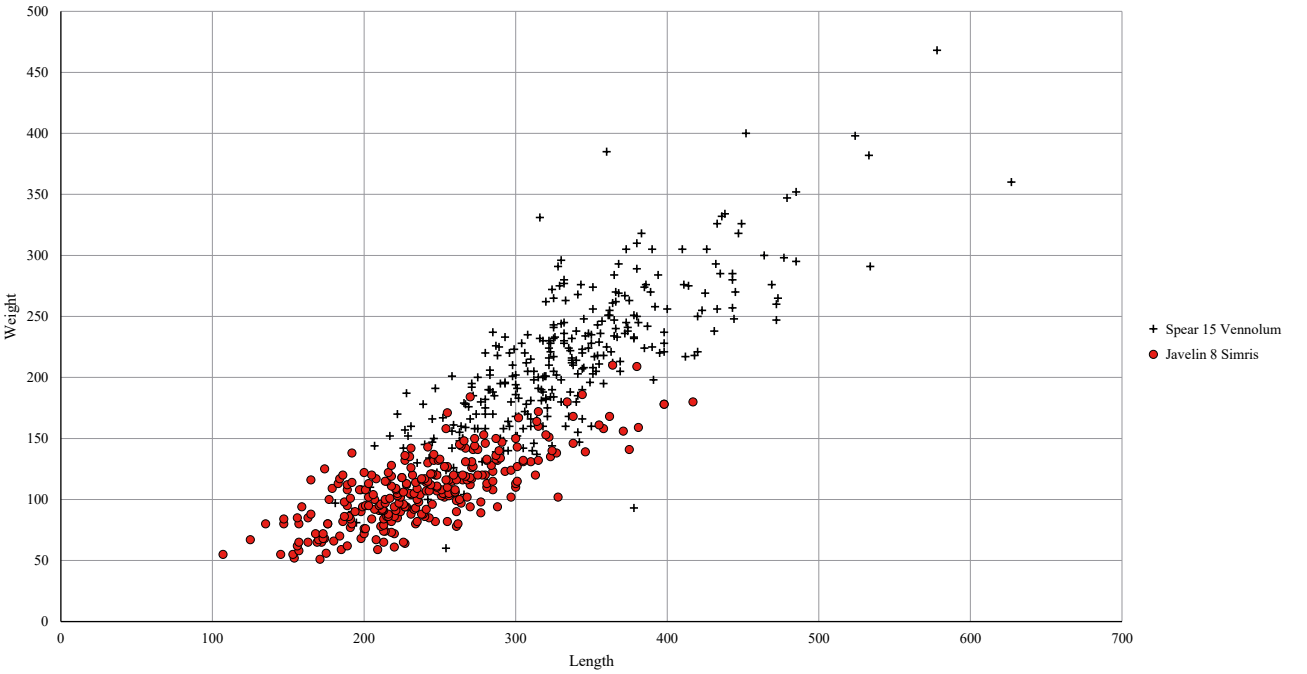

Fig. 1.11. Diagram of the weight and length of around 305 spearheads, type 15 Vennolum, and 295 javelins, type 8 Simris, from Illerup Ådal, Site A.

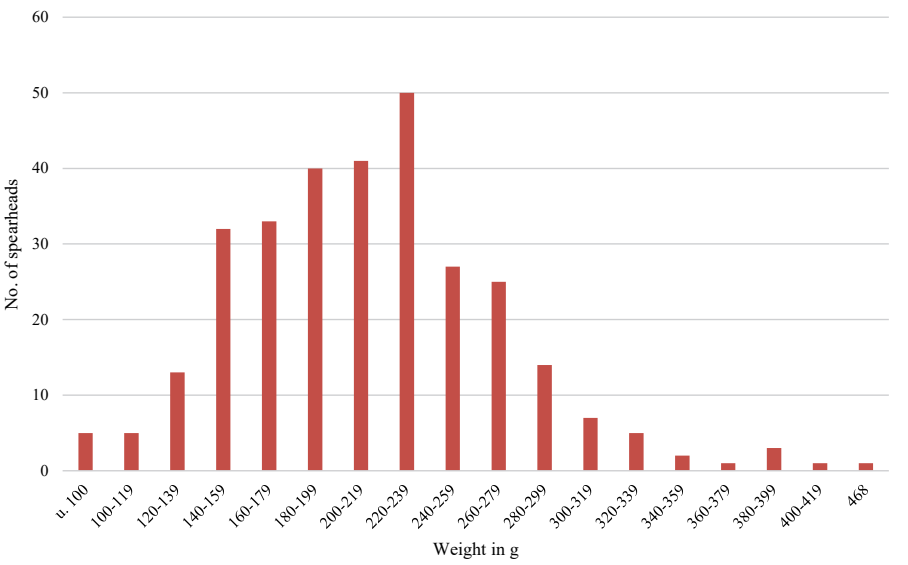

Fig. 1.12. Weight distribution of 305 spearheads of type 15 Vennolum from Illerup Ådal, Site A.

same on average as type 8 Simris, but type 2 Hval and type 25 Folkeslunda only weigh around two thirds of this. It is possible that these could have functioned as extra darts or as darts thrown from horseback.[46] Two of the three less common spearhead types weigh significantly less than the other spearhead types and the same or slightly less than the heaviest javelins. Whether the function of these 22 spearheads differed on this basis remains uncertain, however. The average weight of spearheads and javelins deposited around 25 years later at Illerup, Site B,

46. The possibility that different types represent a mixed ethnic composition of the army seems improbable given the generally broad Scandinavian distribution of almost all spearhead and javelin head types (see distribution maps in Ilkjær 1990 and Bemmann & Hahne 1994).

	Type	Ratio in g	Average	Frequency
Spear	T. 8 Brunsberg	41-191	105.7	14
Spear	T. 10 Lynghøjgård	60-152	96	8
Spear	T. 15 Vennolum	60-468	213	305
Spear	T. 17 Vennaker	103-235	168.7	28
Javelin	T. 2 Hval	50-130	71	10
Javelin	T. 8 Simris	36-210	108.9	285
Javelin	T. 25 Folkeslunda	47-110	68.8	19
Javelin	1-barb types	67-151	109.6	31

Fig. 1.13. Weight ratio, average weight and frequency of spearhead and javelin types from Illerup Ådal, Site A. A few other types cannot be clearly distinguished between sites A and B and are not shown here.

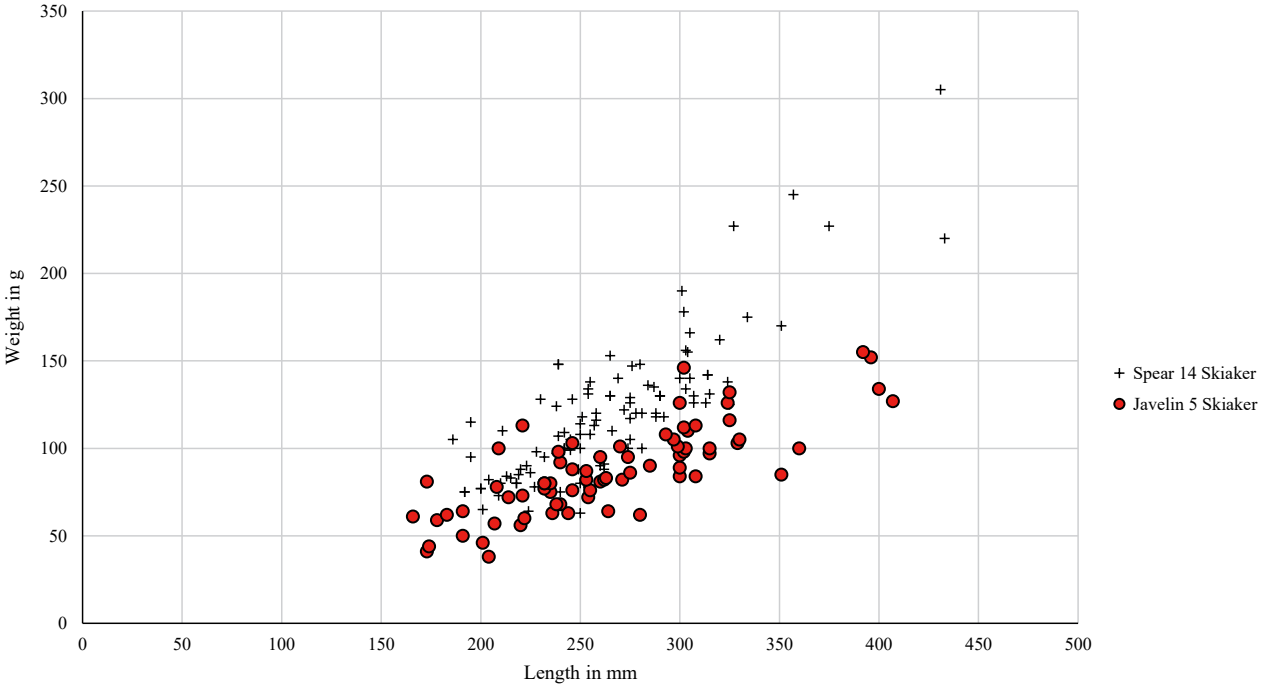

Fig. 1.14. Weight and length of 107 spearheads of type 14 Skiaker and 75 javelins of type 5 Skiaker from Illerup Ådal, Site B.

decreases significantly, although there is still a general weight difference between the two (fig. 1.14).[47] Again, atypical weight distribution is only found amongst the spearheads, with a few examples weighing considerably more than the others (fig. 1.15).

