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## Bracers or Bracelets? About the Functionality and Meaning of Bell Beaker Wrist-guards

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*The Bell Beaker bracers, or wrist-guards, are traditionally thought to have functioned as archery equipment, protecting the arm against the sting of the bowstring. Their position on the body is therefore thought to have been on the inside of the lower arm. Through analysis of the position in which wrist-guards are found, we have come to the conclusion that they were, however, more often than not fastened to the outside of the arm, which leads us to consider a range of new possible uses and meanings for the bracers. With combined information from archaeological and ethnographic surveys we have come to think of the stone wrist-guard as an artefact that was associated with a martial, ideologically-laden activity in the Bell Beaker culture.*

### AIMS AND GOALS

A class of objects that frequently occurs in Bell Beaker graves all over Europe is the bracer or wrist-guard: small, rectangular, thin stone plates with two or more perforations.<sup>1</sup> Traditionally they are interpreted as archers' gear: wrist-guards that have been tied to the inner (left) arm to protect it against the sting of the bowstring when released. This interpretation is commonly accepted amongst archaeologists, although the functionality is frequently questioned (eg, Butler & Fokkens 2005; Case 2004; Fitzpatrick 2003; Fokkens 1999; Jacobs 1991; Müller-Karpe 1974; Turek 2004; Smith 2006). Conclusive research is lacking and alternative interpretations are often of a catch-all nature, concerned with prestige goods in general.

Originally, the interpretation of these objects as wrist-guards must have come from the analogy with modern or ethnographic examples. A survey of ethnographic literature shows that many societies use wrist-guards, commonly made of organic materials such as leather or hide. Stone examples, however, are virtually unknown and appear to be an unnecessary and cumbersome solution to a practical problem.

Moreover, just as many societies do not use wrist-guards at all in archery. The use of wrist-guards is therefore not self-evident and it cannot be seen as a more-or-less logical evolutionary development in shooting as suggested by, for instance, Rausing (1967, 47), cited by Piggott (1971, 92). Why and how people use wrist-guards seems to be more-or-less culturally defined. This not only depends on technicalities, eg, the duration of the draw or the strength of the bow (cf. Webb 1991, 36–8), but also on the importance of archery in a given society. In our study we have tried to explore the archaeological, the ethnographic, and the historical records in order to get some understanding of the world of archery and warfare, of the accessory tools, and of their possible meanings.

Our interest in the matter follows from the Leiden Beaker Project, co-ordinated by the first author. Within the framework of this project we are trying to understand Beaker Cultures as regional expressions of a European cosmology and ideology. We aim to think beyond the traditional evolutionary prestige model and discuss material culture in a multi-dimensional way. Central to our approach is the expected biography of objects (Kopytoff 1986) and the idea that objects – through exchanges between people and between people and ancestors or the supernatural – obtain their significance and become inextricably bound up with people and with values that are part of the cosmology of a given society (cf. Barraud *et al.* 1994; Bazelmans 1999; Fontijn 2003; Mauss 1950;

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Godelier 1999; Weiner 1992).

Our present study focuses on the following questions:

- What does the archaeological record tell us about the position of the wrist-guard on the body?
- What does the ethnographic record tell us about wrist-guards?
- What does the ethnographic record tell us about the social meaning of archery and of associated artefacts such as wrist-guards?
- What is the relationship with martial aspects of a society?
- What do prehistoric wrist-guards tell us about the construction of (martial) identities in the Late Neolithic and the Bronze Age?

We aim to answer these questions in several ways. First we have surveyed the available archaeological data on wrist-guards. Apart from the standard works by Clarke (1970), Harbison (1977), and Sangmeister (1962; 1974) little has been done in terms of fundamental work on these objects. Recently, a large project has started in Great Britain that encompasses the material aspects of bracers (Woodward *et al.* 2006), but most of the work done so far by other authors has been oriented towards distribution, raw material, and typology. Notable exceptions are the work of Turek (2004) and of Smith (2006), who studied functionality as well.

For our purpose typological information alone was not satisfactory. What we needed, in particular, was information about the position of wrist-guards on the body. This is a difficult class of information to obtain. Out of the 430 examples at our disposal, only a small number were associated with clear evidence for their original position. There are many inhumation graves with skeletons preserved in Moravia, Bohemia, and Bavaria, but the reports on these cemeteries are published in poorly accessible journals (both in terms of availability and in language). We have searched as many journals as possible within the framework of this study, but we know that far more information is scattered through the literature. In that respect this study is only a starting point for further research.

Through analysis of the position in which wrist-guards are found we give an impression of their possible uses and meanings. Additionally we have tried to investigate both of these aspects in the ethnographic literature. There is, however, a

disappointing lack of ethnographic accounts on the function of wrist-guards. The museums are filled with examples but they have not been studied in much detail, certainly not with respect to their meaning.

More information is available on the art of shooting, in both historic and modern contexts. Much has been published about the social importance of archery. We have restricted ourselves to a few societies where archery is, or was, dominant because it tends to have a diverse social meaning in different places. The combined information from archaeological and ethnographic surveys is used to present a tentative model of the function and meaning of wrist-guards in Late Neolithic and Early Bronze Age societies.

#### THE ARCHAEOLOGICAL EVIDENCE

##### *Form and typology*

One of the difficulties when dealing with this subject is the enormous diversity in terminology. Beside the ethnographic words for the wrist-guard (Navajo: 'ketoh' or 'gatoh', Hopi: 'mapona') there are several words for it in English. 'Wrist-guard', 'arm-guard', 'bracer', 'archer's guard', 'wrist-band', 'bow-guard', 'wrist-protector', and 'armlets' are all used. Beside these there are several authors who describe these objects as 'wristlets', 'gauntlets', or 'bracelets', which gives them a whole other meaning. We have chosen to use the term *wrist-guard* in general because that is one of the most commonly used terms by archaeologists also in other languages (*polsbeschermer* in Dutch, *Armschutzplatte* in German), although among archers 'arm guard' or 'bracer' is the most common indication (Soar 2005, 204).

Wrist-guards come in many forms, both in outline and in cross-section. Therefore the two prominent typologies are based on classifications of these two variables. Sangmeister (1964, 93) initially distinguished two basic types: the narrow and the broad wrist-guards, which were not defined by objective criteria. Sangmeister corrected this in 1974 and arrived at a modified typology in which the distinction between broad and narrow still played a critical role (Fig. 1A).<sup>2</sup> The broad wrist-guards have their main distribution in Central Europe (Bohemia, Moravia, Hungary) while the narrow ones occur in all European regions where the Bell Beaker complex is present. By far the majority of the 272 wrist-guards

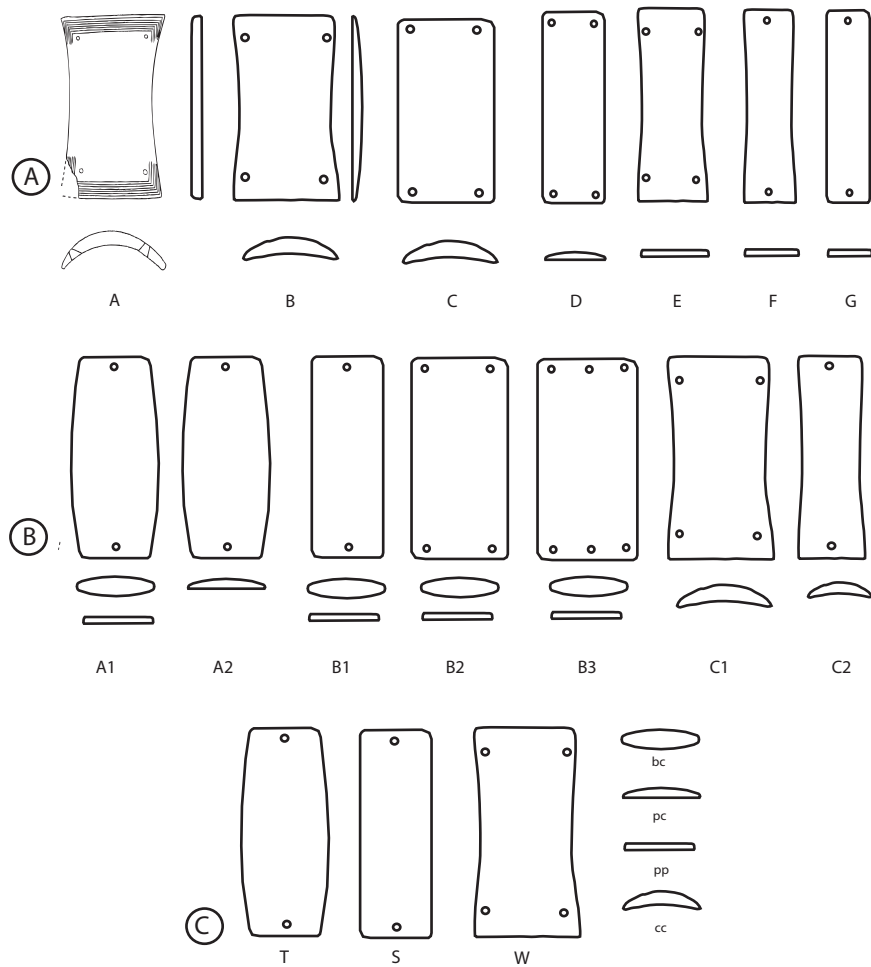


Fig. 1.

Wrist-guard typologies. A: The typology of Sangmeister (1974) distinguishes between broad (A–C) & narrow forms (D–G). B: The typology of Atkinson (Clarke 1970) distinguishes between tapered, straight, & waisted forms. C: Descriptive typology proposed by the authors based on Smith (2006, 1). Distinguishes three outline forms & four possible cross-sections. The description is a combination of the number of holes, the outline, & the cross-section

studied by Sangmeister in 1974 have four holes; around a third have two holes (Table 1). Sangmeister's study did not include British or Irish examples.

In Ireland and Great Britain Atkinson's classification is used (published by Clarke 1970, 570; Harbison 1977, 3; Woodward *et al.* 2006, 532). Atkinson distinguishes between forms A, B, and C (cf. Clarke 1970, 570). Form A is generally convex in outline and has a flat or bi-convex cross-section and two holes (A1), or a plano-convex cross-section (A2).

Form B is generally rectangular in plan with a flat or bi-convex cross-section and two holes (B1), four holes (B2), or six or more holes (B3). Form C is waisted in plan, has a concavo-convex transversal cross-section and a convexo-concave longitudinal cross-section with four holes (C1) or with two holes and V-shaped perforations (C2) (Clarke 1970, 570; Fig. 1B).

Lengthy debates are possible about the importance of the form in cross-section and in outline. We assume, although this is hard to substantiate, that the

TABLE 1. DISTRIBUTION OF TWO-, FOUR- OR SIX- AND MORE HOLED WRIST-GUARDS FOR CONTINENTAL EUROPE (SANGMEISTER 1974), SCOTLAND &amp; ENGLAND (SMITH 2006), &amp; IRELAND (HARBISON 1977)

|          | <i>Continental Europe</i> |     | <i>Britain</i> |     | <i>Ireland</i> |     |
|----------|---------------------------|-----|----------------|-----|----------------|-----|
|          | No.                       | %   | No.            | %   | No.            | %   |
| 2 holes  | 75                        | 29  | 26             | 38  | 94             | 95  |
| 4 holes  | 184                       | 70  | 28             | 41  | 5              | 5   |
| 6+ holes | 3                         | 1   | 15             | 21  | 0              | 0   |
|          | 262                       | 100 | 69             | 100 | 99             | 100 |

differences in cross-section between straight or slightly curved on both sides, or plano-convex, have little or no impact on the functionality. The difference appears to be only aesthetic. That leaves a basic differentiation in cross-section between flat or plano-convex and concavo-convex. That difference may have been irrelevant from a functional point of view, but it probably does make a difference in the manufacturing process and in wearing as well: the concavo-convex variant is more difficult to produce and possibly easier to wear.<sup>3</sup> In Britain there are indications that there is a trend towards the more elaborate objects and more holes; see below) being a later development (Woodward 2006, 533). Also Sangmeister (1974, 128–30) thinks that his more elaborate type A may be the latest development. However, in all regions both two- and four-holed variants occur throughout the currency of wrist-guards.

