

7 Concluding Discussion

This study provides a holistic overview of metal body armour from the European Bronze Age. Helmets, cuirasses and greaves, as well as further potential pieces of body armour, are described and their geographical and chronological distribution, typological classification, as well as material characteristics, documented and discussed. These material characteristics have also provided important insights into the manufacture and use of the different categories of armour that have been discussed.

At present, 71 helmets from eastern Europe (Tab. 7.1) and 52 from western Europe (Tab. 7.2) are known, as well as 31 cuirasses (Tab. 7.3) and 78 greaves (Tab. 7.4). These different categories of armour have rather wide distribution patterns, which span a number of different geographical areas and time periods. Body armour from the European Bronze Age ranges from Iberia in the west to Cyprus in the east, and from Sicily in the south to Sweden in the north. Notable omissions in this distribution include Britain and Ireland, where no helmets, greaves or cuirasses have been recovered, their absence even more curious considering the large number of shields found in this region. Body armour is also poorly attested in Scandinavia, where there are again shields and only a small number of bronze helmets. In Germany, the distribution of these shields and helmets overlaps but only two greaves and one potential cuirass are known. In the Iberian Peninsula, crested helmets are known only from a few fragments but also as depictions on stelae, as are bronze shields. From France, helmets, greaves and cuirasses have been recovered but no shields, whilst in Italy helmets and greaves but no cuirasses or shields have been found. In Greece, cuirasses are known but only a small number of greaves and helmets, and no metal shields.¹¹⁹² In the central Alpine region, helmets, a small number of greaves and, most recently, a miniature cuirass have been found. Only in the Carpathian Basin are all four major categories of metal armour known, with overlapping distributions. Despite the frequent occurrence of armour in associated deposits, only the associated deposit from Nadap contains the remains of all four categories of metal armour together, whilst the grave at Dendra represents the burial where most likely a complete assemblage of metal body armour has been recovered.

With the exception of the Greek finds, and those from Volders and Čaka, body armour has generally been found either in associated deposits or as single, often from wet contexts. The latter can perhaps be connected with the disappearance of sword graves around Bz D(2) amongst the eastern Urnfield culture and shortly followed by the western Urnfield culture. Moreover, in the western Urnfield culture, cemeteries largely stopped being used around 950 BC, whilst contemporary river deposits, such as those from the upper river Rhine, appear to increase, indicating a shift in burial traditions from graves to rivers. There is then no reason to suggest that armour was excluded from sepulchre contexts, only that the nature of those contexts may have changed. The general deposition of weaponry in watery places may also be related to the conclusion of war-like activities, perhaps connected with victory, peace-making, alliance maintenance or an offering made to gain fortune in ongoing or future fights.¹¹⁹³ With regards to depositional patterns, especially the occurrence of weaponry in graves and armour in wet contexts, it

¹¹⁹² A likely 'functional' shield with riveted-on handle is known from Delphi (Hencken 1950, fig. 7). The shield bears mixed characteristics of shields of Type Herzsprung and Type Lommelev-Nyírtura, and might be either a local hybrid or potentially later copy of Bronze Age shields. A similar case might be shield 67 from the Idaean cave (Hencken 1950, figs. 8–9); see Molloy 2015 for a more detailed discussion.

¹¹⁹³ See also Vandkilde 2006a, 486.

seems as if armour was, with more frequency than that of weapons, transferred from contexts related to the personal sphere to more explicitly ritual ones (assuming that not all deposits in rivers were sepulchral), as metal armour is rarely found in graves. The idea of different traditions of deposition in terms of different metalworking categories, must also be extended to different regional and chronological traditions of deposition, in accounting for distributional absences or gaps. Some areas may simply have not deposited certain categories of armour, perhaps preferring instead to hand armour down between generations, as in the case of Odysseus' boar tusk helmet. Perhaps certain categories were instead recycled, or it may simply be the consequence of differential archaeological recovery related to regional or national differences in economic activity and development.

The wide geographical distribution of the body armour inevitably encompasses numerous regional chronological schemes, with differing phases and horizons, which were aligned in order to enable the visualisation of the chronological development of armour and to pinpoint the appearance and spread of specific forms and types. The overarching chronological scheme used in this alignment was that defined by Reinecke, based largely upon the association of different metalworking classes, and the more recent work of Sperber,¹¹⁹⁴ based on the 'high' dendro-chronological dates from the lake-shore settlements northwest of the Alps. Similarly 'high' dates have also been suggested for the British Bronze Age, which are considered relevant to the regional chronology of western Europe and the Atlantic Bronze Age.

Helmets were classified into two main Classes according to their manufacture, distribution and general appearance: Class I, which comprises helmets made of one metal sheet and with round or conical cap, and Class II, which comprises helmets made of two metal sheets and with crested cap. The classification of greaves largely follows the technological classification of Clausing.¹¹⁹⁵ Here the greaves were distinguished according to technological criteria into Class I (fixation with a wire) and Class II (perforations along the edge). Class I comprises Subclass A with integrated loops (types Desmontà, Lengyeltóti, Kuřim, Canosa and Limone), Subclass B with wave-shaped wire (Type Kallithea), Subclass C with separate loops (Type Grammichele) and Subclass D with riveted on loops (Type Ilijak). G. v. Merhart's classification of the cuirasses,¹¹⁹⁶ which has remained in use, has had to be revised, and now comprises regional groups characterised as Greek, Carpathian and western European cuirasses, with each group differing from the others in appearance, deposition, chronology and geographical distribution.