There is only limited data for the following century. The second part of the 3rd century CE is characterised by broad-bladed spearheads, type 26 Svennum, with the average weight of spearheads from the Vingsted bog find increasing to 235 g and 273 g in the case of the dry-land deposit at Uppåkra, Sweden (Helgesson 2004).[48] There is also a small difference in weight between javelins of type 6 Svennum at Vingsted and Uppåkra, with totals of 129 g and 139 g respectively. However, most importantly, in both cases the javelins weigh significantly less than the contemporary spearheads. The appearance of very long socketed javelin head types in the later 3rd century CE, types 3 Skuttunge and 14 Lundskin, may be equivalents to the light and heavy *pilum* of the Roman Empire. The three examples from Uppåkra have an average weight of 235 g. Corrosion may have contributed to the low weight of spearheads

47. The average weight of 107 complete spearheads of type 14 Skiaker is 120 g; the average weight of 75 complete javelins of type 5 Skiaker is 87.5 g.
48. Differences in corrosion could explain contemporary variation, although the Uppåkra spearheads are on average 3 cm longer than the spearheads from Vingsted. The iron tips from Vingsted, Nydam and Uppåkra were weighed by the author between 2005 and 2008. The weight of spearheads and javelins from Illerup can be found in Ilkjær 1990. Out of respect for my colleague, Andreas Rau, who is currently publishing the Nydam find, I will only mention the weight of the early 4th century deposits from the Nydam boat field. Only complete spearheads have been weighed.

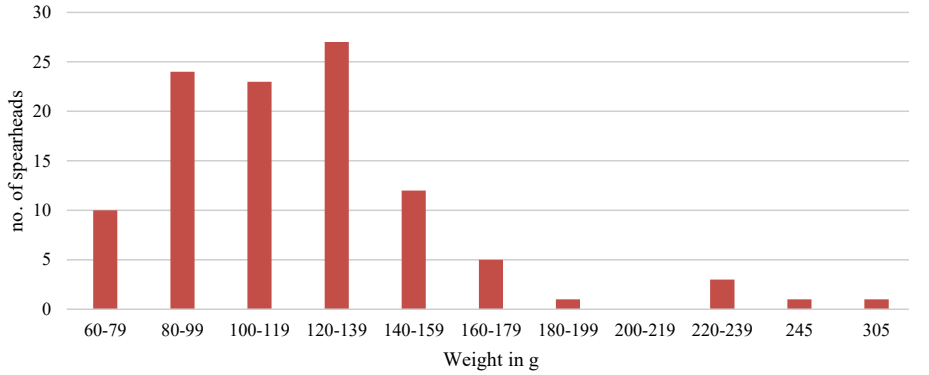

Fig. 1.15. Weight distribution of spearheads of type 14 Skiaker from Illerup Ådal, Site B.

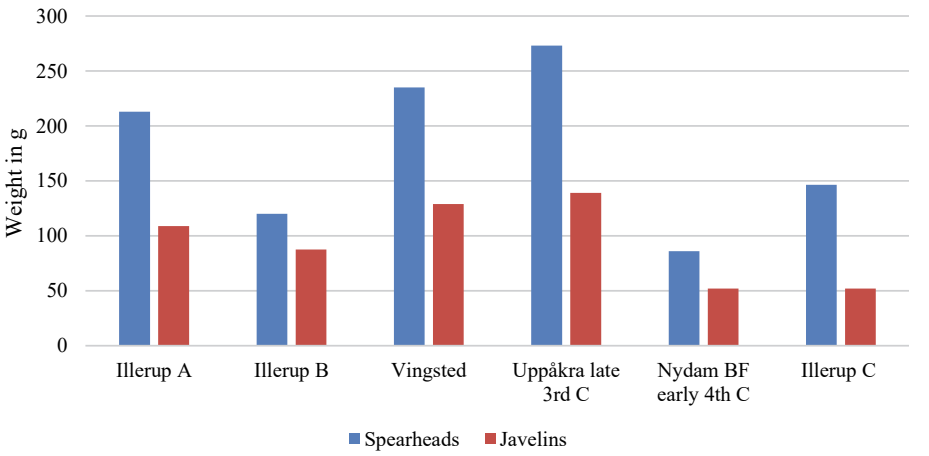

Fig. 1.16. Changing average weights of spearheads and javelins from 200 until 400 CE.

from the early 4th century CE in the Nydam boat field. On the other hand, the lighter javelins seem to continue into the late 4th century CE (below). It is most noteworthy, however, that spearheads (type 27 Vøien and 28 Fjellberg) on average weigh 86 g and the javelins (type 9 Einang, 10 Äpplerum and 15 Gøe) only 52 g. In all these cases, there is a considerable difference between the weight of spearheads and javelin heads, which supports the assumption of a functional difference based on their attributes (fig. 1.16).

In the later 4th century CE, however, a few significant changes apparently occurred. With the development of the type 11 Mollestad spearhead from type 27 Vøien, the spear had had now reached its most effective shape as a weapon for stabbing: the socket is extremely short, whilst the blade is long and very narrow, with a sharp, star-shaped cross section. Simultaneously, the javelin continued its 4th century CE development, becoming more dart-like: with a low weight, a very short socket on the common type 11 Sättra, and a square blade cross section along with a pinched blade, which probably displaced the weight of the dart towards the tip.[49] The average weight of the javelin head had not changed since the early 4th century CE (52.1 g). Simultaneously, another spearhead type had developed, however. The type 5 Havor actually outnumbers the Mollestad type, by 1.5 to 1 at both Illerup Ådal, Site C, and the late 4th century deposition at Nydam.[50] The type has a distinctly bodkin-shaped head with relatively blunt edges, resembling a javelin head, although without the

49. Two comments: 1) A few long-socketed javelins are known from the late 4th century (type 16 Foss). They can be seen as reflecting a continuation of the division into light and heavy missiles, as indicated in the late 3rd and early 4th centuries CE. 2) The development towards weight adjustment of the tip continues in the early 5th century in type 13 Tveito (Ilkjær 1990: 166, 246-250; Bemmann & Hahne 1994: 440-442) with the blade's markedly thickened cross section. The development may run parallel with the late 4th/early 5th century development of the Roman led-clad darts, the *mattiobarbuli*, *martiobarbuli*, *mamillatae* and *plumbatae* (Bishop & Coulston 2006: 200). The striking similarity between type 11 Sättra and a javelin head from a late Roman fort at Pilismarót, Hungary, is perhaps an indication of simultaneous development of missiles in the late 4th century CE (Bishop & Coulston 2006: fig. 127.2; Ilkjær 1990: 240-245).
50. The type is, however, rare in contemporary graves. This could support the interpretation of its function (see note below).

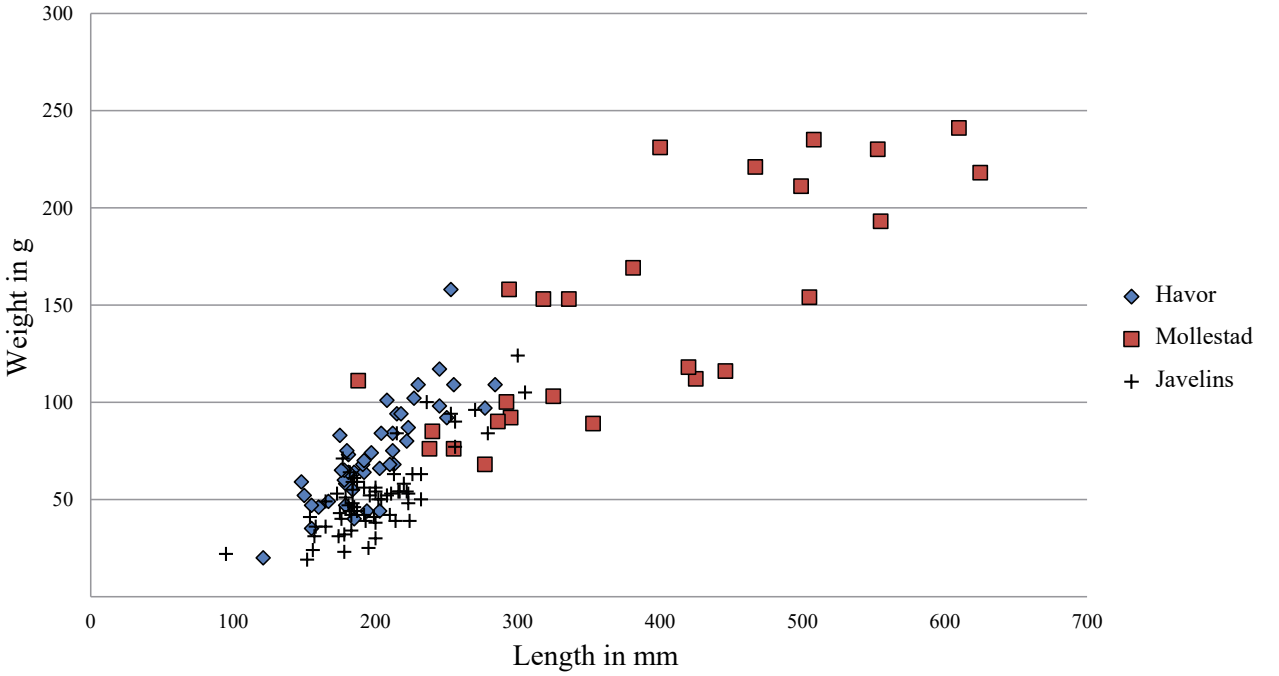

Fig. 1.17. Weight and length of spearheads and javelins from Illerup Ådal, Site C. Even without the barbs, the shape and weight of spearheads of type 5 Havor indicate they functioned as heavy darts.

barbs. However, the shape and average weight of only 80 g of the type indicate that this spearhead type was developed as a heavy missile (fig. 1.17).[51]

As in the case of the development of shield bosses, the typology of spearheads and javelin heads never seemed to settle down or reach a consensus between shape and function that lasted for more than a couple of generations. However, the general, yet complex, Scandinavian weapon system, which combined a barbed missile with a spearhead in the panoply of every warrior, lasted for at least four centuries and must have been effective, albeit demanding. The barbed polearms were abandoned in the mid-6th century, perhaps due to the replacement of armies recruited from an active free elite to armies consisting of mounted aristocracy and otherwise of conscripted fighters recruited from the peasantry, like those conscripted by the regional high medieval laws of Denmark and Norway (Nørgård Jørgensen 1999: 200-201; Iversen 2010: 151-157).