Since the British and continental typologies are mutually exclusive for some types of wrist-guard, and since they were not oriented towards functionality, we propose here a more descriptive typology based on that used by Jonathon Smith (2006, 1; Fig 1C). This classification is a combination of the three variables (number of holes, outline shape, and curvature) in a transparent manner: the first descriptor simply indicates the number of holes, the second indicates the basic form, as waisted (W), straight-sided (S), or tapered (T), and the last two letters indicate the cross-section: both sides convex (bi-convex: bc), both sides flat (plano-plano: pp), one side flat, one side convex (plano-convex: pc), or crescent-shaped (concavo-convex: cc). In our opinion this is the best way to describe or to classify wrist-guards, even if the difference between flat and plano-convex may be meaningless.

A comparison of the distribution maps made by Sangmeister (1964; 1974) and Harrison (1980) augmented with the data gathered by Smith (2006) shows that broadly two style-regions are present. The two-holed types have a more Atlantic-Mediterranean distribution (although the straight-sided variants also occur in Central Europe). In Central Europe the four-holed types are most frequent, especially the more elaborate ones with a crescent-shaped cross-section (4Wcc).<sup>4</sup> It is interesting to note that also England and Scotland appear to have a large percentage of the more elaborate Wcc-types while in contrast Ireland has almost exclusively ‘Atlantic’ two-holed types (cf. Table 1).

#### *The position of wrist-guards on the arm*

In order to find out where the stone bracers were placed on the body, we have surveyed as much literature on the subject as possible, although we acknowledge that our search has been far from exhaustive. Most of the well-preserved inhumation graves are to be found in England and in Central Europe. In the latter region the burials occur in relatively large cemeteries. Through the work of, for instance, Buchvaldek (1990), Dvořák (1992), Dvořák and Hájek (1990), Heyd (2000), Husty (1999; 2004), and Neugebauer (1991) we have detailed information on the Central European examples. Nevertheless the position of the bracer has seldom been discussed in detail. Most authors cite the position as ‘on the lower left arm’ without mentioning whether the object was found on the inside or the outside. A wrist-guard should be placed on the lower arm, and since that is the place where most bracers are found, few consider its position in more detail. Yet careful observation shows that wrist-guards are not only found on the inside of the arm; in fact quite the contrary.

In principle one can only deduce the position of the wrist-guard on the arm only when the position of the hand is known. The published drawings generally do not enable one to distinguish between the ulna and the radius, which could also indicate the position of the hand. Only in very few cases (eg, Sangmeister 1974, Kornwestheim burial) it is possible to make that distinction. In Figure 2 we have schematically summarised a number of possible positions and their

interpretation. Let us stress immediately that Figure 2 is not more than a descriptive and classificatory tool: all in-between positions remain possible. As a point of departure for our classification we have taken the common position of the left arm in Bell Beaker burials: the hand folded inwards towards the head or even underneath the head. If the arm is in this position, a bracer on the inside of the arm ends up in position A1 or A2. In fact, position A2 has been

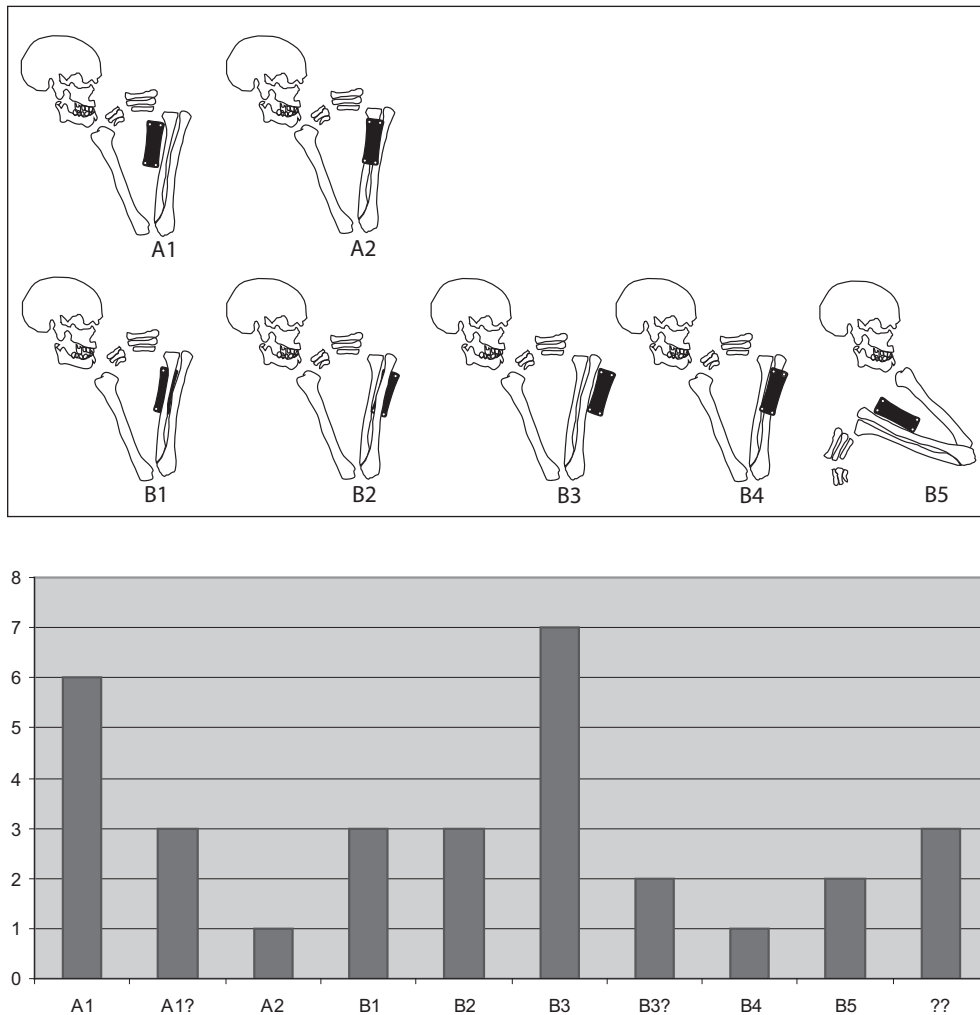


Fig. 2.

*Above:* schematic categorisation of positions of the wrist-guard on the body: a decision model. Position A: wrist-guard on the inside of the arm. Position B: wrist-guard on the outside of the arm. B1 is the most difficult to interpret and can sometimes also indicate an original position on the inside (cf. text). *Below:* frequency table of the positions (data in Appendix)



recorded in our sample of the archaeological record only once; position A1 has been found nine times (including questionable examples). Positions B1 and B2 are likely to originate from an original position on the outer arm. Position B1 is the most difficult to interpret. Especially with a four-holed bracer, it is difficult to imagine how it could end up underneath the arm bones if it had been tied to the inside of the arm, even if the arm (was) shifted during decomposition. A wrist-guard in position B2–B5 must definitely have been fastened to the outside of the arm. In Position B3 and B5 one might still argue that the arm has shifted during decomposition and that the wrist-guard originally had been fastened to the inside of the arm, but in that case one would need evidence for a considerable displacement of the arm and the hand. When such evidence was absent, we have classified the position as B3 or B5. Position B4 has in fact been recorded only once (Fig. 3: Driffield), and this observation is not very trustworthy because it is actually a 19th century artists impression of the find. B5 appears odd, but has in fact been recorded for two burials (Fig. 4: Oberstimm 2 & Fig. 5: Landau SüdOst 1981). Most common is position B3, which has been recorded for 11 burials.

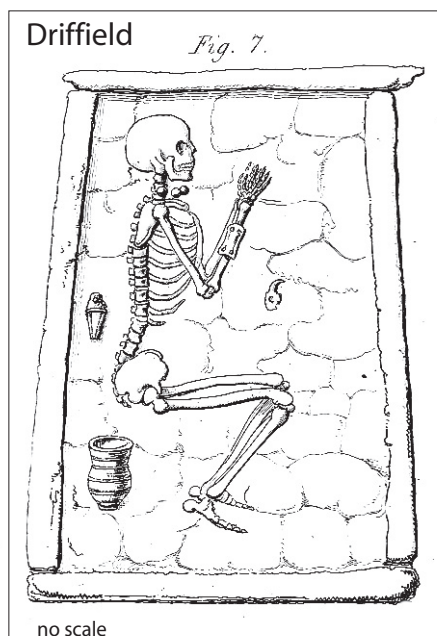


Fig. 3.  
Driffield (Londesborough 1852)

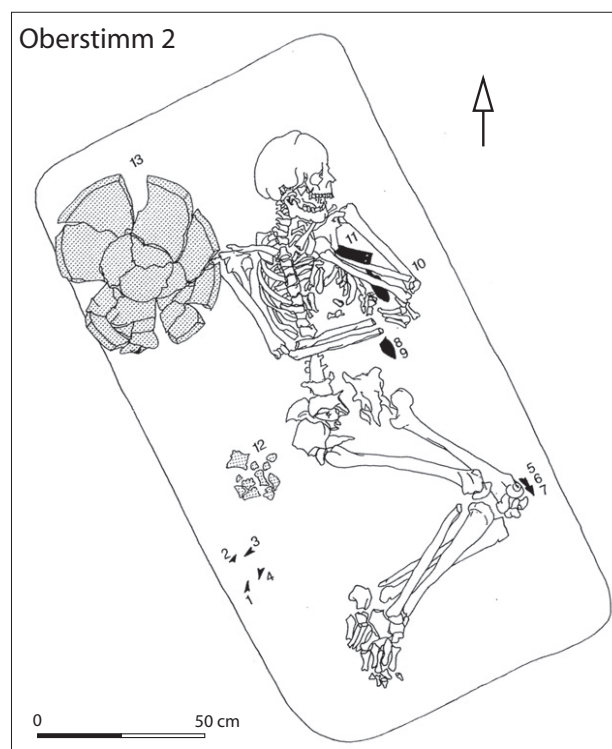


Fig. 4.  
Oberstimm Grab 2 (after Rieder 1983, 42)

Although the evidence is not abundant, a number of burials do show clearly how wrist-guards were placed on the arm. In the Appendix 31 examples have been recorded where the position could be determined with some degree of certainty. We have not relied on textual statements by other authors because the evidence tends to be coloured by interpretation. Very often the position on the outside of the arm is ignored or not referred to at all. An interesting example, for instance, is the so-called Amesbury Archer, excavated by Wessex Archaeology in 2002 (Fitzpatrick 2003). One of the two wrist-guards was found on the outside of the left arm, near the wrist in position B3, that is clearly on the outside.<sup>5</sup> Jane Brayne's reconstruction, however, places it on the inside of the wrist, because that is, the 'convention'. Fitzpatrick confirmed that it did indeed lie on the outside of the wrist (Fig. 6; cf. Lawson 2007, fig. 5.15; pers. comm. Fitzpatrick, April 2008) but he does not mention this in the preliminary publication (2003). Interestingly enough,

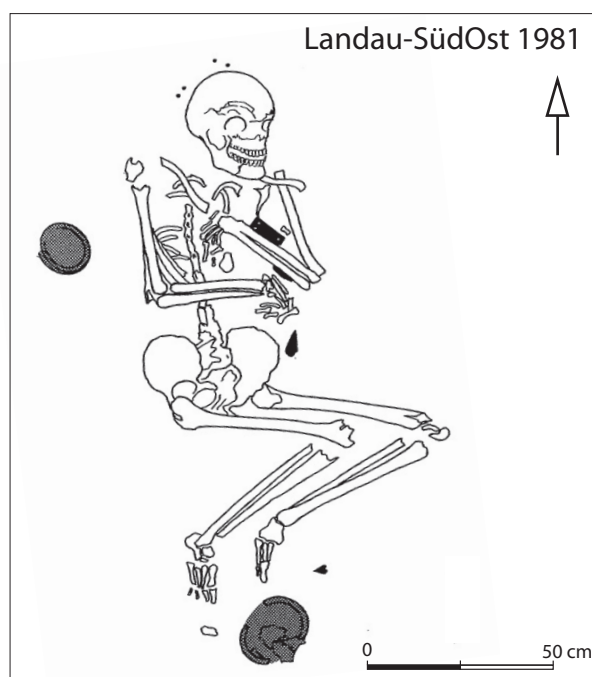


Fig. 5  
Landau SüdOst 1981 (after Husty 2004, fig. 5)

he does state that ‘it is likely that (contrary to what is shown in the painting) the wrist-guard adorned a leather cuff’ (Fitzpatrick 2003, 184).