The recovery of less than 250 finds of metal body armour from the European Bronze Age raises several questions, the most important certainly being 'who wore it?' and 'how was it used?' The labour invested in the production of the armour and its intrinsic material value certainly point to their being prestigious, high status objects. The small number of armour recovered might also hint at their value, though here we must be sensitive to inevitable biases in recovery, effected by both the more recent economic conditions of each region and their individual traditions of antiquarian and archaeological recovery and collecting, as well as by different regional traditions of deposition. The latter effects are evident if we compare the number of recovered Greek hoplite cuirasses, which are few, to the thousands of cuirasses historically documented to have originally existed. Without doubt we may assume that such armour was worn by economically and socially potent persons. But who were these persons: warriors who used their metal armour primarily in actual combat or who used their metal armour mainly as status symbol and for display? Before we discuss the persons behind the armour, who appear to have been exclusively men, we will first look at the armour itself and what it tells us about its use.

We have demonstrated in this study that there are sufficient examples of body armour for a detailed study of their damage to be broadly conclusive as to their use, despite the concerns raised by Harding.¹¹⁹⁷ Bearing in mind that 'there can be no rituals or symbols without the reali-

¹¹⁹⁴ Sperber 2011.

¹¹⁹⁵ Clausing 2002.

¹¹⁹⁶ v. Merhart 1954.

¹¹⁹⁷ Harding 2007, 121.

ty of what they signify',¹¹⁹⁸ there can still be doubts as to the use of metal armour in combat. It is worthwhile to consider, however, that:

First, a not inconsiderable number of the body armour has evidence for both use and combat (with some damage certainly resulting in a fatal end for the person wearing the armour, as seen on the cuirasses from Jura B and the one from the Danube), as well as signs of repair, indicating that where such traces are present they were used as actual armour. This does not, of course, preclude the use or function of bronze armour as parade objects, as suggested by the labour and skill invested in their decoration,¹¹⁹⁹ but nor does this embellishment of bronze armour mean that they were incapable of withstanding an attack from a weapon. Here we might take into consideration the Greek hoplite bell cuirasses, which were bought and decorated by their owners and were clearly used in combat. With their similar proportions and thickness, these cuirasses served to fulfil more practical requirements than just social differentiation. Looking at combat traces on the European cuirasses, especially the western European examples, which are also the most intensely decorated, clearly demonstrate that they were used, with evidence of battle traces and repairs, especially in those areas where other cuirasses show sword or spearhead impacts,¹²⁰⁰ regardless of the investment in their decoration. The situation is somewhat different for the greaves, where no direct weapon impacts are known but there are signs of intense use.

Second, metal body armour was clearly not a skeuomorphic or symbolic substitute for organic body armour but rather afforded an additional layer of protection atop such organic armour, and would never have been worn unaccompanied by shock-absorbing organic lining beneath. Helmets were also worn over an organic cap or had an organic inlay. Greek cuirasses had a permanently attached organic lining, while Carpathian and western European cuirasses were usually worn above a leather, wool, felt or textile jerkin. Greaves were worn over, or sewn on to, an organic wrapping. In every case, bronze armour offered an additional layer of protection in comparison to just organic protection. Given this, the opinion that armour made of sheet bronze is 'most unlikely ever to have provided any significant degree of protection in serious fighting'¹²⁰¹ can no longer be substantiated.

Bronze shields do not seem to have had an organic lining but still provided a high level of protection, with experimentation demonstrating that they were capable of withstanding strong blows from a sword,¹²⁰² though not all shields need have been used in combat either. Despite its use alongside organic protection, it is important to note that bronze armour was not too thin to be effective alone. It requires significant force to penetrate bronze sheet, especially if the attacking weapon is also made of bronze as well and in the context of hand-to-hand combat. Given sufficient strength and the right kind of weapon (like a spear) such bronze armour could nonetheless be pierced, testifying to use in combat, as testified by the impact traces on cuirasses, of one does not want to assume a 'ritual' killing.

The primary function of bronze body armour, with respect to all aspects of technological and stylistic development over time, was clearly engineered toward optimising the protection of the body whilst increasing the level of mobility. The latter aspect was clearly important, for if the main intention was to serve merely a defensive function it would be far more massive, and served instead to incorporate an offensive function, in offering optimum mobility and the ability to attack an opponent.¹²⁰³ We can conclude that metal body armour was not an elaborate display version of organic armour, and was capable of being used in combat, and flexible enough to be used in various combat situations, be it melees, individual or ritual combat. This does not exclude a function for metal body armour as a symbol of wealth or social status, and as an indi-

¹¹⁹⁸ Kristiansen 1999, 188.

¹¹⁹⁹ However, certainly not according to their 'flimsy' construction, as noted by Harding 2007, 118.

¹²⁰⁰ See Chapter 3.9.

¹²⁰¹ As noted by Harding 2007, 122.

¹²⁰² Molloy 2009; Uckelmann 2012; Molloy 2013. See also Needham et al. 2012, 489.

¹²⁰³ See in particular the tests on replica armour by Molloy 2013, who noted for example that the penetration of a 1.5mm thick bronze sheet was far from easy with a sword, spear or an arrow.

cator of the power of its owner or the society to which they belonged to, or its use in ceremony and display. However, armour was, or was intended to be, used primarily according to its nature as an effective means of protection of the body.