1.7.3. Shields

Shields of the 3rd century were circular, usually with a diameter of 80-100 cm, and consisted of five to eight flat boards, with a metal boss covering the cut-out for the hand in the middle and a metal reinforced wooden handle placed vertically on the opposite side. The types of wood vary, but alder (*Alnus*) is by far the most common choice for the shield boards (Ilkjær 2001: 247ff.; Malmros 2020: 100f.).[52] Traces of red or blue paint indicate that the shields were painted, and based on a few finds from Nydam, geometric patterns and figures painted on the shield boards are known of, which are apparently not to dissimilar to Roman examples from Dura Europos, Egypt or the *Notitia Dignitatum* (Ilkjær 2009: 358; Petersen 2020b; Fischer 2012: figs 227-228). Unfortunately, the finds are too few to establish whether coloured and painted patterns were used as emblems of military units, like in the Roman army or during the Middle Ages, or simply reflect the preferences of the individual warrior.

51. There is also a resemblance to the javelins in the frequency of ornamentation of type 5 Havor. On spearheads of the Mollestad type, ornamentation, usually a dot of inlaid gold on the upper part of the socket, is found on 50 % of the 38 examples from Illerup Ådal, but on only one of the 57 examples of type 5 Havor and none of the 79 javelins at Illerup, Site C. Similarly, at Illerup Site A, ornamentation, usually carefully chiselled patterns on the blade, rarely (20 examples) as an inlaid silver dot and circles or concentric circles on the blade, is found on just over 50 % of the spearheads of the Vennolum type, but on only two javelins of the Simris type (0.7 %). The spearhead was apparently a personalised weapon, whereas the javelin was not, and was hurled against the enemy and often lost.
52. Alder constitutes 56 % of the shield boards from Illlerup; oak (*Quercus*), aspen (*Populus*), hazel (*Corylus*) and lime (*Tilia*) between 13 and 7 %; and ash (*Fraxinus*), willow (*Salix*) and pine (*Pinus*) 3 % or less. At Nydam, alder constitutes 86 % of the 78 analysed shield boards; and Norway spruce (*Picea*), lime, aspen and oak less than 4 % each.

The shield boards are very thin, usually about 10 mm around the centre, and gradually get thinner towards the edges of the shield. A cover of rawhide or vellum probably held the boards of the shield together, and traces of skin have been found under metal edge fittings (Warming et al. 2016). Experiments on reconstructed shields have demonstrated immediate weaknesses on bare examples, whereas shields covered with a thin, transparent hide were remarkably resistant to arrows and to javelins thrown from very close range (Bundgård 1998; Paulsen 1998; Ilkjær 2001; Pauli Jensen et al. 2003; Pauli Jensen 2007; 2009).

The shields that are known from the bog depositions of the Late Roman period are all circular. Their shape before the 3rd century CE is only sporadically known, but numerous indications suggest that the circular shape was relatively new as a universal design when round shields first appeared in the early 3rd century bog finds. In the Hjortspring bog find, dated to as early as the mid-4th century BCE, all 64 wooden shields are rectangular, and most of these are relatively wide and clearly intended to cover the torso of the individual warrior and nothing more (Rosenberg 1937; Randsborg 1995; Kaul 2003) (fig. 1.18). A panoply consisting of spearheads, single-edged swords and relatively small shields, all weapons that are very different to those of the apparently standardised panoply of the late Roman period, reveals a lot about warfare in the Early Pre-Roman period.

From the intermediate period, only one preserved shield is known from the wetland depositions in Denmark. The early 1st century shield from Alken Enge, close to Illerup Ådal, East Jutland, is a typical late La Tène-shield. It is an elongated oval, made of one piece of alder wood (*Alnus*) and has a wooden handle, placed vertically in the middle of a central cut-out for the hand (Andersen 1959: 9; Ilkjær 2009: 356, fig. 319; Iversen 2019: 90-91, fig. 3). The shield is approximately 20 cm longer than the longest shields from Hjortspring, measuring 105.5 x 38.5 cm, which would have provided protection from the top of the torso down to the knees. The shield boss is missing. The attached wicker has protected the bottom edge of the shield from wear. Whether this shield represents an old tradition that was about to disappear or a shield fashion that lasted for decades or even centuries is uncertain. Without preserved wood, the shape

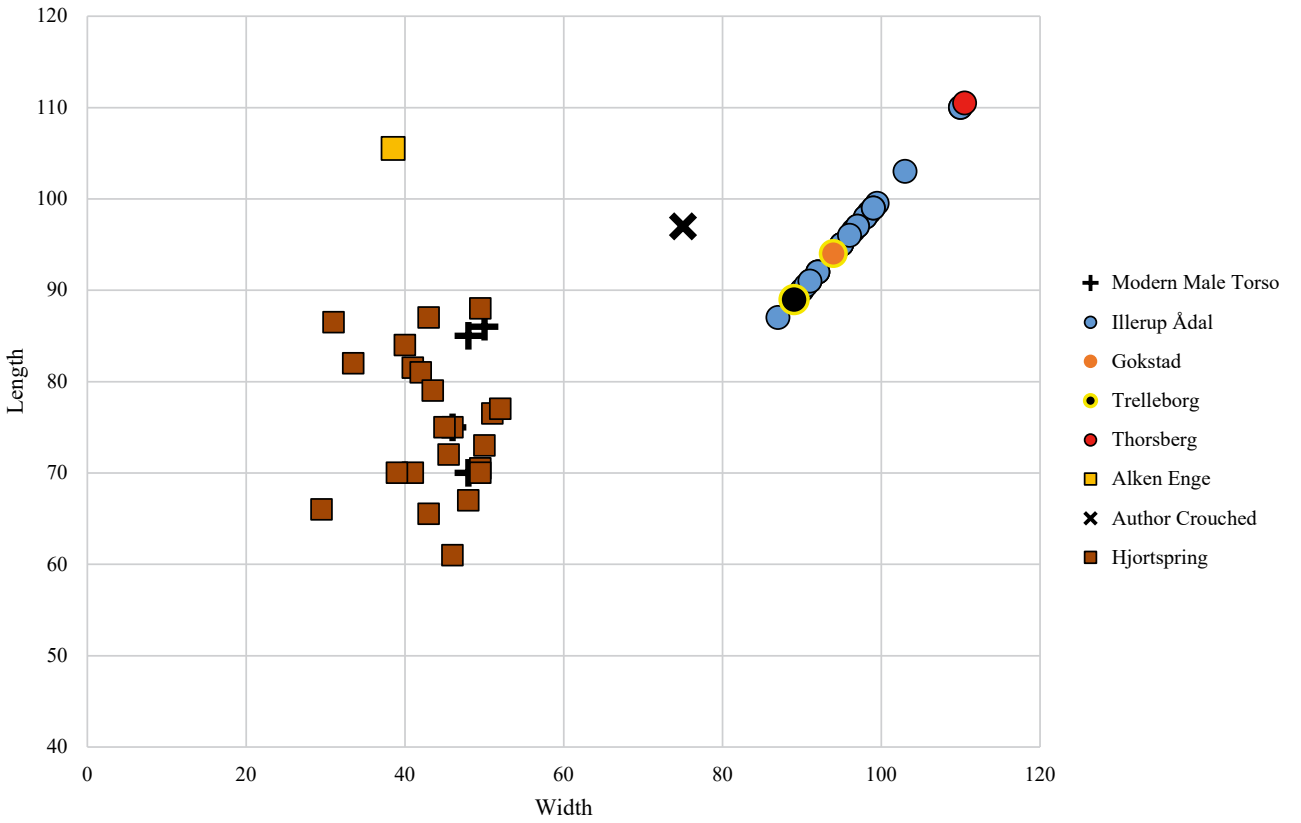

Fig. 1.18. The size of the Pre-Roman rectangular shield would have meant that it covered the torso of one warrior. In addition to this, the Early Roman period shield from Alken Enge is longer and would have covered the face or thighs. The circular shields from the bog deposits and the shields from Viking Age Trelleborg and Gokstad would completely cover the present author in a crouched position.

of the metal edge fittings that are occasionally found in graves sometimes gives an indication of the shape of the shield. According to N. Zieling, 10-15 % of the weapon graves in Northern and Central Europe contain shield rim fittings (Zieling 1989: 359). Many of them, however, do not provide conclusive evidence of the shape of the shield. Bartosz Kontny suggests that elongated, rectangular or hexagonal shields were generally used in the Przeworsk culture of the Early Roman period and sees a connection between the introduction of the domed shield boss in the early 3rd century and the circular shield (Kontny 2008a: 126). This may be supported by small, shield-shaped miniature pendants that are found in the graves of women and children (Kontny 2006: 126, fig. 13). Examples of shield rim fittings from Scandinavia, apparently from elongated, oval or rectangular shields, suggest that the shape of the shield in the Early Roman period generally followed similar patterns as in the Przeworsk culture.[53] The shield from Hagenow, grave 9/1995, Lower Elbe, measured 115 x 67 cm (Voss 2007: 65), and Zieling adds other German shields to the list: Harsefeld, grave 156, Mannheim-Feudenheim, Husby, graves 102 and 631, Bornitz FK 22 and Wachow (Zieling 1989: 355-358). Fittings for rectangular shields are also known from Vimose, although it is uncertain which deposit they are from (Zieling 1989: 357; Pauli Jensen 2008: 212). The identification of fittings for oval shields in the Thorsberg deposit by Zieling is not confirmed by Matešić (Zieling 1989: 355; Matešić 2015a: 171-173; 2015b: pl. 86-99).[54] However, there are also examples of circular shields in the Early Roman period (Zieling 1989: 354), indicating that there is no standardization of the shape of the shield until the late 2nd or early 3rd century CE.