Only the British and Scottish wrist-guards have been discussed in more detail with respect to their position. Woodward *et al.* (2006, 532) state that in 13 cases the position of the bracer was known: ‘in eight cases a possible functional location on the lower arm was evident (five left, three right).’ Smith positions eight specimens on the left arm, four on the right arm; of these, four were found on the outside of the arm, four were in an indeterminable position, and the other four were found on the inner arm (Smith 2006, 13 and database).<sup>6</sup>

It takes, however, careful observation and discussion of post-depositional changes to determine a wrist-guard’s exact original position. In considering post-depositional change, we have assumed that, at least in Central Europe but also in Great Britain and possibly in the Netherlands, the dead were laid down in chamber-like spaces within graves, made of wood or (in some British cases) of stone. Generally speaking

the wooden chamber may have lacked a base, but would have had planked sides and a wooden cover (cf. Sangmeister 1974, 103). Decomposition therefore, would have taken place in a space that left room for bones and objects to shift during the process, or being shifted by rodents.

The Kornwestheim burial, published by Sangmeister in 1974 (103 ff, fig. 6; Fig. 7), is a good example of why the position has to be analysed in detail before it is classified. Most people would probably say that the Kornwestheim bracer is placed on the inside of the lower left arm, which certainly appears to be the case. The rather wide wrist-guard is lying with its decorated side upside down. The arm is partly lying on top of it. Sangmeister says that the wrist-guard was: ‘z. T. unter diese geschoben’ (1974, 103) indicating that he thinks that it was not tied to the arm, but had been shifted underneath it by the people who buried the man. Indeed it is difficult to imagine how a wrist-guard that was tied to the inside of the arm could end up in this position. If it had been tied to the inside of the arm, it would have ended either on top of the bone with its upper surface facing up, or entirely next to the bone, upside down. The position in which it was found, however, could more easily be explained if it had been tied to the outside of the arm. The bracer would have shifted to this side of the arm a little, and after decomposition the arm bones would have come to rest on top of it. Therefore we classify this example as probably located on the outside of the lower left arm. A discussion could be held about the bracer of Gemeinlebarn Verf. 2071 (Fig. 8), but since this is a rather narrow 2Tpp bracer, it could equally well have been fastened to the inside of the arm, the inner arm bone having shifted on top of it after decomposition.

The Barnack wrist-guard (grave 28; Fig. 9) is another example of a position that is difficult to interpret. The excavator states that it was underneath the arm bones and partly underneath the ‘pelvic girdle’ (Donaldson 1977, 209). The wrist-guard in grave 28 was lying upside down with its gold caps facing downwards, but a broken corner was lying on top of the other part, with its gold caps facing upwards. In principle this position could be the result of post-depositional decay if the wrist-guard had been riveted to a leather band.<sup>7</sup> The largest part, tied to the outside of the arm, would have fallen off first, while the broken-off part remained hanging for a while. Both pieces fell from next to the hip while the knees



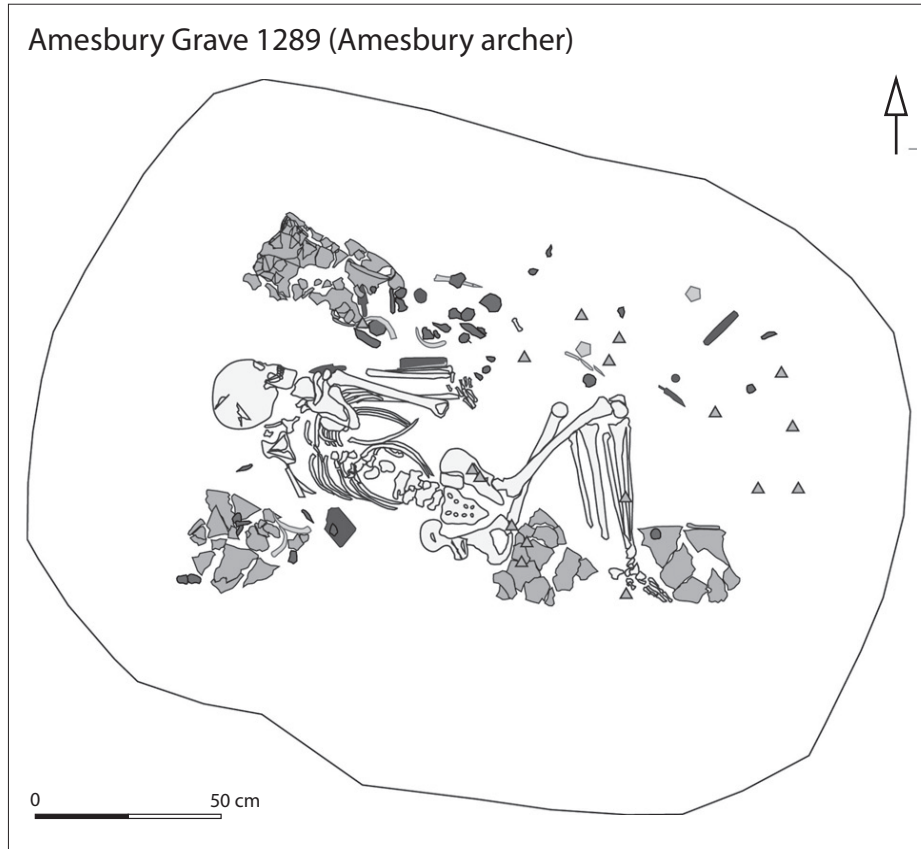


Fig. 6.  
Amesbury grave 1289 (Amesbury Archer). Courtesy of A. Fitzpatrick, Wessex Archeology, Salisbury

were still in their original drawn-up position (*ibid.*, 208) and the smaller segment only came to rest on top of the larger part of the wrist-guard when the legs had shifted into their final position, flexed to one side. We have therefore classified the Barnack wrist-guard as really positioned on the outside of the left arm, and not as laid down underneath the outside of the left arm by the mourners.

The surprising conclusion of our survey is that, while the majority of the bracers were indeed positioned on the lower arm, generally the left arm, they had been worn on the outside. Figure 2 shows that only eight out of 30 examples were located on the

inside of the arm, with 17 definitely on the outside. Even if we leave position B1 – the position that is hardest to interpret – out of the equation, still *c.* 60% are positioned on the outside of the arm. That was, in fact, wholly unexpected and is difficult to explain as evidence for a functional position. It is also clear that this position on the outside of the wrist is not exclusive, so both a functional and a non-functional or ornamental position are possible, although the majority appear to be ornamental. This is not restricted to two-holed wrist-guards, but also applies to the easier-to-fasten four-holed specimens (cf. Appendix).

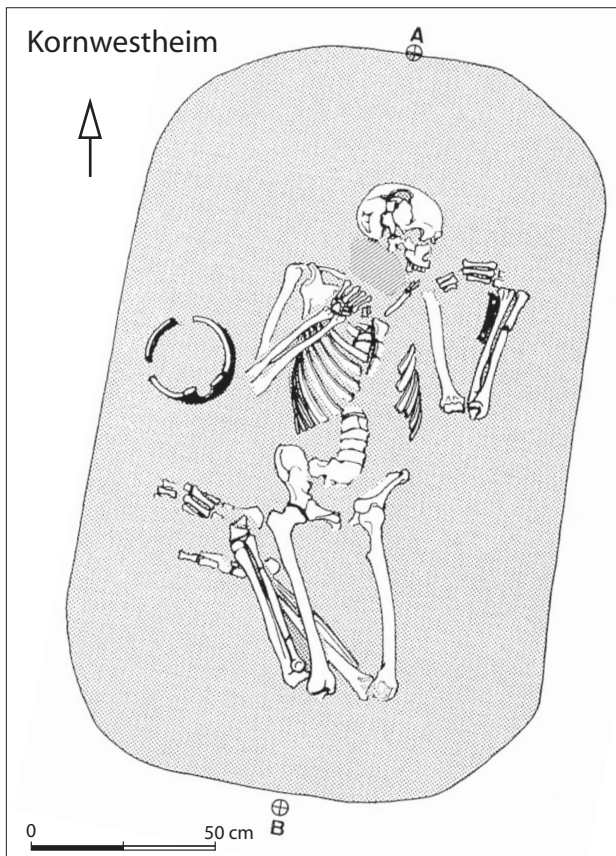


Fig. 7.  
7 Kornwestheim (after Sangmeister 1974 103)

*Bracers on wristlets: anomalies or norm?*

In the previous section it became clear that most of the wrist-guards whose position could be checked from drawings lay in a position that indicates ornamental rather than functional use. Ornamental use is indicated not only by position, but also by form: several of the wrist-guards are of an impractical design. Disproportional, and therefore probably impractical, for instance, are two-hole wrist-guards over 200mm long, found in Spain, or specimens less than 50mm long, found for instance in Luxemburg (Sangmeister 1974, table 4) and in Ireland (Harbison 1976). The gold bracers ‘mounted on leather wristlets’ (Childe 1950, 222), found in Brittany, Bohemia, and

southern France, were also probably impractical. Husty discusses these in detail and concludes that they were probably not bracers at all, since some of them occur near the head (Husty 1999, 102 ff, fig. 25; 2004, 46 ff; Turek 2004, 212). In other regions gold-adorned specimens occur that were also probably mounted on leather wristlets. The British bracers from Culduthel Mains in north-east Scotland, Driffield in Yorkshire, and Barnack in Cambridgeshire, with their gold-capped rivets are the best-known examples (Woodward *et al.* 2006, 535, 541, fig. 4). A 4Wcc wrist-guard with copper rivets was found at Borrowstone (cist 6; Fig. 32) in Aberdeenshire (Shepherd 1986, 13; Sheridan, pers. comm., March 2008) and a 4Wcc wrist-guard had copper (or copper