Whilst it is clear that bronze body armour was used in combat, the question of the combination of arms and armour is still unsolved. Tomb 12 from Dendra represents the most complete set of arms and armour. No similar sets of armour have yet been found together in other graves. The associated deposit from Nadap includes the next most complete set of armour, comprising fragments of four greaves, at least two different helmets, a shield and a fragment from a cuirass. Because of its context, it is unclear if the armour belonged to the same person, or was the armour of two or more warriors. Even though warriors are often depicted in the archaeological literature with a complete set of arms and armour, such reconstructions,¹²⁰⁴ however, remain largely speculative due to their lack of recovery. Little consideration has been given to the fact it is likely that a combination of both metal body armour and organic body armour was used, of which the latter is rarely preserved. In addition, different types of body armour were certainly in use contemporaneously (as indicated by the different helmets types found together in the associated deposit of Nadap). The warrior was clearly afforded a choice of body armour, with different elements perhaps selected according to economic possibilities, social status, standards and principles, as well as the type of melees, battle or fight, each resulting in a different set of arms and armour.

Moving on from the armour as an object worn in combat to the individual wearing it, we must address the question of who these individuals were – who was ‘the’ European Bronze Age warrior, and how did he fight?

Contemporary images of European Late Bronze Age warriors of how he wanted to be understood – or how others wanted him to be understood – are known from only a few regions in Europe, comprising the rock art of the Nordic Bronze Age, the carved stelae of the Iberian Peninsula (stelae) and the bronze figurines from Sardinia. The latter provide an especially qualitative insight into the nature of organic body protection. The society of these regions felt the need to depict their warriors using materials, which are fortunate enough to survive archaeologically. These depictions underline the importance of warriors for their community. It is very likely that similar warrior depictions were also common in other regions but produced using materials that have not survived. The surviving depictions differ both in their selected materials and in the motifs. In the Nordic Bronze Age, it appears that the context or situation itself is the primary focus of the depictions, in which some warriors played a part, as opposed to simply depicting the warrior, which, however, may have been due to the artistic restrictions of the material itself.¹²⁰⁵ Consequently, the Nordic rock art provides an important insight into the specific way arms and armour were used, at least for Sweden or Northern Europe. Phallic men,¹²⁰⁶ often depicted on boats and usually with arms and weapons raised, can be seen attacking (?) each other, or are shown heading on a boat together to face a common enemy in battle. The main weapon of aggression is usually the spear and double-edged axe, while the sword remains in most cases in the scabbard.¹²⁰⁷ The attacking weapons are rarely shown touching the body of the opponent. Whether or not this is also due to artistic limitations or a matter of stylistic choice remains unclear. The later superimposition of figures and objects atop earlier depictions often obscures the original composition of a scene, changing the original scenery and creating a different message, perhaps unintentionally. However, both original and later rock art compositions appear to depict tales of privileged groups in society, created to visualise their rich oral tradition.¹²⁰⁸ Both original and later compositions provide insights into combat as it might have happened, though the dead appear never to be depicted.

¹²⁰⁴ For example, as depicted in Marzatico – Gleirscher 2004, fig. 11b; Milcent 2012, title page.

¹²⁰⁵ Harding 2007, 139–140.

¹²⁰⁶ With men characterised in this manner most likely due to the limitations of the medium, which did not permit any finer representations of gender differences. There are almost no obvious human figures that appear to be women in Nordic rock art (see Goldhahn – Fuglestad 2014, 245, fig. 14.4, tab. 14.2).

¹²⁰⁷ Unlike Harding 2007, 117, at least one scene with a sword ‘in action’ is known. See Fig. 2.39.7.

¹²⁰⁸ Vandkilde 2006a, 488.

However, if what was depicted is a real battle, idealised combat, staged or parade ground fighting, remains unknown. The fact that where fighting occurs on ships, only some of the depicted persons carry weapons, has led to their interpretation as ritualised actions or perhaps sports-like events without death.¹²⁰⁹ Nevertheless, one has to take into account that the warriors depicted may act as a *pars pro toto* for the whole ship's complement, and that the depiction of a large group of warriors wielding weapons on a ship might have been restricted due to artistic limitations. Accordingly, other warriors were depicted as simple lines, sometimes even without a head. One might also see the depiction of violent scenes in Nordic rock art as demonstration of 'potency among high-ranking warrior heroes, fighting as equals and according to certain aristocratic rules and ethics'.¹²¹⁰

The focus is somewhat different in the case of the warriors depicted on the Iberian stelae – which appear to be either funerary in nature, depicting deceased warriors, or perhaps signifying a chiefly ideology¹²¹¹ – and probably also the Sardinian bronze figurines, where different combinations of arms and armour occur. In both cases the warrior, and perhaps even a specific individual, is depicted in a singular, static way. Other categories of finds found in those graves with weapons, as suggested by the Iberian stelae, suggest that the warrior himself was characterised not only by his arms and by armour. As well as weaponry, the Iberian stelae also depict mirrors and toilet articles, indicating that they were equally important as weaponry. Similarly, graves with weapons also often contain jewellery and toilet articles. These other objects were likely an important part of the warrior's accoutrements, symbolising the creation and maintenance of the look of the warrior. For a professional warrior it would certainly have been important to be recognised as such, especially when not engaging in combat or when not wearing his weaponry. The public appearance of a warrior may have been defined by a specific way of dressing and a combination of ornaments, a certain style of hair and beard, or perhaps tattoos, guaranteeing that they would be recognised as such.