The metal shield bosses protected a central cut-out for the hand. Most of the Pre-Roman and Early Roman shield bosses had spikes or rods (i.e. blunt protrusions), culminating in the more ornamental protrusions of 3rd century shield bosses. It has been suggested that the spikes and rods had an offensive function, which I find convincing, but the change from one type to the other because of an inherent weakness in the spikes seems less plausible (Kontny 2008a: 125-126). A development from shield bosses with spikes to those with rods is observed several times: in the Late Pre-Roman period, during the Early Roman period and again in 5th century, at least in Scandinavia. I see this development as a continuous attempt to cope with the disadvantages of shield bosses with protrusions. In a fast advance against the enemy, a spike or a rod could have had an unpleasant effect on every friendly warrior in front of such a shield, whether the advance was undertaken in an orderly formation or as a wild rush. The blunt rods could have counteracted some of this discomfort, but probably not to a sufficient extent. The longer rods, on the other hand, had the disadvantage that they could be grabbed by the opponent in close combat, forcing the shield to the side. For a short while, before 150 years of abandonment, the solution became the ornamental applications of the early 3rd century. Some of these, especially the pointed ones that dominate in Illerup Ådal, could still cause discomfort to friend and foe alike. It is perhaps revealing that only half of the Illerup army had shield bosses with such an applied decoration, including all warriors with copper alloy bosses.[55] These shiny bosses were meant to be seen and could thus have been positioned in the front row of a flat formation. Such a suggestion could, on the other hand, point towards another possible function of the protrusions on shield bosses. When the shield was held in a vertical position, the protrusion (and the spindle-shaped wooden shield boss of the pre-Roman period as well) could function as a foresight when firing missiles at the enemy, which would again indicate that many spearheads, barbed and without barbs, were indeed intended for throwing. In the later 3rd and the 4th century CE, shield bosses with spikes are no longer found. They reappear in a different form in the 5th century and become the only type of shield boss.

1.7.4. Shield bosses of wood and wicker and spearheads of bone

The shield bosses in the Hjortspring bog find are all spindle-shaped and made of wood. Their validity as examples of a general and temporally universal trend for shields made entirely of organic materials, as claimed by first M. Jahn, later W. Adler and specifically by B. Kontny is, however, questionable (Jahn 1916: 215; Adler 1993; Kontny 2008a). In both the shape of the shield itself as well as its shield boss, the Hjortspring shields

53. Probably Bjerrelide VII and Kastrup, Denmark (cat. nos 90 and 252; Pauli Jensen 2008: 212); Hunn, Norway (cat. no. 1153); Brostorp, Ölands Skogsby and Simris 1972, Sweden; and Saramäki, Finland (cat. nos 1933; 2040 and 2079; Salo 1968: pl. 27.6; Stjernquist 1977: 10, Zieling 1989: 355-358).

54. The identification by Zieling (1989: 358) of a square shield at Grebo, Sweden (cat. no. 1972), is less convincing, as most of the fittings of Zieling's type F are curved.

55. At Thorsberg, fewer shield bosses had protrusions and besides seven shield bosses with double-conical rods (Zieling D2), most of the applications are of a softer, rounded type with no apparent offensive features (Matešić 2015a: 150-160; 2015b: pl. 52-73).

follow the trend of early La Tène Central Europe, as shields are known from contemporary depictions. Depictions of warriors in La Tène art from the 6th-4th centuries BCE show that shields were indeed rectangular or oval with a spindle-shaped boss, but there are no traces of metal fittings on any of these.[56] This is consistent with the fact that no metal shield bosses are known from this time. They are introduced in the 3rd century BCE, as ribbon-shaped metal strips with open sides, fixed horizontally across the spindle-shaped boss (Savory 1976; Rapin 1983; 1999; Waldhauser 1988). From this time onwards, such metal fittings are occasionally depicted in La Tène art.[57] A few other wooden shield bosses from other Pre-Roman wetland sites do not alter the fact that the Hjortspring find cannot be used to support the theory of the use of shields made entirely of organic materials during the Roman period (Martens 2011: 158-160). The wooden shield bosses from the Roman period depositions at Vimose and Thorsberg is another matter, although in the case of Vimose, three wooden shield bosses out of a total of 307 is hardly a significant number.[58] At least half of the shield bosses from Vimose belong to an early 3rd century deposit. 56 cannot be dated and the remainder are from the late 1st and 2nd centuries CE (Pauli Jensen 2008: 157). In typological terms, the three wooden shield bosses can probably all be placed in the Early Roman period as well. In this case, they constitute between 3 and 5 % of the contemporary shield bosses. In the Thorsberg deposit, two finds of organic material can also be interpreted as shield bosses: a wooden fragment and a small wicker basket (Matešić 2015a: 161-162). Unlike the wooden bosses from Vimose, the Thorsberg fragment and wicker example, which are both domed, are not interpreted by Engelhardt as shield bosses in their own right, but "obviously" as the foundation for a metal cover (Engelhardt 1869: 50). The wooden fragment is today unfortunately missing, but Matešić states that the size of the wicker dome is not consistent with an interpretation as the foundation for a metal boss, although she is cautious about interpreting it as a shield boss (2015a: 162; 2015b: pl. 74). The evidence for shield bosses of organic materials from Thorsberg should be considered in comparison with 36 copper alloy and two silver shield bosses, and possibly several hundred iron bosses that have now been lost due to corrosion (Matešić 2015a: 163, Table 5). To conclude, all of the evidence from bog deposits does not support the presumed widespread use of shield bosses made entirely of organic materials after the invention of the metal shield bosses in the 3rd century BCE. In other words, the explanation for missing metal shield bosses in weapon combinations in graves is not well supported by the bog deposits of Scandinavia. Moreover, no other bog deposit has produced shield bosses of wood or wicker.

At Hjortspring, 31 spearheads are made of tubular bone with an oblique cut at one end as the tip and the hollow opposite end functioning as the socket. A small rivet hole is usually present at the socket end. The type is also known from the Pre-Roman period find from Krogsbølle on Funen and numerous other bog and river finds (Kjær 1902; Kaul 2003: 220; Martens 2011: 156-158). There is no evidence indicating that these simple bone spearheads were used beyond the transition between the Pre-Roman and Roman periods.

1.7.5. Archery

Many bog finds also contain large numbers of wooden bows and arrows with iron tips as well as occasionally bone arrowheads. In the early 3rd century depositions, A and B from Illerup Ådal, the number of archers may not have been significant. Only six wooden bows and around 200 arrowheads have been recorded in these two depositions (Pauli Jensen in Pauli Jensen & Nørbach 2009: fig. 91).[59] 70 % of the arrowheads are flat-bladed and more than half of these have relatively wide blades. It has been assumed that the wide, flat-bladed arrowheads were developed for hunting and their high percentage indicates that archery was less specialised as a military discipline in the early 3rd century CE, or

56. Fragments of statues from Vix and Glauberg (Fernandez-Götz and Arnold 2019: fig 3; J. Jensen 2003: 19); reliefs on burial *stelae* from Bologna and Bormio (J. Jensen 2003: 92; Kruta et al. 1999: 104); and procession on copper alloy bucket from Arnoaldi (J. Jensen 2003: 88).
57. Terracotta statue from Civita Alba (J. Jensen 2003: 20), Tropaeion at Pergamon (Kruta et al. 1999: 355). Regarding burials with shield bosses, see Kruta et al. 1999: 266, 293, 341, 527.
58. Engelhardt, the excavator of Vimose, mentions five wooden shield bosses, but Pauli Jensen only refers to three (Engelhardt 1869: 13; Pauli Jensen 2008: 157).
59. From contemporary Thorsberg, five bows and 122 wooden arrows support the assumption that archers were only of the limited importance in the early 3rd century CE (Westphal 2008: 235), although a comparison could be hindered by the possibility that more archers than infantry may have been able to flee the battlefield. 170 arrowheads from Vimose are all thought to date to the 3rd century deposit, along with 16 wooden bows and fragments, although it is not clear from the description whether the latter number is the total fragments or a minimum number of individual bows (Pauli Jensen 2008b: 146).

even that bows and arrows were only brought along on military campaigns for use in hunting (Kontny 2008a: 127; 2023). However, these arrowheads could equally have been used in war to kill horses and, against an army of warriors without body armour, would have been just as effective against human flesh. The argument that the arrows were less effective against shield wood than needle-shaped, bodkin-type arrows is only valid if the arrows were intended to become stuck in shield wood. Even though shields were used to protect the warrior against arrows and missiles, and arrows stuck in the shield board may have been a nuisance, this was probably never the primary purpose of firing arrows. Bearing this in mind, it is perhaps surprising that 26 % of the Illerup Ådal arrows are of the bodkin type, which is usually associated with warfare because of its penetrative effect against chainmail. The fact, that neither trilobate arrows nor bows of composite materials, known in the Roman army from the 1st century CE onwards (Bishop & Coulston 2006: 88), were used during the Roman period in Scandinavia, would also imply that impact was never a fundamental concern, probably because of the lack of armour.[60] The light weight of the arrows also seems to suggest a preference for short-distance precision (Westphal 2008: 243-244). Experiments have shown, however, that an Iron Age bow could shoot arrows between 100 and 167 m, with the majority of shots between 120 and 140 m (Paulsen 1998: 423; Nielsen 1991: 144; Pauli Jensen 2007; 2009; Pauli Jensen et al. 2003: 319). The poor quality of many of the bows described by H. Paulsen (1998: 390-399) and confirmed by Westphal (2008) and Malmros (2020: 114)[61] has been grossly exaggerated by Kontny (2008a: 127). H. Paulsen after all concludes that the bows from Nydam are highly developed weapons (Paulsen 1998: 425). Furthermore, the individual finish and general poor quality does not preclude the military importance of archery in Scandinavian warfare in the Late Roman period, and instead merely indicates that bows were not made by specialised craftsmen, but by the archers themselves, which may attest to the social standing of the combatants deployed in the archery units of the armies. However, during the later 3rd or early 4th century CE, the increasing importance of archery is indicated by the bog finds and the bodkin type becomes dominant, constituting more than 75% of the arrowheads. This is especially evident from the 4th century deposits at Nydam and Ejsbøl. 29 bows were found during the original excavations at Nydam by Conrad Engelhardt in 1859-1863 (Paulsen 1998: 391). A further 48 are known from the renewed excavations in the 1990s (Malmros 2020: 98). These 77 bows and more than 3,000 wooden arrow shafts and fragments had been washed around on the shore of the lake, and therefore cannot be positively attributed to one of the three major 4th century depositions in the so-called boat field, but even equal division between the three depositions would imply archery units of 25 or more.[62] At Ejsbøl, almost 700 arrowheads indicate the presence of 20 to 30 archers, based on two or three dozen arrows for each archer (Rau 2007: 151-152). At 12 arrows per minute, the archers could have emptied their quivers within two or three minutes (Westphal 2008: 244).[63] Nevertheless, we should probably not imagine that archery units were sizeable enough to create a hailstorm of iron tips that showered down onto the enemy army at the beginning of battle, and the technology of bows and arrows probably suggests that direct aim was involved. On the other hand, the growing number of arrows, and thus quite possibly archers, between the 3rd and 4th centuries must have been significant. The number of arrows at Illerup Ådal is about half the number of estimated infantries. Over a hundred years it had increased to 3.5: 1. This means that with very high precision, the combined effort of the archers could have killed the entire opposing army several times. In other words, relatively few archers could have had an extremely devastating effect from around 100 m, at least until the infantries clashed. This emphasises the importance of speed in warfare during the Late Roman period in Scandinavia.