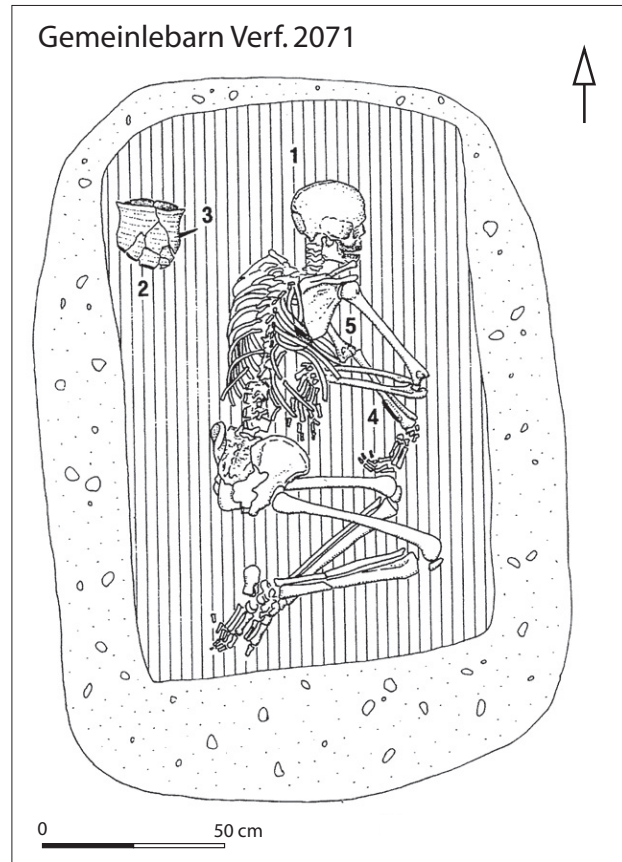


Fig. 8.  
Gemeinlebarb Verf. 2071 (after Neugebauer & Neugebauer 1994, fig. 4)

alloy) staining in its holes at Tring in Hertfordshire (Smith 2006, 11). Van Giffen reports a 2Wpc wrist-guard from a Beaker burial at Emst which had remains of bronze thread in the holes (*Überresten eines Bronzedrahtes*) (van Giffen 1930, 75). Possibly this 'thread' was the last remains of bronze rivets. Since these protruding rivets would damage the bowstring when shooting, it is probable that these were ornaments rather than wrist-guards proper.

These exceptions, of course, cannot be used to explain how the great majority of wrist-guards were fastened to the wrist. Generally leather or sinew thongs are suggested as materials to fasten the wrist-guard (cf. Turek 2004, 223)<sup>8</sup>, but apparently this was not always the case. Moreover, by far the majority of

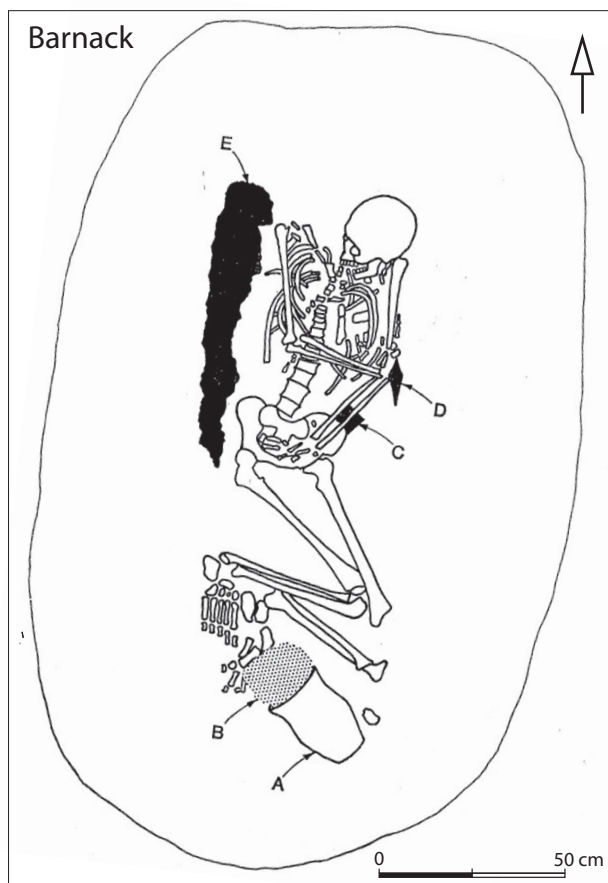


Fig. 9.  
Barnack (after Donaldson 1977, 209)

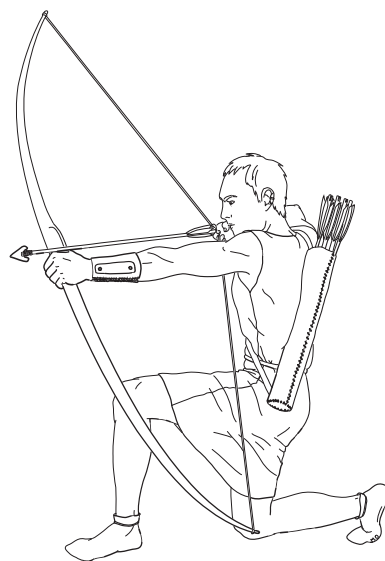


Fig. 10.  
Possibly the most common way of wearing a stone wrist-guard: as an ornament, but probably with a symbolic value with respect to the warrior/archer's personal status (drawing M. Oberndorf, Faculty of Archaeology, Leiden University)

the wrist-guards have only two holes. It is very difficult to imagine how these could have been tied to the wrist in such a manner that they stayed in place tightly (cf. Husty 1999, 64–65). That is one of the conditions for a well functioning bracer. Taking this as a clue, we suggest that also these bracers were mounted on a leather wristlet, either in a functional position, or as an ornament (Fig. 10; cf. Butler & Fokkens 2005, 392, fig. 17.18; Harrison 1980, 53; Jacobs 1991).

#### THE ETHNOGRAPHIC RECORD

##### *Ethnographic evidence for the use of bracers*

'In a bracer a man muste take hede of. iii. thinges, yat it haue no nayles in it, that it haue no bucles, that it be saft on with laces wythout agglettes. For the nayles wyll shere in sunder, a mannes string, before he be ware, and so put his bowe in

ieoperdy: Buckles and agglettes at vnwares, shall race hys bowe, a thinge bothe euyll to the syghte, and perilous for sreatynge. And thus a Bracer, is onely had for this purpose, that the strynge maye haue redye passage' (Ascham 1545, 108).

This historical description of bracers does not concur with prehistoric bracers at all. The prehistoric stone specimens must have protruded from the wrist, some had conspicuous rivets, and the two-holed specimens in particular must have been tied to the wrist in an awkward way. To cite Humphrey Case: 'I take stone wrist guards to be symbolical, durable but comparatively expensive and impractical representations of hide or leather ones' (Case 2004, 26). Case's observation to some extent matches the ethnographic evidence that we have studied. Wrist-guards are known throughout the ages and in all parts of the world. However, it is clear that they are not a necessity in archery '... to give the bow so much bent, that the string need never touch a man's arm, and so a man need no bracer' (Ascham 1545). Webb, however, states that a bracer is especially required when the bow is held for a long time at full draw, for instance when shooting birds (1991, 36). The use of wrist-guards directly to the wrist thus depends, among other things, on the way the bow is drawn and released after the arrow has been fired. This is partly determined by cultural processes, but additionally by the type of game that is hunted.

Wrist-guards can be made of almost any material, but in general they are organic. The specimens of the Museum of Volkenkunde in Leiden (which are mostly from New Guinea; Fig. 11) are made of plants or wood-like materials. The Inuit generally use ivory or horn (Fig. 12), although one made from bark is also known (Miles 1963, 41). Horn and ivory bracers are known from 16th century England, as a find recovered from the *Mary Rose* warship shows (Soar 2005, 206). We did not encounter any examples of stone wrist-guards in the ethnographic literature. From the anthropological literature it becomes clear that most of the wrist-guards are made from leather:

'The Indian, par excellence, wore upon his left wrist a band of rawhide, from 2 to 3 inches [51-76 mm] wide, as a guard against the bowstring. Many of these come from the Southwest, where they are ornamented with silver and worn in ceremonies' (Mason 1894, 646).

'The flaker for making flint points was "a little bone" (antler) worn at the bracer or wrist-guard, which commonly was made from the skin of a wolf, badger, or black fox' (Willoughby 1907, 78).

The American Indian wrist-guard was a simple piece of leather wrapped around the wrist and worn by all the men. Only with the introduction of metalworking did Navajo and Hopi Indians start to wear silver ornaments on their leather wrist-guards. In fact these silver *ketohs* are amongst the best ethnographic parallels for prehistoric specimens, especially the four-holed examples (Fig. 13). They have a similar form, size, and convex-concave cross-section. This of course does not have any relevance for the meaning of the Bell Beaker bracer. What it does show, however, is that the boundary between a utilitarian object and an ornament is very fine and can change over time; indeed, an object can fulfil both functions simultaneously. Navajo and Hopi Indians are famous for their (contemporary) silversmiths, and many books have been written about their silversmithing (Anderson 1999; Tisdale 2006; Woodward 1938; Wright 1998). Almost all of these books show examples of these so-called *ketohs*. Unfortunately, as far as we know, no study has been undertaken into their function and meaning. Only loose remarks suggest a symbolic meaning beside the purely utilitarian function.

Most Navajo men still wear *ketohs* as ornaments, treasured especially for their masculine connotations. Ritually, also, *ketohs* have a place: 'During the summer rain-dances in the Hopi villages and at Zuni, the dancers wear bow-guards, which are an essential part of the dress of many of the Kachina dancers' (Adair cited in Bedinger 1973, 56). In one of the many folk stories of the Hopi, it is mentioned that: 'the wrist-guard is identified with strength and bravery. All Hopi (warriors) wore them, and a child might wear one to make him "strong"' (Benedict 1930, 68).

It is interesting that, in the Indian context, the owners considered the leather wrist-guard to be more important than the silver decoration which, from an economic point of view, must have been much more valuable. Laubin describes a silver *ketoh* he was given '... the old Navajo who owned it would not sell the leather guard, as he considered it to be the most important part' (Laubin & Laubin 1980, 108). He believes the silver was purely ornamental and the real meaning for the warrior lay in the leather. An





Fig. 11.

An archer of the Marind-Anim wearing a rik-a-rak arm-guard made of plant material. The photograph is taken by a Fathers of the Holy Hart around 1935 in Papua-New Guinea (courtesy of the MSC, KITLV archive)

interesting remark was made by Wright about the silver ornaments of the Hopi Indians: ‘There seems to have been an earlier prototype which survived as leather wristband with bone plates sewed on for decoration. Reputedly the bone was from the scapula of a slain enemy or from a predator animal, specifically bear’ (Wright 1979, 54). Although the wrist-guards seem to have had some sort of symbolic meaning, evidence is lacking to make a strong argument. What is clear is that they can easily cross

the border between functional tool and ornament, so whether a leather wrist-guard is a purely utilitarian tool, an ornamented tool (bracer), or ‘only’ an ornament (bracelet) may be very ambiguous.

#### *Archery as an ideology*

‘In ancient times there was no other weapon into which a human being could throw so much of himself – his hands, his eyes, his whole mind, and body’ (Mason 1894, 638). Another insight in the use and meaning of wrist-guards can be gained through the



Fig. 12.