Warfare, battles, raids or other kinds of violent group activity is a way to canonise and institutionalise impulsive aggression. Consequently, institutionalising the warrior gives warriors an excuse for violence without sanctions, if carried out within the rules of society. Warriors need to be able to control their aggression and release it when necessary. Impulsive aggression is associated with a rapid rise in heart rate, connected with increasing irrationality, reduced cognitive capabilities, and a dramatic subsidence in sensory and physical capacities.¹²¹² This is counterproductive for strategic purposes and could be a risk to a group. To avoid such conditions and retain a heart rate at a maximum of 145 bpm requires extensive mental and physical training, as well as regular handling with weaponry in simulated combat. In this way, muscles memory can be built up and well-practised movements become second nature, with the body acting and reacting almost instinctively under conditions of stress and tension. After violent interactions, warriors, as well as any surviving victims, are, depending on their personal level of psychological resilience, more or less traumatised. Some may suffer from a form of post-traumatic stress disorder. To reduce or adapt to such psychological traumas, every society has found different ways to cope with such post-traumatic stress disorder, either as individuals or as a social group, perhaps by incorporating them into various rituals or ritualised events. There are of course limits to which such things may be inferred from archaeological contexts but they are well known from both ethnographic and sociological studies, and have been discussed in detail elsewhere.¹²¹³

It is, however, not only the presence of a weapon or armour that indicates warrior status, or determines whether such weaponry was ever actually used in combat. Damaged weaponry obviously indicates the use of weaponry, though it need not necessarily be the person whose remains were found with the weapon that used it in such circumstances, as indicated by the heavily used Type Riegsee sword recovered from the grave of a 12 year old from Bruck, Ger-

¹²⁰⁹ Osgood et al. 2000, 34; Vandkilde 2006a, 488.

¹²¹⁰ Vandkilde 2006a, 488.

¹²¹¹ Harrison 2004, 75; Harding 2007, 137–138.

¹²¹² Molloy – Grossman 2007, 193.

¹²¹³ I refer here in particular to the recent studies of Robben – Suárez-Orozco 2000.

many.¹²¹⁴ It is arguable though that this child might have derived from a line of warriors and was supposed to become one as well once grown up, which would mean an inherited warrior status, or perhaps the sword was a metaphor for warrior values rather than evidence of an actual warriorhood, as suggested by Vandkilde.¹²¹⁵

How was the warrior organised, what was his social position, or his duties in peaceful times? Was there a so-called warrior elite or a group of warriors fighting for an elite?

The existence of a military organization with a specific structure has certainly to be assumed for the European Bronze Age. On the basis of fortified settlements, the high number of arms, and human victims of violent acts, there was obviously a necessity to both defend and attack, for whatsoever reason. Relative to the demography of a particular settlement, community or tribal group, as well as level of economic wealth and political organisation, a population may invest in professional warriors or non-professional warriors. These warriors may have been selected from the population on the basis of specific criteria, such as gender and being of a certain age, as well as according to their economic and social status. Non- or semi-professional warriors would certainly have been less of a threat or obstacle to opponents who were well-organised, 'full-time' or dedicated warriors. Consequently, professional warriors are common amongst complex, political centralised societies.¹²¹⁶ The warrior of course had to be fed and maintained by his society – at no small cost – but was a good investment for troubled times or to achieve further resources with raiding. According to the level of (real or imaginary) danger from outside, warrior groups had more or less influence on their society. While their presence during troubles was accepted by their community, this acceptance might have been questioned during peaceful times, perhaps resulting in warriors engineering conflicts to justify their existence.

Discerning more detailed information regarding the organisation of such warrior groups in the European Bronze Age, be they be non-, semi- or professional, by archaeological means is fraught with problems. We remain poorly informed as to who was involved, the true extent of gender exclusion, acceptable age categories, the number of participants involved, the extent of armaments in circulation, the degree of professionalisation, or what qualified a person for participation in becoming a warrior. These variables may also have had a bearing on exactly who got to participate in specific events or circumstances, were certain warriors may have been selected on the basis of their having specific armament for different tasks according to their skills, age or various other factors. Moreover, factors such as social or religious values, the code or values of the warriors, the wielding of particular armaments, and differing geographical conditions, may have resulted in distinct versions of the warrior from region to region. With many of these complex historical variables understood in only the most cursory of ways, the archaeologist is capable of presenting only the slightest caricature of the Bronze Age warrior and the institution to which he belonged, especially when so much of our understanding is based upon the occurrence of weapons alone.

An important aspect of archaeological inquiry has been to discern more about the size of such warrior groups. Those associated deposits where armament dominates have been interpreted as the deposition of an opponent's arms after a battle, with the number of weapons being used to calculate the number of warriors involved.¹²¹⁷ There have also been attempts to calculate the number of warriors based on the occurrence of arrow heads and weapon combinations in graves.¹²¹⁸ The results so far, however, are not entirely satisfying. This is especially the case where we lack much of the basic information concerning such events, such as the number of

¹²¹⁴ v. Quillfeldt 1995, 21.

¹²¹⁵ Vandkilde 2006a, 485.

¹²¹⁶ Otterbein 1970.