1.7.6. Cavalry, horses and boats

Besides infantry and archers, the Scandinavian armies also included cavalry, or rather mounted warriors, as their tactical importance has probably been overestimated in previous research.[64] At Illerup Ådal, Site A,

60. Trilobate arrows are known from a few Scandinavian graves from the later 5th century CE onwards.
61. The poor quality of objects from the Nydam excavations in the 1990s only applies to the bows made of yew, and 23 hazel bows and three of elm wood are apparently of excellent quality (Malmros 2020: 114-115).
62. Rau (2007:151) proposes as many as 50 archers for two of the depositions in the Nydam boat field.
63. Westphal is referring to the shooting requirements of members of the royal guard during the reign of the English king Henry VIII. The analogy cannot be directly applied to the Iron Age armies of Scandinavia. Seven arrows a minute is estimated by Pauli Jensen et al. 2003: 326.
64. Examples are Engström 1992; Jensen et al. 2003: 323. The latter almost immediately contradict themselves by stating that all riding equipment belonged to the elite of the army: the princes or army leaders.

only 10-12 horse harnesses are present. Two bridles made of iron may belong to a lower social level, but the remainder can certainly be associated with the highest social stratum or level of command. It is inconceivable that cavalry comprising the leadership of the army would have acted as an independent tactical unit during battle, as the loss of leadership would have had fatal consequences for the whole army. At Ejsbøl, 12 horse harnesses were found and only seven at Nydam (Ørsnes 1988; Andersen 2003; Bemmann & Bemmann 1998; Nørgård Jørgensen & Andersen 2014). If, on the other hand, sacrifices of army equipment are interpreted primarily as remains of invading armies fighting far from their homes, it is entirely possible that the size of cavalry was limited due to logistical problems associated with naval transportation, and thus that the defending and winning side could have had a cavalry force that greatly outnumbered the invading cavalry unit. In the early 3rd century Thorsberg find, the number of horse harnesses is indeed higher than in any other find, with a total of 18, only four of which are positively attributed to the social elite (Lau 2014: 194, 269, 272).[65] The size of the army is uncertain, but the number of copper alloy shield bosses indicates a size similar to Illerup Ådal, Site A. In this case, cavalry could have played a tactical role in battle. At both Ejsbøl and Nydam, boats are present, either as boat rivets or in the case of Nydam, a complete boat and remains of another two boats. The complete oak boat is dendrochronologically dated to around 320 CE, but is believed to have been deposited as much as 80 years later. It was approximately 23.5 m long and built from wood from Schleswig-Holstein, Denmark or Scania, and contained seats for 28 oarsmen. Although found in a parallel position to the oak boat, a pine boat excavated in 1863 is thought to have been deposited in the early 4th century CE. Unfortunately, it was burnt by Prussian soldiers during the war against Denmark in 1864. It is presumed to have been almost 19 m long with seats for 18 oarsmen. Fragments of a completely chopped up oak boat are dated to around 190 CE and the vessel was probably deposited in the mid-late 3rd century CE (Rieck 2003; Rieck 2014). According to medieval Danish military law, only the coxswain of each ship was obliged to have a horse when the army was assembled for military campaigns (Lund 1996: 3). None of the known boats from the Danish Iron Age would apparently have been suitable for the transportation of horses, or even just one animal. Instead, the most likely explanation for the presence of mounted warriors on boats is that horses were stolen after landing, although this was probably not the optimal solution for effective cavalry warfare (Halsall 2003: 185; Dobat et al. 2014).

1.7.7. Logistics and crafts

Most war booty finds include some elements of the logistics of warfare. Ships were recovered from Nydam and ship nails from Ejsbøl and Vimose. Large fishhooks for deep-water fishing indicate that the Illerup army also came to Jutland by ship. Wagons or parts of wagons are present at Tranbær, Vimose and perhaps Thorsberg, and finds of wagons have been suggested from Nydam and Kragehul (Schovsbo 2007). Whether these are definitely associated with the sacrifices of army equipment is, however, uncertain.

Beside these means of transportation, many finds reveal details of the life and pastimes of the individual warrior on campaign. Gaming pieces are common, and gaming boards and dice are also sometimes present (Engelhardt 1869: figs 11-12; pl. 3; Schovsbo 2007: 29; Blankenfeldt 2015: 250ff.; Kokowski 2019: 126ff.). Wooden bowls are also often found. As many as 84 of these were recovered from Nydam (Malmros 2020: fig. 3.1, 104-105). One has a hastily carved chequerboard on the bottom, providing a particularly vivid picture of a soldier's life (Ilkjær & Iversen 2009: fig. 6; Blankenfeldt 2015: fig. 151).

A variety of tools are also very commonly found, suggesting that many specialised artisans were also warriors. Anvils, soldering irons, files, hammers and small pieces of scrap metal indicate that repairs could be undertaken on campaigns. Adzes, chisels, planes and augers for woodworking are also present (von Carnap-Bornheim & Ilkjær 1996a: 371ff.; Dobat 2008). An unfinished comb from Illerup Ådal shows that work was brought along on the trip. Sickles from Vimose and Nydam may have been used for harvesting during the campaign and a rake from Thorsberg for caring for horses or livestock (Engelhardt 1863: pl. 16; 1865: pl. XV; 1869: 26f.).

Intriguing evidence also points to the existence of field surgeons. Specialised types of knives, tweezers and small wooden pins made from blackthorn with a supposed healing effect may have been used as medical instruments (Frölich 2003; 2009). The question is still open for debate, however, as small wooden pins of blackthorn are also found as rivets in arrow and spear shafts (Malmros 2020: 100), the knives could have been used for leatherworking and the tweezers were probably intended for the personal hygiene of the warriors rather than closing cuts to the flesh. Even the most convincing example of surgery, the proposed saw for trepanation, has also been interpreted as a knife for leatherworking (Dobat 2008: 46).

65. In addition, there are nine horse harnesses in a late 3rd/early 4th century deposit (Lau 2014: 194, 270, 273).

1.7.8. Army sizes

The largest of the Scandinavian army equipment sacrifices clearly represent battles fought by armies of at least a few hundred and up to 1,000 warriors on each side. The biggest, most thoroughly documented and published find from Illerup Ådal contains four offerings, with the earliest find from the early 3rd century containing the equipment of around 400 warriors (Ilkjær 1990; 1993; 2001; 2002; Von Carnap-Bornheim & Ilkjær 1996; Biborski & Ilkjær 2006; Ilkjær & Iversen 2009; Pauli Jensen et al. 2003; Blankenfeldt 2020). As only 40 % of the find area at Illerup Ådal has been excavated, the army of Illerup Ådal, Site A, is usually estimated at 1,000 warriors, although less realistic numbers of 1,500-2,000 or even 3,400 warriors have also been suggested (Albrethsen 1997; Kaul 1997; Steuer 2006; U.L. Hansen 2002: 32-34). The largest offering from Vimose, probably dating to around 230 CE, contains equipment for at least 300 warriors, but it is not known how much is still left in the bog and how much has been lost during years of peat digging.[66] The army from the contemporary Illerup, Site B, would have numbered at least just over 100 warriors. Like the late 4th century deposit Illerup C, it is a lake shore deposit and has very probably been fully excavated. The army from the Ejsbøl North find, dated to around 300 CE, probably consisted of at least 200 warriors, based on the number of shields, javelins and spearheads. The two early and late 4th century deposits from Nydam are probably derived from armies of a size similar to the Ejsbøl army, although the state of preservation of the iron makes a precise estimate impossible. From the Swedish site of Skedemosse there are more than 1,000 iron heads from spears and javelins. Unfortunately, their state of preservation prevents the dating of more than just a few of these. In the very late 4th century CE, the army from Illerup, Site C, probably consisted of just under 100 men.

So the largest of the Scandinavian armies consisted of several hundred warriors. Many deposits are clearly smaller. In some cases, this may be due to the limited excavations of some of the bogs, but it should be acknowledged that certain booty offerings are actually evidence of warfare on a limited scale, such as raiding parties or inconclusive skirmishes.[67]

1.7.9. The structure of the armies

One of the most intriguing results from the interpretation of the war booty site from Illerup Ådal is the recognition that the army was organised in three hierarchical layers (von Carnap-Bornheim & Ilkjær 1996a: 483ff.). This is most clearly discernible from the shield material of Site A. Five shield bosses are made from silver with inlaid semiprecious stones and glass, and are furnished with impressed metal foil decorations. The shield boards are decorated with small face masks and/or rosettes of gilded silver and the edges with a silver fitting (fig. 1.19) (von Carnap-Bornheim 1996a: 279ff.; 1996c: pl. 54; 117; 129; 138; and 234). These five shields clearly represent the leadership of the Illerup army, and a hierarchy within these is possibly indicated by the number of rosettes and face masks. One has eight rosettes and 22 masks, another six rosettes and 16 masks,[68] two have four rosettes and 14 masks, and the fifth shield has no rosettes and eight masks (von Carnap-Bornheim & Ilkjær 1996a: 280-285). Two copper alloy shield bosses with rosettes and impressed metal sheet decorations and another three iron bosses with similar decoration may be associated with the first or second level of the army, together with 30 shield bosses of copper alloy. The lowest level of the army is represented by more than 300 shield bosses of iron. To a certain extent, this pattern is also found on other equipment from Illerup A, such as sword grips and scabbard fittings as well as horse harnesses. Five gold or golden arm or neck rings can also be attributed to each of the leaders of the army (von Carnap-Bornheim & Ilkjær 1996a: 249ff.; 1996c: pl. 246; 249; 253).