Inuit wrist-guards made of carved bone (left: MAC 1994-0560, 75 mm long and 30 mm wide) & of ivory (right: MAC 1994-0563, 70 mm long and 30 mm wide). Images courtesy Museum of Anthropology, University of Missouri-Columbia

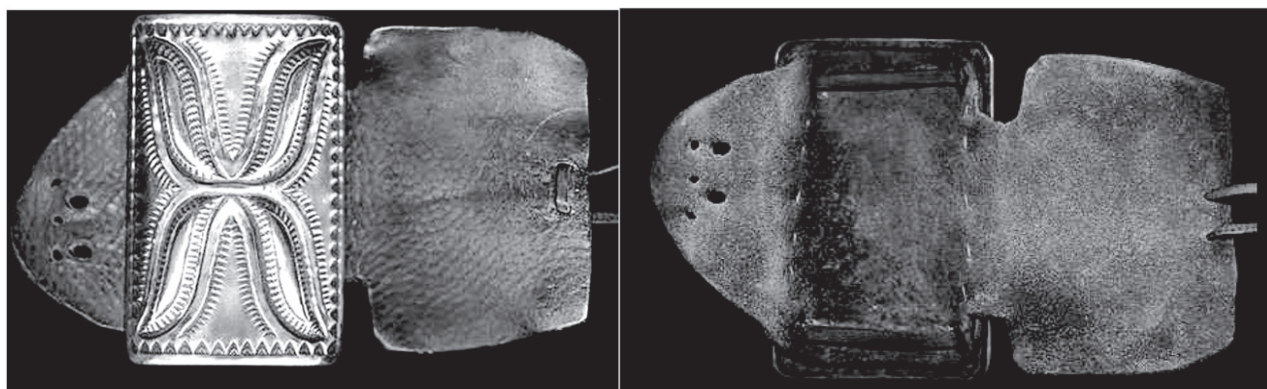


Fig. 13.

A silver Navajo Ketoh mounted on an original leather wrist-guard seen from the front (left) and from the back (right). Courtesy of [www.arco-iris.com](http://www.arco-iris.com)



analysis of the role of archery in society. Sources used span regions of Northern America to the Far East. They show that archery is often of great importance, not only on a practical, but also on a higher, spiritual, ideological or competitive level.<sup>9</sup>

Famous archers can be found in legendary stories, such as the legends of William Tell and Robin Hood. Further back in history a famous example is described in Homer's *Odyssey*: Odysseus himself was the only one who was able to strain his bow and could shoot an arrow through the holes of 12 axes (Van Oldenburg Ermke 1959). In doing so he beat his competitors and regained his wife after his long absence due to the Trojan War. We can discover the same theme in epic stories outside the borders of present-day Europe, for example in the *Ramayana* and the *Mahabharata*. These two Indian epics are both thought to have been in existence, in their core form, by around 1500 BC, but they may well have originated in an even earlier period.

In these epics the bow is a recurrent motif, often intertwined with human values such as bravery, strength, and accuracy. Sometimes the central figure has a godlike identity. Like Odysseus, the Indian prince Rama proved his strength and skill by being able to lift and strain the bow, which originally belonged to Shiva, and eventually to break it, something none of the gods had been able to do, not even with their powers combined. By passing this test Rama gained the hand of Sita, daughter of king Janaka (Narayan 1972). In addition to the thematic similarity regarding the straining of the bow and (re)gaining a wife, which is evident in both of these epic stories from the Eurasian world, another similarity is that both King Rama and Odysseus received the bow from a 'special person', who could be either a dear friend or a mighty god. This theme can also be traced in many other stories that include bows.

In these stories the bow and arrow fulfil an important role and represent, or simply acknowledge, the identity of the stories' hero. What is surprising, perhaps, is the perennial importance of archery. While the stories of William Tell and Robin Hood are set in the period around the 13th century AD, the epics of Odysseus, and the *Ramayana* and the *Mahabharata*, are both thought to have originated from around 1500 BC or even earlier. It appears that archery is repeatedly presented as a powerful and almost

prestigious aspect of life, connected with the virtuous aspects of identity. Archery has the potential for being important in any given society, but whether that is indeed the case is culturally defined.

In this respect another interesting example of a literary source, which emphasises the high-valued position of the bow and arrow, is the *Niukta Naigamakanda*. This Indian treatise was written around 1000–800 BC. Among other things it gives a ranking of the different types of weapon. The sword is described as the most inferior weapon; spears and javelins are mediocre; but the bow and arrow are regarded as the weapon *par excellence*. In this case the traditional Indian caste system may be used as an explanation for the superiority of the bow and arrow: a person belonging to a higher caste was expected not to touch a person who belonged to a lower caste. Therefore, people in a higher social position had an interest in a weapon that made it possible to keep a proper distance from lower caste people. In India the bow and arrow were regarded as being so precious that, if a warrior died in battle, the bow, arrow, and quiver that he had been holding would be cremated with him (Pant 1978, 23).

Several examples illustrating the highly-valued position of archery can also be found in the western world. In his study on Yahi archery Pope provides us with an illustration from northern America of how important the bow could have been for its owners. The Yahi or Deer Creek Indians formed a tribe that lived on north-central California. The group lived on wild game and the bow was their glory and delight (Pope 1918, 104). Pope describes the death of Ishi, his informant:

'During the declining days of his [Ishi's] life, the one thing that brought that happy smile to his face which characterised him was the subject of archery. A little work, feathering arrows or binding points in with sinew, gave him more pleasure than any diversion we could offer ... When he died and was cremated according to the custom of his people, we placed by his side some tobacco, ten pieces of dentalium shell, an acorn meal, a bit of jerky, a quiver full of arrows, and his bow' (Pope 1918, 131).

These examples are only a small part of an enormous variety of literary sources in which archery is given a

special and often glorified position. The use of the bow and arrows is associated with strength and skill, which can become important parts of someone's personhood and social identity. The artefacts associated with archery can easily become objects that symbolise those identities and in that manner become items with a special value and meaning.

This is very much the case in these areas of the world where archery has become part of an ideology or a life style, as in Japan. *Kyudo*, the 'way of the bow', is the Japanese way of practising archery (Onuma et al. 1993, 6). Onuma describes *kyudo* as a way of trying to understand humanity. The pursuit of the qualities of truth, goodness, and beauty is a major element in the practice of *kyudo*. Accuracy is important and the ability to hit the target's centre is at the root of any form of archery. *Kyudo*, however, distinguishes between shooting that is merely skilful and shooting that is correct and right-minded (*ibid.*, 2). Qualities that separate the true masters of the art of *kyudo* from the archers that are merely skilled in shooting are grace, dignity, and tranquillity. The combination of these three characteristics gives *kyudo* a religious-like quality, according to Onuma, that is influenced by the two major schools of Zen and Shinto (*ibid.*, 6). One of the basic thoughts behind the art of *kyudo* is that the archers do not merely study it in order to learn how to shoot a bow, but that every shot is a learning experience which provides an opportunity for growth (Onuma et al. 1993, 7).

Interestingly Onuma describes five different historical stages of Japanese archery. The first, prehistoric, period extends from 7000 BC to AD 330. This first period includes the Jomon culture, which originated from 7000 BC and lasted until 250 BC. The Jomon, a hunter-gatherer people, relied heavily on the use of the bow. It was used in warfare and in rituals, but primarily for hunting. From 250 BC onwards, with the beginning of the Japanese Iron Age, a stronger sense of community grew, and a more elaborate system of political and economic control came into being (Onuma et al. 1993, 11). It is in this period (Yayoi culture) that there was a shift from hunting of game animals to fishing and farming. The bow, Onuma describes, evolved at this point in history from a hunting tool into a symbol and an instrument of political power.

Our brief survey has made clear that archery has the ability to become an important aspect in society for a number of different reasons. In several societies

archery and archer's equipment have a function in the construction of people's identity. This is connected with certain characteristics, which are likely to have been of a great value for that society, such as strength, skill, and accuracy. In that respect archery can be seen as a feature of a broader ideology or way of life. As we have seen in our discussion of *kyudo*, archery itself is able to play an even bigger role, namely that of being an ideology or way of life in itself, even to the point that archery loses its original meaning and the archer's equipment becomes a symbol for that particular ideology.

Even though we deal with a totally different culture when discussing the Bell Beaker culture, it is well possible that archery was a vital element of the Bell Beaker cosmology as well, and that the paraphernalia connected with archery became symbols of those cosmological values. The bow-shaped pendants found in Moravian and Bohemian Beaker burials, which are made of boars' tusks or bone, may be a case in point (Piggott 1971; Heyd 2000, 286 ff; Husty 2004, 44 ff). We will try to elaborate this idea in the next section.

#### HUNTERS OR WARRIORS?

It is almost a paradox that, in a period in which hunting had lost its primacy in favour of farming as a dominant economic practice, arrows, bow pendants, wrist-guards, arrowshaft smoothers, and probably bows became a more-or-less prominent feature of the archaeological record. One might expect sickles or plough shares to appear in the burial context, but that is never the case: why archers equipment and copper daggers? To put the question differently: the Amesbury Archer was almost irrefutably an archer, but was his archery equipment related to his role in society as a hunter? Or was he represented as a warrior in death? Or perhaps both?

In their book about Bronze Age warfare Osgood and Monks (2000, 139ff) have already argued that warfare was a significant element of Early Bronze Age life, citing numerous examples where people had been killed by arrows. They have, however, offered little in the way of a social framework to account for this. Warfare is often seen as a functional aspect of life; the result of the defence of trade routes, or of competition over tradable goods, slaves, wives, etc (Osgood & Monks 2000, 147). In our view this approach is too limited, although one can never deny such functional

aspects as direct reasons for warfare. But warfare often encompasses strong ideological aspects as well, as we have seen in our ethnographical examples. We are used to thinking about swords as martial weapons *par excellence*, but ethnographic surveys show that archery and associated artefacts can have similar connotations. Therefore our hypothesis is that, during the Late Neolithic, Copper Age, and Early Bronze Age, archery and the use of bow and arrow were connected with a martial ideology, which is precisely why these artefacts were part of the set of grave gifts, and not plough shares or hoes (cf. Fokkens 1999, 38 ff). A similar position has been taken, for instance, by Heyd (2007, 357 ff) and Sarauw (2007).

Such an ideology would account for several aspects of the associated artefacts that are otherwise difficult to explain. One of these aspects is the almost excessive elaboration of arrow tips, by means of surface retouch (cf. Chapman 1999, 125). This is, in principle, not functional, but if warfare and raiding were socially and ideologically important, one may assume that the objects used in these activities and the process of their manufacturing would be meaningful as well. The elaborate technology involved may result from those social and ideological aspects. The same connotations may have been involved in bow making and bow string production.

The introduction of the stone wrist-guard as an artefact that was associated with an ideologically-laden activity is in support of the idea of martiality as well. Several elements are important here. In the first place many specimens show great skill in polishing and stone working. Drilling holes, getting the stone into the right cross-section and the right shape, all contribute to making the wrist-guard special. Helms demonstrated that craftsmanship can be meaningful and can give objects a cosmological charge (Helms 1993). Additionally most wrist-guards are not made from locally available stone (Woodward *et al.* 2006). Getting things from afar, involving travel, adventure, and myths, is another aspect that can charge objects and their owners cosmologically (Helms 1988). Wrist-guards may therefore be cosmologically-charged objects that could have been associated with higher values, not necessarily just with power or prestige.

We think here of values such as bravery, righteousness, stability, tranquillity of the mind, values that could have been necessary for good archery and marksmanship. Wrist-guards may have

been objects that were almost inextricably bound up with such qualities and with their owners. Given such a unity between people and objects, one might expect that gift-exchange was involved in the acquisition of wrist-guards. We refer here to the gift exchange of objects not only between people, but also, especially, between people and the supernatural, be it gods, spirits, or ancestors.