¹²¹⁷ Examples of this approach include: Randsborg 1995, 48–50 (Valsømagle and Smørumovre hoards); Kristiansen 1999, 103 (Zalkod hoard); Bridgford 2000, 159 (Wilburton hoard). Critical of this approach has been Harding (2007, 164–166) but he hopes that 'perhaps the number of swords deposited in some river and bog finds may bear on this matter' and that also the number of spearheads may indicate the number of warriors involved, such as the hoard from Uherské Hradiště (Moravia) or Bükkaranyos II (Hungary) (Harding 2007, 168).

¹²¹⁸ Sicherl 2004, 212.

people involved, or the organisation of the battle, or the individual combat techniques used, and therefore we are unable to define the type of event itself. Where written sources are unavailable, such as is the case for the European Bronze Age, it is difficult to distinguish between such small scale events as raids, piracy, feuds or melees, and between these and full-scale war. The necessary archaeological reliance upon weapons, however, does provide important insights into aspects of fighting by arms and the use of armour, as surviving on the objects themselves, representing details that might otherwise be missing from historical sources.

The only presently known Bronze Age battlefield is located at the Tollense, Mecklenburg-Vorpommern, Germany, and is still under excavation. However, it has already revealed impressive insights into a Bronze Age battlefield or execution place. Severe injuries caused by both blunt objects and sharp edged weapons, such as sword or spear, have been identified on skeletons recovered from the site, with such injuries found both on the upper part of the body and the head as well as on the lower legs.¹²¹⁹

Several locations along a 2km stretch of the river Tollense revealed these skeletal remains and various artefacts. Systematic investigation of these sites begun in 2008, and two locations in particular – at sites Weltzin 20 and Weltzin 32 – revealed several thousand bones, representing a minimum of 120 individuals, as well as various artefacts, including bronze arrowheads, spearheads, tin spirals (ingots), bronze spiral rolls, a gold ring, and two wooden clubs.¹²²⁰ The remains of horses also suggest the presence of mounted persons.¹²²¹ Radiocarbon dates of the majority of these finds indicate a date in the 13th century BC.¹²²² The skeletal remains were found widely scattered rather than articulated, perhaps indicating that body parts were purposefully disarticulated, maybe during fighting, though it is possible that also occurred posthumously through natural processes, including movement by the river. It is not yet clear how the bodies were placed in the river. Although work is ongoing, it is so far assumed that a minimum of 120 individuals is represented, with some 40 individuals represented only by their skull. Most of the remains appear to have belonged to men, aged between 20 and 40 years old. Unfortunately, age and sex determinations have been possible on only a few bones, mainly skulls, femurs, and pelvises. A small number of women and juveniles were also present, whilst at Weltzin 20 the bone of an infant was recovered, though whether it dates to the Bronze Age is unclear.¹²²³ Only one bone has so far been shown to have traces of animal bite marks. The actual areas so far investigated are relatively small, suggesting that a much higher number of people may have been killed, as well as a much larger number of people having been originally involved in the battle, given that some may have survived.

The remains of eight of the 83 individuals analysed showed lesions. The evidence of trauma and injuries on the bones, mainly on the skull, clearly indicate a violent encounter between different groups. For instance, on the skull of a young female there is trauma to the front of the bone, whilst a male skull bears an impact impression from a club, and on another arrow heads were found embedded in the skull of a young man and in the right humerus of a further adult, while other skulls also show evidence of impacts from arrow heads or spearheads. About half of the traumas appear to have occurred shortly before death or indicate that the victim lived for only for a short period, perhaps only days or weeks, after sustaining injury.¹²²⁴ Both the trauma and the weapons found indicate the use of both face-to-face weapons, such as wooden clubs, knives, daggers, swords and spearheads, as well as weapons capable of striking at distance, such as bow and arrows, with heads of flint and bronze, and perhaps spearheads used as javelins. There is no indication of metal defensive armour. Other Bronze Age injuries resulting from blunt weapons

¹²¹⁹ Most recently see: Brinker et al. 2015; Lidke et al. 2015.

¹²²⁰ Jantzen et al. 2008; Jantzen et al. 2011; Jantzen – Terberger 2011; Krüger et al. 2012; Brinker et al. 2013; Brinker et al. 2014; Dombrowsky 2014; Flohr et al. 2014.

¹²²¹ Jantzen – Terberger 2011.

¹²²² Jantzen et al. 2011, 427–428, tab. 1, fig. 9.

¹²²³ Jantzen et al. 2011, fig. 6; Brinker et al. 2013, tab. 2; Flohr et al. 2014.

¹²²⁴ Jantzen et al. 2011, 424–425, fig. 7; Brinker et al. 2013, 138–139.

are otherwise known only from the late Urnfield culture site at Stillfried, Austria. A young girl has four impressions on the right side of the skull, caused by a blunt trauma, and another injury above the right forehead, this time inflicted by a sharp weapon, such as a sword or an axe.¹²²⁵

Based on the number of skulls without injury, and the absence of multiple traumas,¹²²⁶ it would perhaps be wrong to interpret the battle at Tollense as a 'massacre', though many deadly injuries do not necessarily leave traces on the bones. Its interpretation as a mass execution is also problematic, however, as some injuries show signs of healing, though these might be connected with previous or repeated combat events. It seems more likely that it was a battle, especially given the large number of people involved.¹²²⁷ This is further supported by the higher occurrence of young males amongst the remains compared to the number of females and older children.