The hierarchical pattern can also be indirectly observed in the destruction patterns of the objects. Silver shield bosses have been subjected to the most obvious post-battle destruction, the copper alloy bosses to less, and shield bosses of iron are usually undamaged or only slightly damaged.

A key issue in this hierarchical pattern is whether it represents a chain of command or, for instance, just an army leadership with a core of elite and the main part of the military force consisting of young or/and inexperienced warriors. Were the warriors of the second level, with their copper alloy-adorned shields, members of a bodyguard that fought close to their chief or did each of them command a group of level 3 soldiers?

66. According to legend, an iron ship's anchor was reforged and used to cover the door of the local church at Allesø (Engelhardt 1869:25-26).
67. For further discussion, see Iversen 2008: 189f.
68. This shield, SAUE, is considered by von Carnap-Bornheim & Ilkjær (1996a: 485) to have belonged to the ultimate leader of the army on the basis of its shield boss with inlays of red garnets.

Fig. 1.19. Five shield bosses from Illerup Ådal of silver with gilded, impressed foil, rosettes and/or small face masks represent the highest level of the army. This shield, SAUC, is one of two with four rosettes and 14 face masks. Photo: Moesgaard Museum.

Although the analogies with the tripartite structure of the army, the *principes*, *comites* and *pedites* of Tacitus' *Germania* and *regales*, *optimates* and *armatores* from Ammianus Marcellinus, can be disregarded as Roman *topoi*, most scholars today accept the hierarchy of the Illerup army as reflecting a military command system of senior and junior officers and privates.[69] Some have even gone as far as to see this system as an imitation of the structure of the Roman army (Albrethsen 1997; Fuglevik 2007). In this case, the silver shield bosses would belong to the *centurions* commanding a unit of 80 soldiers: *decani* carrying shields with copper alloy bosses and each commanding a tent of men, the *contubernium*, of eight soldiers. This argument would be convincing if it could be demonstrated that the same pattern of organisation was a common phenomenon, but this is not the case. In the contemporary find from Thorsberg, two silver shield bosses and 36 bosses made of copper alloy are present. Iron is not preserved, but the proportions of silver and copper alloy are clearly different to those from Illerup Ådal. In the case of Vimose, another contemporary find, only fragments of one shield boss can be attributed to the top level of the army, 13 shield bosses are made of copper alloy and 150 bosses of iron (Engelhardt 1869: 28; Pauli Jensen 2008a: 157). These differences may encourage the question whether it is at all reasonable to assume there was a shared army structure based upon a Roman model in hundreds of chiefdoms far to the north of the Roman Empire?

Even though Roman inspiration for the structure of armies can be rejected, silver and copper alloy shield bosses are found in several 3rd century weapon graves in Scandinavia and outside it, supporting the assumption of a shared use of symbolism in the expression of military and social hierarchies in most parts of the barbarian north (von Carnap-Bornheim & Ilkjær 1996a: 291ff.). After 300 CE, the production of such bosses generally ceases, perhaps due to a general interruption to the supplies of

69. Regarding the use of Tacitus/Ammianus Marcellinus, see von Carnap-Bornheim 1992; critique by Fuglevik 2007: 226-230, although his dismissal of the tripartite army structure contradicts the archaeological evidence, as it is not dependent on the dubious descriptions of classical literature. Demanding complete agreement between burials and bog finds is obviously not a point which is accepted in this publication.

Roman manufactured vessels, which probably provided the raw material for fine metal shield bosses.[70]

However, evidence of a tripartite structure can perhaps be found in the belt equipment of the early 4th century depositions from Ejsbøl and Nydam. In each of these deposits, one belt stands out from the rest, with its magnificent, impressed foil decorated fittings and blue glass inlays. There are close parallels with the belt from Ejsbøl at the burial site of Neudorf-Bornstein in Holstein (von Carnap-Bornheim 2003; Abegg-Wigg 2008; 2014) and the belt from Nydam essentially belongs to a typical Scandinavian group of military belts (Rau 2010: 210-253). However, these 4th century belts do not entirely lack parallels outside Scandinavia and Schleswig-Holstein as well as within the Roman Empire (Fischer 2012: 128-134; Tamulynas 2005: fig. 1.3; Bursche & Niezabitowska-Wiśniewska 2018: fig. 12.12, 16 and 18). At Ejsbøl, the second level is represented by 14 similar belts made of copper alloy of a more common quality, and the third level by more than 40 simple copper alloy or iron belt buckles (Ørsnes 1988; Andersen 2003; Nørgård Jørgensen & Andersen 2014). In the case of Nydam, at least four complete belts represent a second level, but unfortunately only a few iron buckles, representing a third stratum of the military hierarchy, have survived (Rau 2010: 491-492).

1.7.10. Body count

Except for the atypical find from Alken Enge, no contemporary human skeletons have been found in connection with the bog finds and no mass graves have ever been discovered in Iron Age Scandinavia to provide an indication of how many died during the conflicts of the Iron Age. From the weapon system and fighting style indicated by the army equipment in the bog finds it is, however, clear that battles could have been hard fought and the body counts potentially massive.

By studying some of the better excavated and well-preserved finds, it is perhaps possible to arrive at an estimate of how many died or were captured and how many were fortunate enough to flee from battle.

Danish archaeologist Jørn Lønstrup was the first to notice a pattern in the deposit dating to 300 CE from Ejsbøl North (Lønstrup 1988: 94-95; 96-97). He argued that 60 belt buckles, knives and sword blades indicated that all warriors had swords and 60 men died during

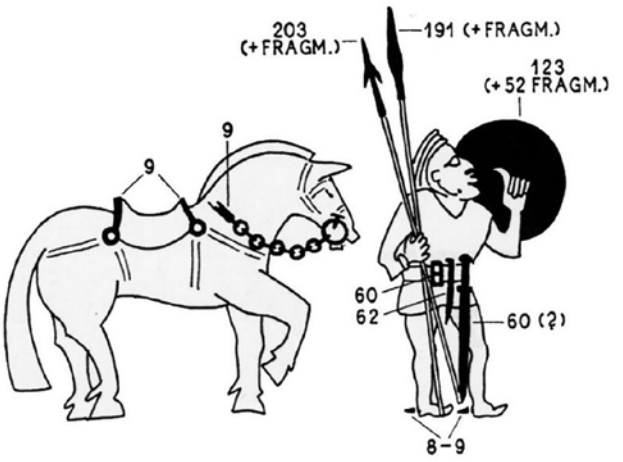

Fig. 1.20. The numbers of finds of artefact groups from Ejsbøl. All of the equipment of an entire army or a reflection of casualties in battle? New excavations have only added a few to the total number of artefacts. From Ørsnes 1970a, fig. 4.

battle or were taken as captives. The approximately 200 spearheads and javelin heads and 175 shield bosses would roughly indicate the total number of participants on the losing side, with the difference between 60 and 200 reflecting the number who escaped. 30 % of the army would then have been killed or captured (fig. 1.20).

Almost the same equation can be applied to Illerup Ådal, Site A. 137 sharpening steels, 140 combs, 129 strike-a-lights and a maximum of 144 sword blades are present, some of which may belong to deposit B (Ilkjær & Biborski 2006: 375). At Illerup, each warrior presumably wore two belts, an inner personal belt and an outer military belt, and had two knives: a battle knife and smaller personal knife. The find at Illerup (Ilkjær 1993a) includes 263 belts, 192 battle knives and 115 small knives. Some of the battle knives could belong to the second sacrifice at Illerup, Site B, which may explain why this find group is overrepresented. The numbers of objects therefore suggest a possible body count of around 130. The total number of fighters is indicated by around 350 shield bosses, 366 spearheads and 410 javelins respectively, giving a percentage of casualties of 32-36 % of the army. The disgrace in terms of masculinity associated with discarding the shield during flight seems to be somewhat of a *topos* in ancient literature, although it could also merely have been an observation of a logical reaction: warriors threw down their heavy equipment when fleeing the battlefield. In early Frankish law, throwing down the shield had become a general insult that implied cowardice, thus

70. The silver shield boss from Gommern was definitely reworked from a Roman silver object (Becker 2010: 108). Regarding exceptions to the end in production, see von Carnap-Bornheim 1999; Rau 2008. The interruption to Roman imports may be explained by the economic crisis in the Roman frontier region and the reorganisation of the Roman army around 300 CE (Halsall 2007: 83-85).

attesting to the common occurrence of the phenomenon.[71] Similarly, the fleeing warriors would have hurled their polearms at the enemy or would have left them on the battlefield as they fled.

Other attempts to reconstruct armies reflect a literal interpretation of bog finds similar to the interpretation of graves. Some of them are based on the reconstruction drawings of the army associated with the deposit dating to 300 CE from Ejsbøl like fig 1.20 or other illustrations of the army organised in units (Ørsnes 1970a: fig. 4; Jensen 2003: 570; 2013: 809). In this interpretation, every weapon of the find is distributed hierarchically, from mounted warriors equipped with a full panoply of sword, shield, spear and javelin, to the last 11 men unfortunate enough to be only equipped with a javelin (Nørgård Jørgensen & Andersen 2014: 261). Such an interpretation is only plausible if every warrior fighting also died or surrendered. Although this may have occurred under extreme circumstances, it does not appear to be a very likely outcome of most Iron Age battles. Nevertheless, the same approach is associated with the interpretation of the army of Illerup Ådal, Site A, by F.A. Stylegar and this line of thought also encourages S. Albrethsen, F. Kaul and U.L. Hansen to propose a probably unrealistically large number of warriors in this army (Albrethsen 1997: 216; Kaul 1997: 142; U.L. Hansen 2002: 34;[72] Stylegar 2009). The interpretation of total defeat also characterises the attempts to reconstruct the Hjortspring army by K. Randsborg and F. Kaul, who both assume that all of the c. 170 spearheads would have belonged to the 64 warriors equipped with shields (Randsborg 1995; Kaul 2003).