From such a perspective, wrist-guards – as often beautifully-crafted objects obtained from distant sources – gain an entirely new dimension. They may have been functional, but at the same time they may have had cosmological, ideological connotations linked to higher values in society. Values linked with archery, marksmanship, martiality, values that possibly were valued in a man, were important for the society as a whole. This could explain why such objects become aggrandised, highly decorated, and ornamental. Even in those forms they can still symbolise the values with which they are associated. In that respect wrist-guards could be compared to oversized and useless swords such as the Ommerschans-Plougrescant swords of the Middle Bronze Age: these were obviously only manufactured for deposition, but they combined the same elements of craftsmanship and distance (Fontijn 2003; 2007). A similar interpretation can be applied to oversized TRB flint axeheads, which also show a high degree of craftsmanship and were acquired from distant places (Wentink 2006).

In our opinion prehistoric wrist-guards were indeed wrist-guards, regardless whether they were worn in the functional position on the inside of the arm or as an ornament on the outside of the arm. In our view their meaning did not derive from their protective function in the first place, but from their association with archery in general, with the martial aspects of archery. Our research shows that they may often have been worn in an ornamental position, but we have to realise that all our examples are gifts to the dead, to the ancestors. And in that respect there is one last important point to make.

#### CHIEFS OR IDEAL ANCESTORS?

The traditional prestige goods model sees the Beaker burials as typical elite burials, especially the ones featuring one or more wrist-guards, since these objects are relatively scarce. Most of the recent discussions of

Beaker grave gifts tend to follow that approach (eg, Heyd 2000; 2007; Harrison & Heyd 2007; Needham 2005). However, if one analyses the Beaker complex over the area of its distribution, it becomes clear that there is a high degree of standardisation of Beaker burials and grave gifts. There is but a limited range of objects that we find in Beaker burials and they almost always occur in similar numbers. Wrist-guards are often found in combination with copper daggers which were probably tied to the left upper arm or worn across the chest (Heyd 2000, 270; 2007, 348; Shennan 1977). Whatever social status these objects signify, it is a standardised status. Such similarity in dress is difficult to explain from a prestige goods perspective alone. It would imply that the elites more or less dressed the same all over Europe. It is beyond the scope of the present article to elaborate on this point, but we suggest that the grave gifts that accompany the Beaker people, both men and women, are in fact – through their costume and outfit – constructing representations of ideal persons or indeed ancestors. In this respect it is important to note that male and female genders are constructed differently but in a similar manner with objects that often have been obtained from afar (see above and discussion in Heyd 2000; 2007, 341 ff).

In our opinion the objects given to the ancestors were a selection of their possessions that fulfilled the social image of an ideal person, an image that, among others, was built up through the (perceived) exchange of objects between people and the supernatural (cf. Bazelmans 1999; Fokkens 1999; 2005; Fontijn 2003). The wrist-guard, as a symbol of archery and of its associated values, can arguably be considered to be such an object.

#### CONCLUDING REMARKS

The present study has tried to answer specific questions, but at the same time has left many questions unanswered. We have refrained, for instance, from a more detailed discussion of the ‘standard’ Beaker assemblage and its meaning. We have resisted the temptation to discuss the importance of the quite frequent association of wrist-guards with copper daggers (cf. Heyd 2007, 348), in Britain probably as part of what Needham (2005, 204) has called the fission horizon. They are absolutely important, but need to be worked out in subsequent

articles and they need a great deal of background research. What we need is a database that all researchers can use as a basis for further research. As part of the Leiden Beaker Project we intent to start such a database and it will be made accessible through the internet for anyone to use and hopefully also to adjust and supplement ([www.surfgroepen.nl/sites/beakernetwork](http://www.surfgroepen.nl/sites/beakernetwork)). We hope that many will join us in the Beaker Network and help to create an environment for more ‘cross-cultural’ research.

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#### Endnotes

- <sup>1</sup> Wrist-guards made from other materials such as amber or gold do exist, but as this article deals with the stone wrist-guards they are not considered here. They would corroborate our argument nonetheless for they are generally not considered to have been functional tools.
- <sup>2</sup> Sangmeister’s typology was slightly modified by Turek (2004, 209) who distinguished subtypes within the B, D, and G forms.
- <sup>3</sup> During the Leverhulme experience it was noted that while flat bracers work best in the inner wrist position, the curved bracers fit much better on the outer (forward edge) of the lower arm (pers. comm. Woodward, March 2008).
- <sup>4</sup> Following Sangmeister (1974), Harrison (1980) calls the two-holed bracers the ‘western type’ and the four-holed bracers the ‘eastern type’.
- <sup>5</sup> Interestingly a bone pin was positioned between the 2Tpc wrist-guard and the arm. One of the ways to fasten a two-holed bracer to the arm or a leather cuff could have been to insert a looped tread through each of the two holes and pass the pin through the loops.
- <sup>6</sup> Smith (2006) points out that four out of 12 British bracers were located on the lower right arm, indicating a left-handed archer, whereas normally only one out of 10 people is left-handed. He therefore takes this observation as an additional argument for an ornamental or symbolic function. It has been pointed out to us, however, that normal left- and right-handedness is not automatically replicated in archery left- or right-handedness (Sheridan, pers. comm. March 2008). In our survey only two out of 24 observations were located on the right arm (the Borrowstone and Driffield burials).
- <sup>7</sup> Kinnes describes the gold caps as ‘tightly fitted within perforations’ (Donaldson 1977, 209). Smith therefore assumes that the Barnack wrist-guard cannot have been worn (2006, 23). In our opinion, however, the gold caps may have been covering copper rivets or other (knotted) material that has not been preserved. Therefore we have



classified it as riveted to a leather band, but this interpretation remains open to debate.

- <sup>8</sup> Alison Sheridan pointed out to us that there is indeed one example, from Newlands in Aberdeenshire, that has two deep grooves on its underside, running between the holes, as if to help house sinew thongs (Low 1936, Fig. 4). See also the shadows of organic material on the Hemp Knoll bracer (Woodward 2006, figs 2c & fig. 4c).
- <sup>9</sup> Our historical survey could have been expanded with stories and data from many other regions, for instance about the Mongol archery traditions and Eurasian horseback archery, but for the present argument the added value would have been little. We have restricted ourselves therefore to a few examples of cultures where archery is seen as a valued element. We are aware of the fact that that has not been the case always and everywhere, but that hardly influences our perception of the role of archery in the Bell Beaker period

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**1 (Fig. 5)**

*Location* Landau-Süd-Ost Grab 1981, Austria

*Wrist-guard type* 3Sc

*Position in grave* Outside of left arm(B5)

*Comment* There is no reason to assume disturbance of the grave or displacement of the arm. It is assumed that the wrist-guard arrived in this position after decay of the leather cuff to which it may have been fastened.

*Association* Copper dagger, 4 flint arrowheads, 2 Beakers

*Sex* Adult male

*Reference* Husty 2004, fig. 5

**2 (Fig. 8)**

*Location* Gemeinlebarn Verf. 2071, Austria

*Wrist-guard type* T2pp

*Position in grave* Inside (?) of lower left arm (B1)

*Comment* No signs of disturbance or displacement of arm

*Association* Beaker, copper awl, copper dagger

*Sex* Adult male

*Reference* Neugebauer & Neugebauer 1994, 198, fig. 4

**3 (Fig. 14)**

*Location* Oberbierbaum Verf. 1, Austria

*Wrist-guard type* 2Wpc

*Position in grave* Upper (?) inside of lower (left?) arm (not incorporated into the table below fig. 2)

*Comment* If the arm is in its normal position, the position may be as indicated, but fragmentary conservation of the skeleton makes interpretation dubious

*Association* Foot bowl, decorated boars' tusks

*Sex* Adult male

*Reference* Neugebauer & Neugebauer 1994, 204, fig.10

**4**

*Location* Zaborzec grave 3, Poland

*Wrist-guard type* 4Sc

*Position in grave* Inconclusive, near the arm, not on it

*Association* Copper dagger, bow pendant, flint arrowhead, 3 flint implements, 3 vessels

*Sex* Adult male 50–60 yr

*Reference* Kamińska & Kulezycka-Leciejewiczowa 1970, 374, fig.131

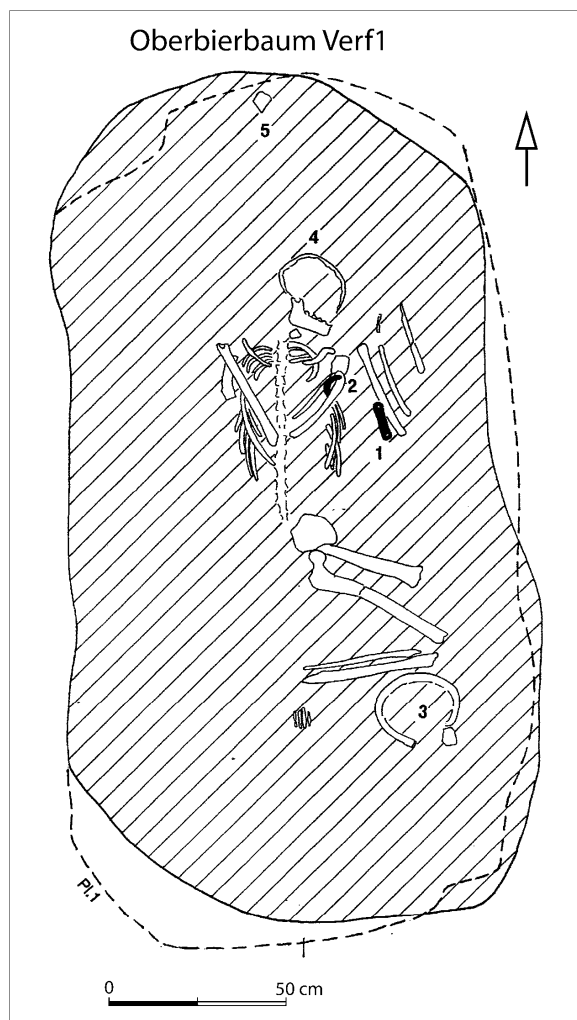


Fig. 14.  
Oberbierbaum Verf 1 (after Neugebauer & Neugebauer 1994, 204, fig. 10)

**5 (Fig. 15)**

*Location* Locheice I, hrob 13, Czech Republic

*Wrist-guard type* 4Wcc

*Position in grave* Inside of lower left arm (A1?)

*Comment* The drawing is not very clear, but probably the visible hand is the right hand, with the left hand laying underneath the skull in original position. This means that the wrist-guard was located on the inside & slid off the arm during decomposition

*Association* 2 vessels, flint tool

*Sex* Adult male

*Reference* Dvořák 1990, 40; fig. 11

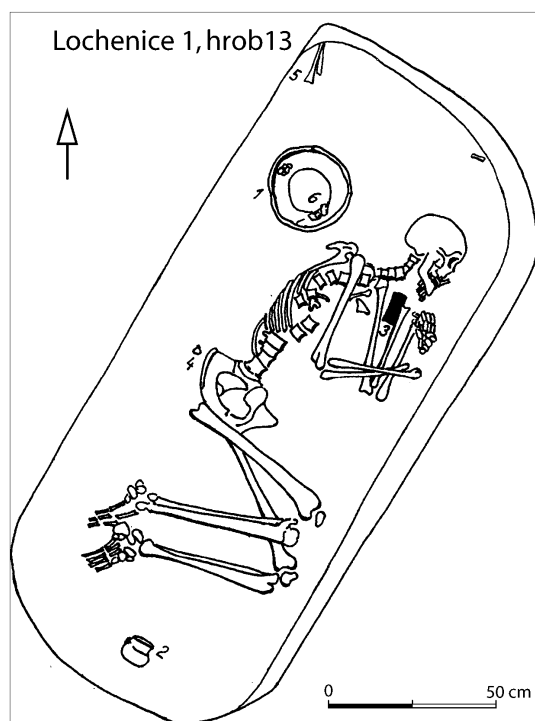


Fig. 15.  
Lochenice I, hrob 13 (after Dvořák 1990, 34)

6 (Fig. 16)

Location Locheice I hrob 5, Czech Republic

Wrist-guard type 4Wcc  
Position in grave Outside of lower left arm ? (B1–B2?)