Considering the low population densities for this time period, the interpretation of the area as a battlefield between two neighbouring settlements seems unlikely. The human remains and artefacts found so far clearly indicate a larger scale of conflict, and would have certainly included people from more than two settlements.¹²²⁸ An indication of its scale, and reason for the conflict, is suggested by the results of isotope analyses, which revealed that those people represented by the remains at Tollense used C4 crop plant, or millet, in their diet.¹²²⁹ Millet was uncommon during the Early Bronze Age in northern Germany, with the cultivation of millet only expanded northwards during the course of the Bronze Age. The presence of tin ingots, bronze pins of Silesian type, and the presence of over 40 bronze arrow heads, may suggest that some of the dead were not local but may instead have travelled from the southeast.¹²³⁰

The lack of metal arms and armour at the site may result from the fact that either none of the victims wore such armour, or the winning warriors may have collected it, with only small metal objects being left behind, such as the spirals. The victims may also not have worn bronze armour or have been equipped with bronze weapons as a consequence of having a lesser economic status, a different social role, or even for religious reasons. As investigations on the site are ongoing, it is possible that further excavations in the Tollense Valley may reveal more about the use of metal arms and armour.

The evidence for combat from the battlefield at Tollense, from which so far only close-combat organic weapons and long-range weapons in the form of bronze arrowheads have been recovered, certainly challenges the idealised notion of the heroic Bronze Age warrior, resplendent in their shining bronze armour, and equipped only with the finest bronze weaponry. Instead, a more common image is invoked, of warriors armed with less prestigious and less exclusive arms, in the form of organic weapons (and armour?), killing each other. It may be that the groups involved were poorly equipped migrants, without immediate access to bronze or smiths, and represents a particularly exceptional combat situation rather than that which normally occurred.

As well as the use damage found on bronze arms and armour, and the evidence for weapon injuries documented at Tollense, there are further injuries documented on human skeletons from the European Late Bronze Age. Most of these injuries appear to have been caused by spearheads and swords.¹²³¹ As a whole, the number of documented injuries is rather small, as the sample of human skeletons for this period is adversely affected by the dominant burial rite during the Late Bronze Age being largely cremation. Where skeletal remains have survived, the application of detailed anthropological studies that might identify such injuries has not been as common as one would like. In addition, only a small number of fatal injuries need leave skeletal traces. Most of those injuries identified have come from separate graves but there are also three

¹²²⁵ Mödlinger 2011, 88–92.

¹²²⁶ Only one skull appears to have multiple traumas, comprising three lesions with evidence of healing, indicating survival for a long period: see Jantzen et al. 2011, 425.

¹²²⁷ Brinker et al. 2013, 143.

¹²²⁸ Jantzen – Terberger 2011.

¹²²⁹ Jantzen et al. 2011, 428.

¹²³⁰ Jantzen – Terberger 2011.

¹²³¹ Mödlinger 2011, 88–92; see here for further references to the following finds discussed, if not otherwise provided.

further Middle and Late Bronze Age sites which have more than one person deposited together, with at least two having signs of purposefully inflicted injuries.

At the site of Sund, Norway, large concentrations of inhumed human and animal bones were found. The (decapitated?) human skulls appeared to have been placed on top of the laid out bodies, left on display, suggesting that it was most likely not the family or relatives that buried those that had been killed.¹²³² Radiocarbon dates indicated a focal date towards the Middle Bronze Age, c. 1500–1100 BC. At least 22 persons were buried, with more than half of them being under 15 years old. Also, more than half of the adults show both healed and fresh injuries. Cuts were identified on a temporal bone, a left humerus, a thoracic vertebra on the anterior side (!), and the left femur neck, as well as three parallel cuts going across the shaft of the first foot phalanx, two triangular lesions to the fovea capitis. Several peri-mortem traumas, such as broken bones, were also documented.

At Tomarton, South Gloucestershire, United Kingdom, the skeletal remains of four younger men, and dated by radiocarbon analyses to c. 1315–1050 BC, were found in a V-shaped linear ditch, which appeared to have been backfilled immediately after the bodies were placed.¹²³³ Ditches of this type usually mark out territories and parcels of land, and a potential dispute might have been the cause of the deaths. One of the men had been speared twice from behind, as indicated by a hole caused by a spearhead in his pelvis, as had another and with such force that the spear tip was twisted and broke off, remaining lodged within the bone. Additionally, his lumbar vertebrae had also been pierced by a spear, and again the tip of the spear had broken off, and would have left the man paralysed in the legs. He also has a circular perforation on the left side of the skull, perhaps representing a *coup de grace* by his opponent, carried out with the ferrule or the shaft butt of the spear. The spearhead's chemical analysis indicates an origin for the copper ore, and potentially also for the weapon itself (?), from the Alps.¹²³⁴

Similar injuries are known from the remains of a body found in Dorchester on Thames, United Kingdom (radiocarbon dated to 1260–990 BC), where again the pelvis was pierced by a spearhead and again the tip broke off and became lodged in the bone.¹²³⁵ Here we are reminded of the description of Homer concerning how the spear was used for piercing the pelvis area.¹²³⁶ He notes in the Iliad twelve pelvic and urogenital injuries, with all but one caused by a spear, and with just one exception (which was miraculously healed) all lead to death.

The remains of several other men also reveal (fatal) injuries. A section of the parietal bone of a man from Wiligrad, Germany, dating to the 15th century BC, was hacked off, the injury probably caused by a sword used as a slashing weapon. A 50 to 60 year old man from Kehlheim, Germany, dating to Ha B, was also injured by a sword, from behind on the lower area of the left parietal. Finally, an approximately 40-year old man from Kråkerøy, dating from Ha A2/B1, suffered a blow to the right side of the cranium and an almost cut through thoracic vertebra.