1.7.11. Fighting style

The complete panoply of the warrior of an army can be referred to as a weapon system, and this system reveals a great deal about the style of fighting and tactics of an army (Engström 1992). The Macedonian hoplite carried a large, round and heavy shield designed to cover the individual and partly the warrior to the side as well. The armour was heavy body armour, with a helmet providing maximum protection, but a limited view, and metal greaves protected the warrior's lower legs. The main weapon of the hoplite warrior was a spearhead used for thrusting, with a spear butt spike at the other end, which could also be used as a weapon if the spear shaft broke. In the Macedonian phalanx, the spearhead was developed into a very long lance, which was clearly designed to be held in a fixed, vertical position. The secondary weapon of the hoplite warrior was a short sword, which was either single-edged or double-edged. The panoply reveals a fighting style involving slow progression in a tight formation, which created an impenetrable wall. The formation could withstand cavalry attacks as well as opposing heavy infantry, and the individual armour and the close formation provided protection against missiles launched by the enemy. It was clearly a defensive system designed for wealthy, free citizens and for minimising losses. It was not, however, a flexible weapon system. Fast tactical manoeuvres had to be conducted by additional troops, such as light infantry and cavalry.

Originally, the Roman army of the early Republic, or at least the part of the army consisting of the wealthy class of citizens, had been designed based on the Greek hoplite model. However, the disastrous defeat to the Gauls in the early 4th century BCE altered the organisation and panoply of the army towards greater mobility and a much lighter panoply, although it was still socially segmented according to the wealth class of the individual citizen. The army reforms by Marius at the transition between the 2nd and 1st century BCE transferred the expenditure on weapons from the citizens to the state, creating the standardised panoply that is recognisably Roman and most importantly allowed greater recruitment from the classes of poorest citizens. Throughout the following centuries, the panoply of the legionary was refined but did not fundamentally change. The Roman legions of the first two centuries CE carried two *pilae* for throwing, a short sword for close combat, a rectangular, curved shield behind which the individual was completely protected, a helmet and some kind of body armour, usually the segmented *lorica segmentata*. This system was designed for great flexibility in combat. The reasonably light equipment of the legionaries made it possible to rush forward or withdraw quickly, but it was still heavy and strong enough to allow a slow progression in a tight formation. The simultaneous throwing of the Roman *pilae* would have a shocking and devastating effect on the enemy and was often followed by a quick frontal attack. Cavalry and archers constituted independent army units, usually made up of barbarian auxiliaries.

Similarly, some assumptions can be made about the fighting techniques of the Scandinavian armies based on the bog finds of the 3rd-4th centuries CE. The main

71. Polybius: *Histories* VI: 37; Tacitus: *Germania* 6:10; *Pactus Legis Salicae* XXX, 6; Halsall 2003: 11.

72. Calculating the size of the Ejsbøl army, U.L. Hansen accepts the number of casualties as 60 men, but immediately contradicts herself by calculating on the basis of spearheads and arrives at an estimate of 2,300 warriors for the Ejsbøl army and 3,400 for Illerup Ådal, Site A (U.L. Hansen 2002: 33f.).

part of the army was made up of infantry. Each warrior possessed one barbed javelin for throwing, a spear for close combat or throwing a short distance and probably a sword as well. The sword during the 3rd to 5th centuries was always the *spatha*. Each warrior also carried a round, relatively light wooden shield with a metal boss in the middle. Shields were probably mostly designed to cover the individual, but formation fighting was certainly possible. The shape of the shield enabled the warrior to crouch entirely covered underneath it when volleys of missiles were fired. Almost none of the warriors wore helmets or body armour. This lack of armoury is consistent with the finds of weapons in graves from Scandinavia and cannot be logically explained by some sort of pre-depositional sorting of valuable equipment, as the war booty finds contain large numbers of very valuable sword blades made within the Roman Empire, as well as silver and gold artefacts.

Compared to the Scandinavian army of 4th century BCE at Hjortspring, there seems to have been a giant leap. The 64 or more shield-bearing warriors would have manned at least four canoes of the Hjortspring type and clearly constitute an army, although the torso-covering shields and the heterogenous assemblage of spearheads and swords does not suggest a very strictly organised or professional army, but instead warriors fighting in a loose and probably very flat and mobile formation. This view very much contradicts the interpretation of the Hjortspring panoply of both K. Randsborg and F. Kaul (Randsborg 1995; 1999; Kaul 2003). Both agree that the equipment of the army was very standardised, and they point to the 11 swords, and 11-12 narrow shields as indisputably representing officer level in the army. Randsborg goes much further. In what seems to be a stream of consciousness, he compares the army from Hjortspring to hoplite warfare of classical Greece, as his perceptions of the battle of Hjortspring "strikingly resemble a clash between hoplite or other phalanx forces of the Greek Archaic and Classical periods" (Randsborg 1995: 58). The monograph is packed with terms which support this interpretation: "platoon", "regimental order", "commanders", "*strategos*", "centurions", "cavalry",[73] "code of combat" and references to specialised weapons like "narrow-headed precisely aimed, deep penetration javelins". Realising that the Hjortspring panoply is different to that of the hoplites, Randsborg goes on to compare the army with the Italian Samnites and the armies of the Roman Republic, but still states: "In spite of the overall differences in appearance of the troops, this weaponry [of hoplite warfare], dominated by shield and spear/lance, is in fact, clearly reminiscent of Hjortspring" (Randsborg 1995: 59).

In my opinion, the variations amongst the spearheads are too numerous to be interpreted as standardised or the opposite: specialised. They were apparently produced by several blacksmiths. As pointed out by Randsborg, their variation is perhaps associated with the composition of the army in terms of age. The swords can be long and slender, or shaped like short choppers, and all shapes in between these (Kaul 2003: figs 2-3). The panoply certainly does not resemble that of the hoplites of classical Greece and fighting in the same manner would have been either fatal or impossible.

The study of the few weapons from the post-battle sacrificial site at Alken Enge, dated to the early decades CE is inconclusive, but the few spearheads are a heterogenous group of weapons that have been poorly made from local iron (Iversen 2019). The presence of such few weapons may have a simple explanation: they were embedded in corpses or were otherwise overlooked when the battlefield was stripped of weapons by the victorious side (Løvschal et al. 2019; 2020). In this case, the spearheads are likely to have belonged to the winning side. The abundance of human remains, in complete contrast to earlier and especially later war-related bog deposits, reveal important details of this early 1st century army (Holst et al. 2018; Mollerup 2019; Løvschal et al. 2019; 2020). The minimum number of individuals from 2,335 human bones is 82, but given the limited excavations of the known area containing scatterings of bones, the number of fatalities could have been as high as several hundred (Bonde Mørk 2019).[74] The army mainly consists of adult men, with less than 5 % of the bones belonging to adolescents and only 1 % to men over 40. The study of 112 examples of trauma on the bones is especially revealing. Most of the 24 occurrences of injuries inflicted with blunt implements had healed by the time of death, suggesting that these were accidental injuries that occurred in civilian life, whilst only one of 76 injuries inflicted with sharp-edged implements and one of 12 injuries caused by pointed weapons had healed. This suggests that the Alken Enge army was not composed of veterans with a great deal of battle experience, even when considering that small injuries could have had disabling or fatal consequences in the Iron Age. Many sharp traumas are recorded on the head, to the forehead, temple and face, the first two

73. Although there are no indications of cavalry in the Hjortspring find.

74. This is a significant number of fatalities, suggesting army sizes that are comparable with or even larger than the 3rd-5th century bog finds. The proportion of fatalities and survivors cannot, however, be estimated.

clearly demonstrating the absence of helmets. Numerous examples of traumas can also be seen on both legs, but fewer on the arms and the torso. Most of these are on the right side, indicating that a shield was held with the left arm. A few injuries on the left side, especially one to the arm pit, were possibly caused by involuntary exposure of the protected shield side during battle. A few injuries to the right ulna can be interpreted as desperate attempts to ward off blows. It is, however, striking that nearly a third of the injuries are found on the back side of the skeletal remains, especially the back of the skull and the torso. The latter are concentrated around the spine and ribs of the upper torso. This implies that many must have turned their backs on the enemy on the battlefield and were killed as they ran, or else were executed with their backs turned towards their killer.[75]

The overall impression of the Alken Enge army is one of able, but inexperienced warriors, fighting with shields, small spearheads and single-edged swords, probably still in a more open and less practised formation than in the armies of the 3rd century. The size of the army could suggest that all men able to fight were recruited, but it was probably not a desperate mustering of all men. This may indicate that the conflict was due to competition over land rights, and perhaps that the local side came out victorious.

Based upon the bog finds, significant changes in the way Scandinavian barbarians fought and organised their armies occurred during the later 1st and 2nd centuries CE, during which bog finds of army equipment are few in number and small, or at the latest at the transition to the 3rd century, when the ritual tradition of army equipment sacrifice was practised on a larger scale. The result was a tripartite, social and/or hierarchical division of the armies and a standardisation of equipment, comprising a panoply of javelin, spearhead, *spatha* and circular shield. Archery increased in importance towards the 4th century, but was probably not utilised before or at the beginning of the Common Era. It is not exactly clear when the bow and arrow was introduced as a weapon, but burial data perhaps generally supports a late date. The Scandinavian armies of the 3rd century onwards were almost entirely based on infantry and the panoply suggests a complexity of manoeuvring that required prior training. When this move towards a higher degree of military complexity began is not evident from the bog finds, and may not be revealed by studying graves, given the difficulties of interpretation that have been discussed above. Some steps towards the standardisation of weapons can perhaps be observed in the late 2nd century deposition from Vimose, in which the 115 spearheads of type 25 Gamme are described as a relatively homogenous group (Pauli Jensen 2008a: 80). However, further assessment of this must wait until publication of the Vimose material in the future.