Comment Wrist-guard appears to be located underneath both arm-bones in position B1–B2

Sex Indeterminable  
Reference Dvořák 1990, 38; fig. 9

7 (Fig. 17)

Location Tišice hrob 77/99, Czech Republic

Wrist-guard type 6Wcc  
Position in grave On Outside of upper left arm (counted as B3)

Association 7 Beakers, 2 gold artefacts, copper dagger, flint artefact, 4Wcc wrist-guard

Sex On the basis of orientation (head to south) the author classifies the dead as an adult female  
Reference Turek 2004, 212

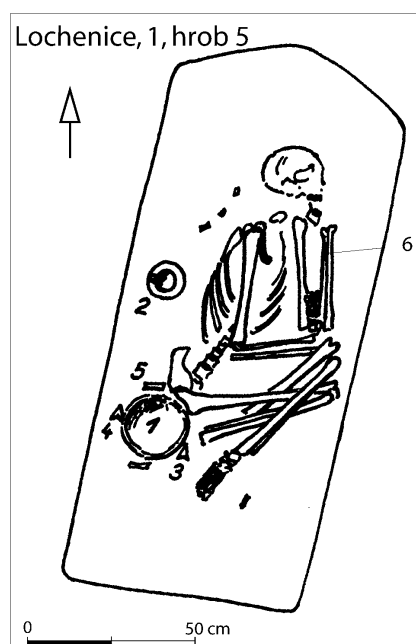


Fig. 16.  
Lochenice I, hrob 5 (after Dvořák 1990, 34)

8 (Fig. 18)

Location Dolní Věstonice III 330/77, Czech Republic

Wrist-guard type 4Wcc  
Position in grave Possibly on inside of left arm (A1?)  
Comment The skeleton is badly preserved & leaves no room for clear interpretation

Association Flint artefact, stone adze, vessel  
Sex Male?  
Reference Dvořák *et al.* 1996, Taf 22B

9 (Fig. 19)

Location Pavlov-I-519/83, Czech Republic

Wrist-guard type 4Spc  
Position in grave Outside of left arm (B3 inconclusive)  
Comment The drawing shows a partially preserved skeleton. The wrist-guard appears to be located underneath the upper right underarm but an arm-bone of the left arm is located there too, so it may have been fastened to the outside of the left arm, although its position is not parallel to the remaining arm-bone

Association 3 Flint arrowheads, flint blade, Beaker, bowl with burnt animal bones  
Sex Male?  
Reference Dvořák *et al.* 1996, Taf. 42D

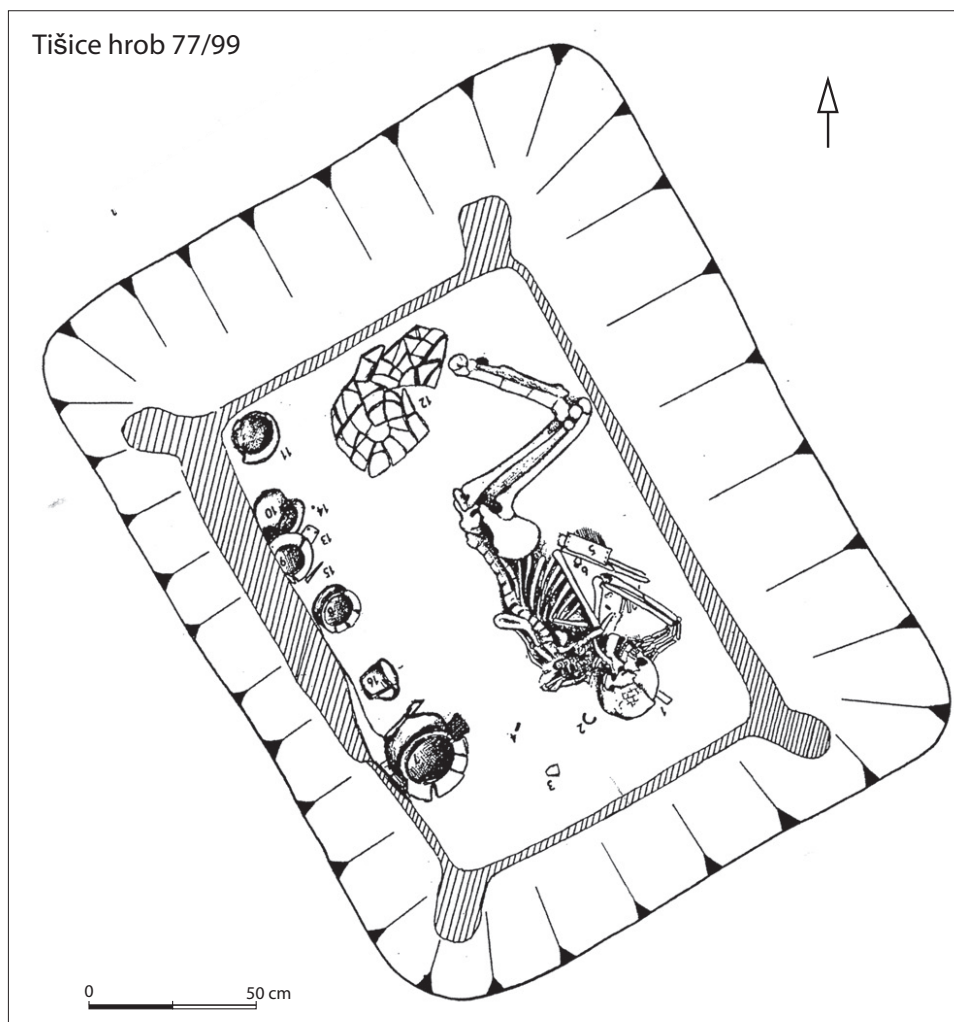


Fig. 17.  
Tišice hrob 77/99 (after Turek 2004, 212)

**10 (Fig. 20)**

*Location* Šlapanice II-12/34, Czech Republik

*Wrist-guard type* 4Wcc

*Position in grave* Across wrist on outside of left arm (B3)

*Comment* In view of possible sex & position across rather than on the arm, the wrist-guard may have been placed there instead of laying in the position in which it was used

*Association* 2 Beakers, 2 other vessels, copper awl, 4 amber buttons

*Sex* Female (based on position)

*Reference* Dvorák & Hájek 1990, 10, Taf. XVI

**11 (Fig. 21)**

*Location* Trieching Grab 1, Germany

*Wrist-guard type* 2Spp

*Position in grave* Inside of lower left arm (A1)

*Comment* Some disturbance (rodents?) may have taken place but the wrist-guard seems to have slid off the wrist close to its original position

*Association* Copper dagger, 3 flint arrowheads, 2 flint tools, Beaker

*Sex* Adult male

*Reference* Kreiner 1991, 153; Heyd 2000, 236

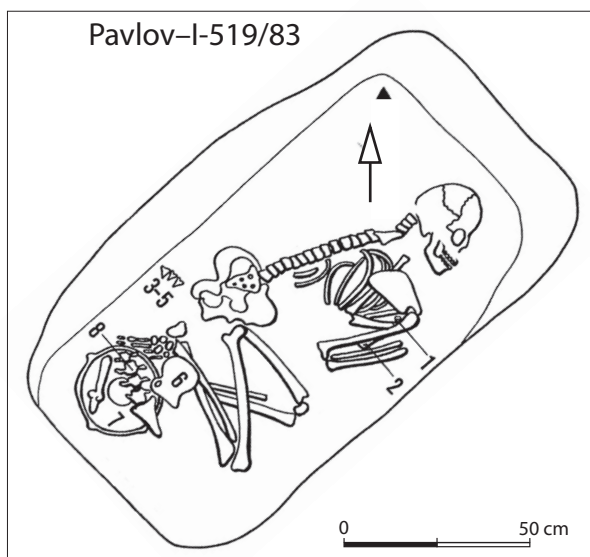
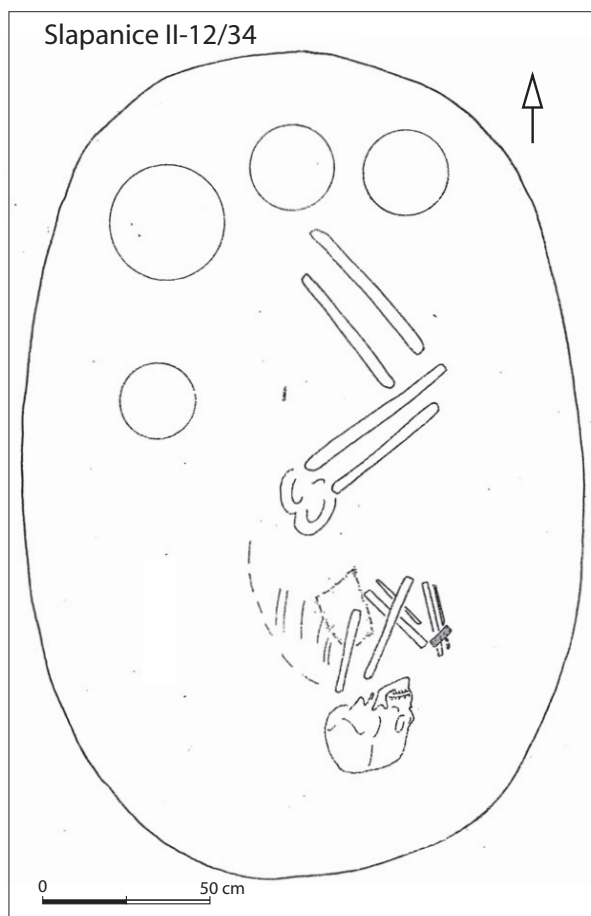
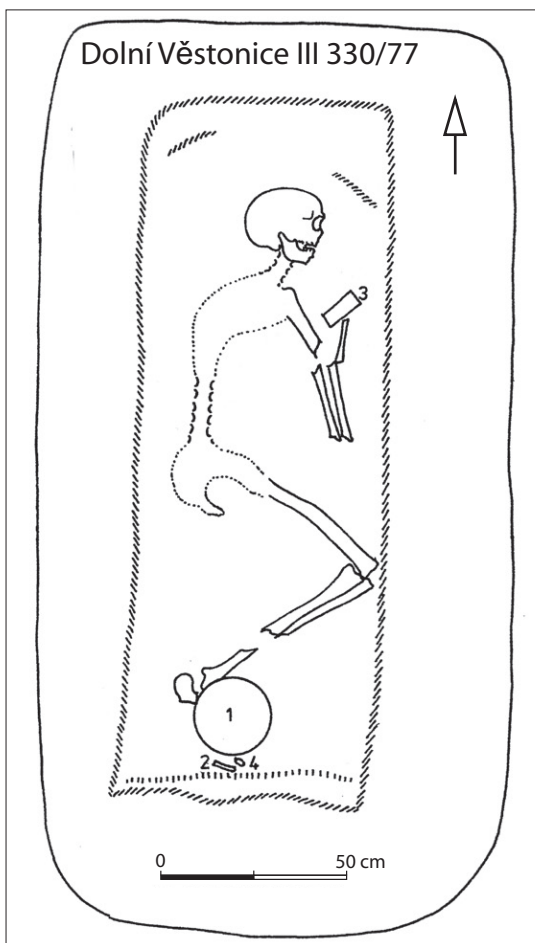


Fig. 18.  
Dolní Věstonice III 330/77 (after Dvořák *et al.* 1996, Taf 22B)

Fig. 19.  
Pavlov-I-519/83 (after Dvořák *et al.* 1996, Taf. 42D)

Fig. 20.  
Šlapanice II-12/34 (after Dvořák & Hájek 1990, Taf. XVI)

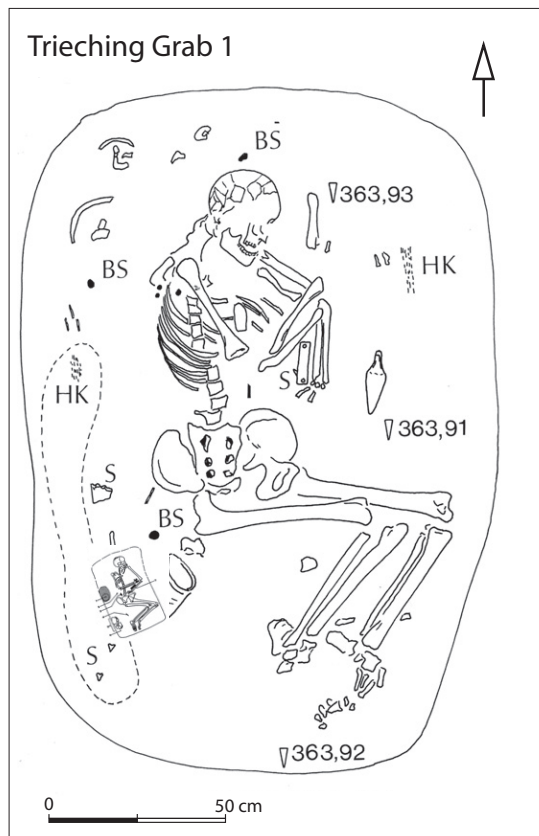


Fig. 21.