Further possible victims who died from injuries caused by a blow from a sword are known from Mycenae (Greece) and the Athenian Agora. The man from Grave Z at Mycenae received a cut from a sword above the left eye and on the left temple. The man was injured around 1630–1500 BC. The individual from the Athenian Agora instead received three injuries to the head, most likely resulting from the blow from a blade during LH IIIA.¹²³⁷

Like today, Bronze Age societies certainly did not consist only of noble and peaceful hunter, peasant and trader or only bellicose, brutal savages either, as the first rather black-or-white studies of war in archaeology suggested.¹²³⁸ Warfare was and is a part of social life, an unfortunately common means of social practice, in constant interchange with other social actions.

¹²³² Fyllingen 2006, 319–329.

¹²³³ Osgood 2006; Osgood 2013.

¹²³⁴ Osgood 2013, chapter 1 (e-book).

¹²³⁵ Osgood 2006, 338.

¹²³⁶ Marani – Koch 2014, tab. 2.1.

¹²³⁷ Mödinger 2011, 88–92.

¹²³⁸ As embodied in Jean-Jaques Rousseau's romantic writings and Thomas Hobbes' Leviathan. See the detailed discussion of this topic by Vandkilde 2006b.

According to the overwhelming material evidence for violent activity, ranging from fortified settlements to the high number of effective metal arms and armour, as well as battle traces on weaponry and human skeletal remains, serious fighting clearly took place within Bronze Age societies. Professional and semi-professional warriors, most likely carried out these armed conflicts as economic capacity, socio-political organisation, and cultural values permitted.

Bronze Age societies have been and, at least in part, continue to be characterised by their warrior identity. Violence was clearly legitimated under certain circumstances and manifested in the warriors themselves, being part of the so-called elite. The act of killing, and the social and personal implications that accompanies it, were (and are) a seemingly unavoidable part of human social actions.

War, combat and violent actions in general are bereft of heroic connotations: War is dirty, exhausting, and filled with blood, guts and excrement. The glorification and idolatry of war and combat is a well-known contemporary phenomenon, and one far from the reality of such events and activity, as it would have been in the past. It is important to note the brutal and deadly side of war, violent action and the warrior so as to prevent its romantic glorification and the idolatry of the Bronze Age warriors – the golden-shining, chiefly and glorious warrior as he is currently described and depicted was primarily a violent killer who left in his wake death, devastation, horror and desperation: a human being, skilled and willing to kill.

Eastern European Helmets		
Cat. No.	Find Site	Type
1	unprovenanced – Greece (?)	IB1 (Oranienburg)
2	Knossos, Greece	
3	Biecz, Poland	
4	Oranienburg, Germany	
5	Žaškov, Slovakia	
6	Spišská Belá, Slovakia	
7	unprovenanced – Lúčky, Slovakia (?)	
8	Keresztéte, Hungary	
9	Nadap, Hungary	
10	Dunaföldvár, Hungary	
11	Sîg, Romania	
12	unprovenanced – Hungary (?)	
13	unprovenanced – Hungary	IA2 (Paks)
14	unprovenanced – Northern Hungary (?)	
15	Paks, Hungary	
16	Žiar nad Hronom, Slovakia (?)	
17	unprovenanced - Cahn-auction	
18	Bajmok, Serbia (?)	
19	Dusnok, Serbia (?)	
20	unprovenanced – Guttmann collection, AG 246	
21	unprovenanced – Guttmann collection, AG 1126	
22	Markovac-Grunjac, Serbia	
23	Veliko Nabrđe, Croatia	
24	Poljanci, Croatia	
25	Elsterwerda, Germany	
26	Pázmándfalu, Hungary	
27	Nadap, Hungary	
28	Strassengel, Austria	
29	Gușterița, Romania	
30	Wöllersdorf, Austria	
31	Hočko Pohorje, Slovenia	
32	Uioara de Sus, Romania	
33	Újszöny/Komárom, Hungary	
34	Mezőnyárad, Hungary	
35	Pázmándfalu, Hungary	
Addendum	unprovenanced – Serbia (?)	
36	Batina, Croatia	IA1 (Nagytétény)
37	Nagytétény, Hungary	
38	Brody/Ternopil, Ukraine	
39	unprovenanced	
40	unprovenanced – Cahn-auction	

Tab. 7.1 Overview of eastern European helmets (see also Figure 2.2 for the classification of helmets).

Eastern European Helmets		
Cat. No.	Find Site	Type
41	Sehlsdorf, Germany	IB2 (Pişcolt)
42	Služín, Czech Republic	
43	Škocjan, Slovenia	
44	Hajdúböszörmény, Hungary	
45	Mezőkövesd, Hungary	
46	Endrőd, Hungary	
47	Şoarş, Romania	
48	Pişcolt, Romania	
49	Monte Altino, Italy (?)	
50	unprovenanced – Mantova	
51	unprovenanced – Zschille collection	
52	unprovenanced – Guttman collection	
53	unprovenanced – Gorny and Mosch	
54	unprovenanced – Lipperheide collection	
55	unprovenanced – Phoenix Ancient Art	
56	Bonyhád, Hungary	
57	Škocjan, Slovenia	IB2 related
58	Škocjan, Slovenia	
59	Szczecin-Zdroje, Poland	IA2 related
60	Fiave, Italy	single type (organic)
61	Malpensa, Italy	single type
62	Ialysos, Greece	Greek cheek plate
63	Dendra, Greece	
64	Kourion-Kaloriziki, Cyprus	
65	Schmiedehausen, Germany	
66	Weißenburg, Germany	cheek plate
67	Podcrkavlje, Croatia	
68	Şpălnaca, Romania	socket
69	Techirghiol, Romania	
70	Grepci, Bosnia-Herzegovina	knob

Tab. 7.1 continued.