1.7.12. Combat

We can thus picture two opposing armies in an internal barbarian conflict. Arrows began to be fired when the two armies were 100-140 m away from one another. Archery probably increased in importance towards the end of the 3rd century CE. A second wave of shock was inflicted by the launching of javelins, perhaps from 30 m or less, before the two armies eventually clashed in close hand combat. Almost none of the Scandinavian warriors fought with helmets or body armour, and their only chance to protect themselves against arrows and the volleys of missiles would have been to crouch behind or beneath their round, wooden shields, and by advancing quickly between firing distance and the eventual clash of armies in close combat. This observation would explain why authors of Roman history often perceive Germanic warfare as fast and chaotic. Herodian wrote: "archers found the Germans' bare heads and large bodies an easy long-distance target for their arrows. But if charged into close combat, they were stubborn fighters and often the equals of the Romans" (Elton 1996: 60). The complex panoply, indicating a coordinated hurling of javelins, and possibly the formation of some sort of shield wall to avoid this weapon, and the following shift to the close combat with spears, must have required some military training. The first clash of the two opposing armies probably still occurred behind a relatively dense shield formation. The thrusting and stabbing with spears would eventually have created enough space in the lines to make individual fighting with the *spatha* possible. The formations are likely to have been relatively flat, although the *cuneus* or pig's head formation is mentioned by Roman historians. Whether an actual tactical formation or not, it would only have been used by one of the two opposing sides. Cavalry would probably have been deployed for scouting, ordnance duties and for rounding up and encouraging the infantry before and during battle.

75. There are no signs of decapitation, however. The dismembering of the skeletal material prior to deposition, and possibly the currents in the lake after deposition, mean that it is impossible to study the fate of the individual warrior. Had the warriors with back injuries attempted to flee, or were they already wounded and unable to do so, and therefore executed during battle or after?

1.7.13. Who were warriors – elite armies or conscripts?

The military equipment of the large bog finds is highly standardised. There are only small amounts of outdated equipment and very little evidence that the armies of Scandinavia wholly or partially consisted of a peasant militia. Furthermore, the Scandinavian weapon system, consisting of a shield, spear and javelin, as well as the size of the armies, would have made fighting without prior training difficult. The inferred fighting style is, in other words, too complicated to be practised by untrained conscripts recruited during times of trouble (Engström 1992). On the other hand, a professional standing army similar to the Roman army seems equally inconceivable. We should instead imagine that warfare was primarily conducted by an elite, which was organised around the chief and his retinue of professional or semiprofessional warriors. The chief could unite with other chiefs according to the military and political aims of the campaign or the severity of the threat. In a defensive situation, an army recruited from a peasant or unfree class may have supplemented the elite army to gain numerical superiority over the invading force (Reyna 1994: 43-46).

The dichotomy between warriors and soldiers, the former archaeologically materialised by a 'heterogenous body of weaponry', 'individual choices' and fighting 'as individuals', and the latter by 'homogenous equipment with standardised weapon types' and 'members of disciplined military formations' is in my mind a false one. This division is rooted in the general exaggeration of Scandinavian society and military organisation in Danish archaeology of the mid-1990s and early 2000s, and is heavily influenced by heroic literature, Hollywood fiction and fantasy games (quotes from Jørgensen 2001: 9-10; see also: Pauli Jensen et al. 2003: 311-312; U.L. Hansen 1995; Randsborg 1995; Albrethsen 1997; Storgaard 2001; 2003). The armies of the early 3rd century fought in formation and with highly standardised equipment, but were warriors more than soldiers, and possibly many or even most of them were farmers as well. But even in earlier periods of the Iron Age, there was a high degree of standardisation and only very limited individual choices were available. *Conan – the Barbarian* would not have fared well in Iron Age warfare, and the epic hero of contemporary myths and sagas merely represents the concentration of the collective achievement into a simpler and more appealing narrative.

The size of political entities would have varied greatly according to the geography, economy and density of settlement in a given area. Attempts at calculating the size of a territory that could muster an army of 1,000 warriors have been thoroughly discussed by A. Rau (2010: 496-500). His efforts and those of three other scholars will be briefly discussed here (Bemmann & Bemmann 1998: 357-363; Jørgensen 2001: 17; Steuer 2006: 229). Rau suggests that a settlement area for 1,000 warriors is most likely to have been between 2,040 and 4,000 km^2 (Rau 2010: Table 26). Bemmann & Bemman, Jørgensen and Steuer all reach a result of between 1,250 to 1,500 km^2 (fig. 1.21).[76] However, there are two unknown variables in the calculation: the percentage of the total population participating in warfare and the population density. Both Bemmann & Bemmann and H. Steuer agree that an area of approximately this size would have been populated by 500 farmsteads and an army would have been recruited from around a fifth of a total population. As stated by A. Rau, this would imply a highly militarised society without any distinction between warriors and peasants (Rau 2010: 496). L. Jørgensen, on the other hand, believes that the same area could have supported between 1,500 and 2,000 farmsteads. With Jørgensen's calculation, according M. Gebühr (2000: 37), a population of 20,000 would have provided the foundation for a 1,000-man army that was 5 % of the population. In Bemmann & Bemmann's estimate, an area between a third and half the size of Funen would have had a population of approximately 6,000 and a population density of between 4.6 and 7.5. H. Steuer proposes a total population in an area of 1,250 m^2 as 5,000 with a density per km^2 of only 4, but L. Jørgensen suggests a total of 20,000 and a density of 13.3 per km^2. This means that Denmark, with a present area of 42,933 km^2, would have had a total population of 572, 444 according to L. Jørgensen, between 197,492 and 331,998 according to J. Bemmann & G. Bemmann, and only 171,732 in the view of H. Steuer. Despite the smaller population, the total amount of warriors who could be recruited in all of Denmark is slightly higher in H. Steuer's model, at 34,346, compared to the 28,622 according to the 5 % in L. Jørgensen's estimate.[77] The present Danish area would have had a population of between 215,000 and 300,000 according to A. Rau.

76. The areas of recruitment are demonstrated by Bemmann & Bemmann with two maps of different landscape types: Thy, northwestern Jutland, and southwestern Jutland (Bemmann & Bemmann 1998: figs 158-159). The map of Thy covers an area of just under 1,300 km^2, whereas the Esbjerg map covers approximately the present municipality of Esbjerg, with an area of just under 800 km^2. The estimates are approximate.

77. With an area of 1130.7 km^2, the three modern municipalities surrounding Illerup Ådal, Aarhus, Odder and Skanderborg, would barely have been able to muster an army of that size: 900 according to Steuer and 750 using Jørgensen's model.

	J. & G. Bemmann 1998	L. Jørgensen 2001	H. Steuer 2006	A. Rau 2010
Number of farmsteads	500	1.500-2.000	500	
% of total population	17%	5%	20%	5-7%
Size of recruitment area	800-1.300 km2	1.500 km2	1.250 km2	2.040-4.000 m2
Total size of population	6	20.000	5.000	10.200-28.000
Population density	4.6-7.5 per km2	13.3 per km2	4 per km2	5-7 per km2

Fig. 1.21. Calculations of population sizes and the recruitment area for 1,000 warriors in Denmark. Rau suggests the same population density for both Denmark and the Baltic islands.

Regardless of who is right, if any of the scholars are, the numbers are thought-provoking compared to the sizes of the armies in classical written sources. A. Rau believes that between 5 and 7 % of the population would have fought in a typical army and that the population density per km^2 would have been the same: between 5 and 7.

All the scholars use villages of the Vorbasse type, with 13 contemporary farmsteads in the 3rd century CE, as the basis for their estimates. There are problems associated with such an estimate, however. Settlement density is obviously not the same in all types of landscape. This has been given some consideration by Bemmann & Hahne, and Rau discusses population density in areas both inside and outside southern Scandinavia: the Baltic islands of Gotland and Öland, the Jæren area in Norway, and even Bohemia and the Rhine area (Rau 2010: 497-498; Table 28). However, the population density of both Danish areas and the Baltic islands in Table 28 is the same, and the proportion of arable and inhabitable land compared to wetland areas is only approximately considered. The western and central parts of Jutland are characterised by flat areas with an arable, but not especially fertile, sandy soils and broad stretches of grazed heathland, which are already a characteristic element of the landscape in the Iron Age. Eastern Jutland, Funen and Zealand are characterised by heavier soils, a hilly moraine landscape and extensive wetland areas, which today are arable land as a result of drainage during the 19th and 20th centuries. Large areas of the northern Jutland Peninsula, northwestern Funen and central and northern Zealand would have been forested in the Iron Age (Aaby 1992; Crumlin-Pedersen et al. 1996; Bech & Mikkelsen 1999; Rindel 1999; Iversen 2010: fig. 5; Christensen 2015: 250; Odgaard 2019). The different landscape types would have greatly affected population density. It is in the sandy, but less fertile areas of western Jutland where large villages, such as Vorbasse and Nørre Snede, and earlier large villages, like Grøntoft and Hodde, are located (Becker 1965; 1968; 1971; Hvass 1979; 1983; 1985; Hansen 1988; Holst 2010). Although many villages with individually fenced farmsteads of the Vorbasse type have been excavated throughout Jutland during the last 40 years, Vorbasse and Nørre Snede are still amongst the largest settlements that are known of. In eastern Jutland, where the Illerup Ådal depositions are located, villages with more than two contemporary farmsteads are so far few in number and their earliest phases seem to date a few decades after the first large-scale depositions in Illerup Ådal (Ravn 2009; Laursen & Iversen 2020). The landscape has undoubtedly influenced the scale of village organisation, but a difference in political organisation between a hierarchically organised eastern Denmark and an egalitarian western Denmark has also been suggested (Holst 2010; 2014). Obviously, settlement structure and political organisation are also hugely important factors in relation to population density, recruitment of armies and the anthropology of warriorhood. The religious and political centres like Gudme, Sorte Muld and Uppåkra in eastern Denmark and Scania would have provided the basis of a different military structure, and certainly have had more armed forces readily available than the average farming community on Funen or in Jutland.

The discussion of population density is extremely complex and will not be focused upon in any more detail here. However, it is clear that even relatively small armies of a few hundred or 1,000 warriors would have been recruited from a large territory. Much warfare would have been conducted on a smaller scale in the form of small raiding parties, although armies of this size which sometimes overran the Roman Empire are not attested by the bog finds of Scandinavia. The armies must have required constant renewal and recruitment from huge areas to have had an impact such as that described in the contemporary written records.