Western European Helmets		
Cat. No.	Find Site	Type
71	Montbellet, France	IA3 (Montbellet)
72	Thonberg, Germany	
73	Wonsheim, Germany	
74	Szikszó, Hungary	
75	Brancere, Italy	
76	Iseo, Italy	
77	unprovenanced – Rome, Italy (?)	
78	unprovenanced – Zschille collection	
79	Mantes, France	IIC1 (Mantes)
80	Mainz, Germany	
81	Oggiono-Ello, Italy	
82	Weil am Rhein, Germany	
83	Pass Lueg, Austria	IIC4 (Lueg)
84	Piller, Austria	
85	Anlaufstal, Austria	
86–87	Biebesheim, Germany (2)	IIC2 (Biebesheim)
88	Bremen, Germany	
89	Ebing, Germany	
90	Pockinger Heide, Germany	
91	Otterstadt, Germany	
92	Auxonne, France	
93	Le Theil, France	
94	Blainville-sur-l'Eau, France	
95	Chalon-sur-Saône, France	
96–97	Montmacq, France (2)	
98	Paris, France	
99	Seurre, France	
Addendum	unprovenanced – sold at Hermann Historica, October 2015	IIC2 related
100	Hungary (?)	
101–110	Bernières-d'Ailly, France (10)	IIC3 (Bernières-d'Ailly)
111	Armancourt, France	
112	unprovenanced – 'Normandy'	
113	Nemours, France	
114	Mainz-Kostheim, Germany	
115	Roxheim, Germany	
116	Larnaud, France	
117–118	Huelva, Spain (2)	
119	Vila Cova de Perrinho, Spain	II
120	Tiryns, Greece	
121	Viksø, Denmark	single type

Tab. 7.2 Overview of western European helmets (see also Figure 2.2 for the classification of helmets).

Cuirasses		
Cat. No.	Find Site	Type
122	Dendra, Greece	Greek
123	Dendra, Greece	
124	Arsenal Thebes, Greece	
125	Municipal Conf. Centre, Thebes, Greece	
126	Čierna nad Tisou, Slovakia	Carpathian
127	Šarišské Michaľany, Slovakia	
128	Čaka, Slovakia	
129	Ducové, Slovakia	
130	St. Germain-du-Plain, France	
131	Pázmándfalú, Hungary	
132	Nadap, Hungary	
133	Ivančice, Czech Republic	
134	Danube, Hungary	
135	unprovenanced – ‘Metropolitan’	Western European
136	unprovenanced – ‘Hamburg’	
137–138	Graye-et-Charnay or Véria, France (2)	
139–145	Fillinges, France (7)	
146–152	Marmesse, France (7)	

Tab. 7.3 Overview of cuirasses.

Greaves		
Cat. No.	Find Site	Type
153	Brodski Varoš, Croatia	IA1 (Desmontà)
154–155	Desmontà, Italy (2)	
156–159	Pergine, Italy (4)	
160–161	Malpensa, Italy (2)	
162	Cannes-Écluse, France	
163	Poljanci I, Croatia	
164	Esztergom, Hungary	
165	Nadap, Hungary	
166–167	unknown (Hungary?)	
168	Rinyaszentkirály, Hungary	IA2 (Lengyeltóti)
169	Nagyvejke, Hungary	
170–172	Nadap, Hungary (3)	
173	Lengyeltóti, Hungary	
174	Stetten, Austria	
175	Poljanci IV, Croatia	
176	Slavonski Brod, Croatia (2?)	
177	Veliko Nabrđe, Croatia	
178	Boljanić, Bosnia and Herzegovina	
179	Malpensa, Italy	
180–181	Athens, Greece (2)	
Addendum	unprovenanced – Serbia (?)	
182	Markovac-Grunjac, Serbia	IA1/IA2
183	Bouclans, France	IA3 (Kuřim)
184	Boutigny, France	
185	Beuron, Germany	
186–187	Volders, Austria (2)	
188	Weissenstein, Austria	
189	Várvölgy, Hungary	
190	Kuřim, Czech Republic	
191–192	Kloštar Ivanić, Croatia (2)	
193–194	Canosa, Italy (2)	IA
195	Limone, Italy	
196–198	Enkomi, Greece (3)	IB1 (Kallithea)
199–200	Kallithea, Greece (2)	
201–202	Portes-Kephalovryso, Greece (2)	
203–204	Kouvarás, Greece (2)	
205–206	Castellace, Italy (2)	
207–208	Grammichele, Italy (2)	IC1 (Grammichele)
209–210	Pontecagnano, Italy (2)	
211–216	Torre Galli, Italy (6)	
217	Dobrač, Albania	ID1 (Ilijak)
218–219	Dabrica, Bosnia-Herzegovina (2)	
220–225	Ilijak, Bosnia-Herzegovina (6)	
226	Olympia, Greece	
227	Dendra, Greece (2?)	II
228	Schäfstall, Germany	
229	Winklsaß, Germany	

Tab. 7.4 Overview of greaves.