Trieching Grab 1 (after Kreiner 1991, 153 fig. 2)

12 (Fig. 22)

Location Sulzdorf, Germany

Wrist-guard type 4Wcc

Position in grave On middle inside of (left?) arm (A1)

Comment Position is not quite clear because bones are missing & upper arm-bone appears to have been displaced

Association Bone pin, cord impressed Beaker (*Schnur-keramik?*)

Sex Young adult male

Reference Gerlach 1996, 52 fig. 26

13 (Fig. 23)

Location Oberstimm Grab 1, Germany

Wrist-guard type 4Wcc

Position in grave Inside (?) of left upper arm

Comment The position appears to have been on the upper left arm or even elbow (inside) since the upper arm-bone lays on top of the wrist-guard, but the evidence is inconclusive.

Association Bone button, copper awl, 3 vessels

Sex Adult male (Rieder 1983), but female according to Turek (2006; based on orientation)

Reference Rieder 1983, 41; Turek 2006, 226

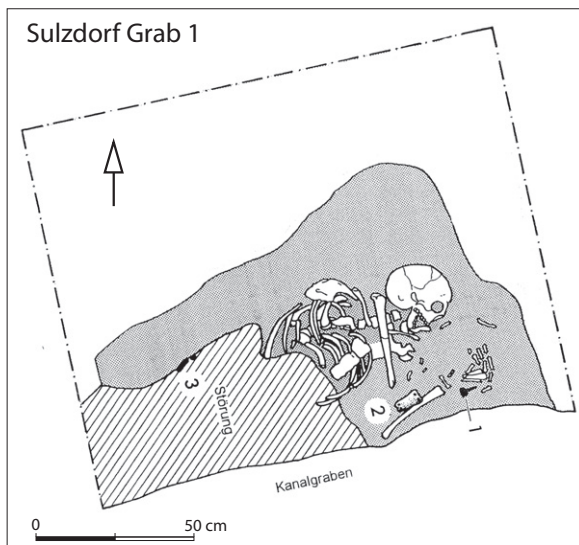


Fig. 22.

Sulzdorf (after Gerlach 1996)

14 (Fig. 4)

Location Oberstimm Grab 2, Germany

Wrist-guard type 4Wcc

Position in grave On outside of lower left arm (B5)

Association Vessel, copper dagger, flint arrowhead

Sex Adult male

Reference Rieder 1983, 42

15 (Fig. 25)

Location Straubing-Alburg, Germany

Wrist-guard type 4ScC

Position in grave On outside of lower left arm (B3)

Association Vessel, bow-shaped pendant

Sex Adult male

Reference Christlein 1981, 76, fig. 62



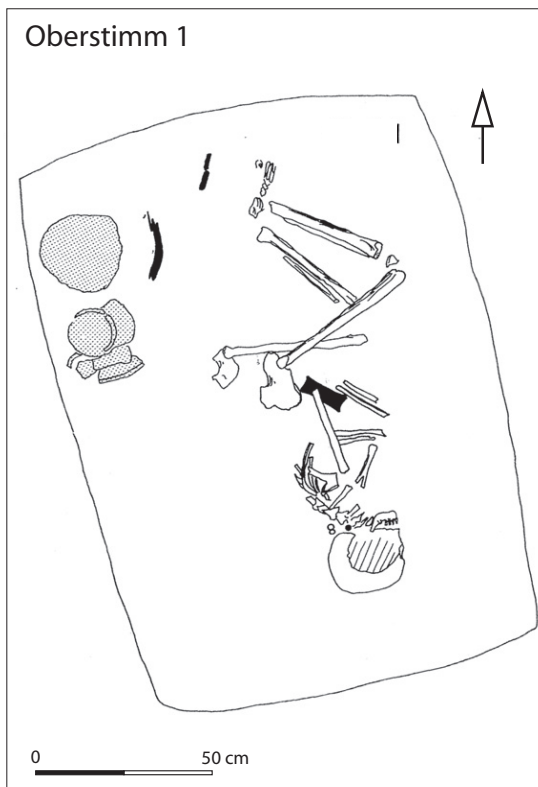


Fig. 23.  
Oberstimm Grab 1 (after Rieder 1983, 42)

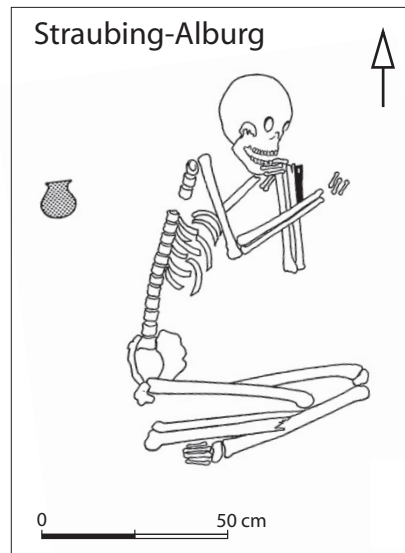


Fig. 24.  
Straubing-Alburg (after Christlein 1981, 76)

16 (Fig. 7)

Location Kornwestheim, Germany

Wrist-guard type 4Tcc

Position in grave On inside or outside of lower left arm (B1)

Comment Depending on the interpretation of the decay process the wrist-guard could have been located on the inside or the outside of the lower left arm. Our discussion (cf this paper) tends towards a location on the outside

Association Bone pin, vessel

Sex Adult Male (on basis of orientation)

Reference Sangmeister 1974, 103

17 (Fig. 25)

Location Ilvesheim, Germany

Wrist-guard type 2x 2Spp; 1x 4Wcc

Position in grave All more-or-less on lower part of left arm, but possibly out of original position

Comment The grave gifts are more-or-less in position, but across the arm rather than parallel to it. The published close-up shows that the wrist-guards that were parallel to the arm are supposed to have laid on top of the dagger. That implies that the whole set may have been arranged & that none may have been in original 'wearing' position

Association Bronze dagger, bone belt ring

Sex Adult male? (on basis of orientation)

Reference Kraft 1972, 15 fig. 2

18 (Fig. 26)

Location Augsburg Sportgelände, Germany

Wrist-guard type 2Spc

Position in grave On outside of lower left arm (B3)

Association 2 Flint arrowheads, broken flint tool, Beaker

Sex Adult male (on basis of orientation)

Reference Kociumaka & Dietrich 1992, 67

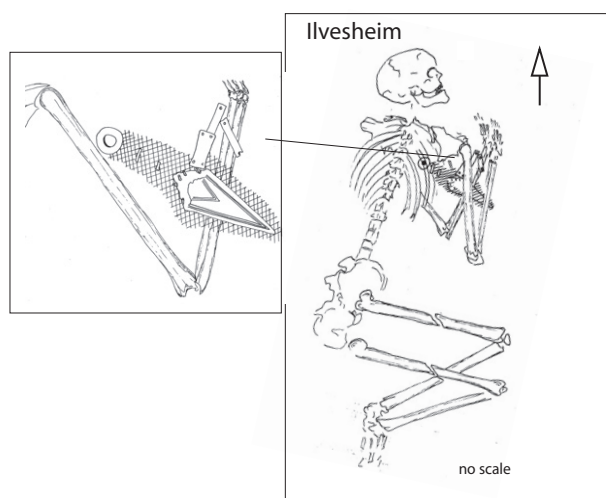


Fig. 25.  
Ilvesheim (after Kraft 1972, 15)

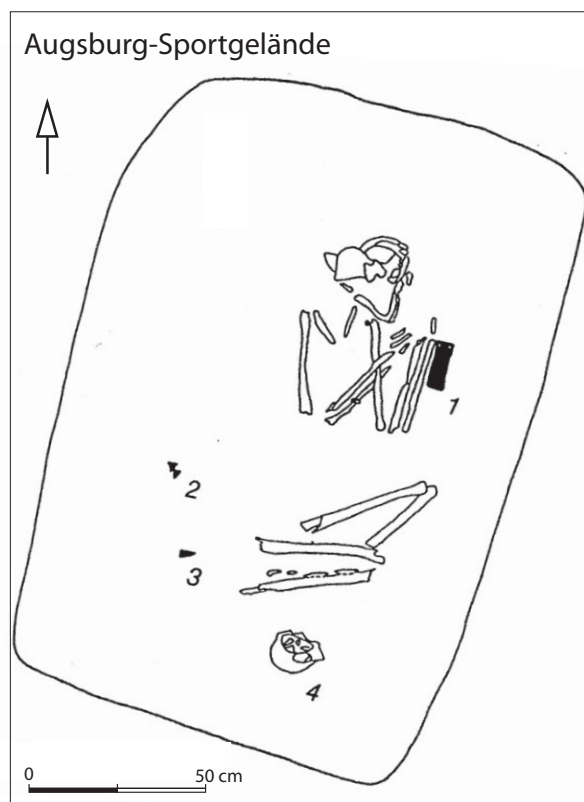
- 19**  
*Location* Königsbrunn, Grab 3, Germany  
*Wrist-guard type* 4Wcc  
*Position in grave* On outside of lower left arm (B3)  
*Comment* Determination is made on the basis of the rather small reproduction of the original drawing (which was not available to us) by Heyd (2001, Taf. 109)  
*Association* 2 Handled Beakers  
*Sex* Infans II/juvenil  
*Reference* Heyd 2001, Taf. 109; 2007, fig. 14a; Kociumaka 1995

- 20 (Fig. 27)**  
*Location* Altenmarkt Grab 5, Germany  
*Wrist-guard type* 6SpC  
*Position in grave* On inside of lower left arm? (A1)  
*Comment* The image is not very clear, but there is little room for a different position  
*Association* Beaker, copper dagger, bow pendant, flint & iron stone, 10 arrowheads  
*Sex* Adult male (on basis of orientation)  
*Reference* Schmotz 1990, 59

Fig. 26.  
Augsburg-Sportgelände (after Kozumiacka & Dietrich 1992, 57)

- 21 (Fig. 28)**  
*Location* Altenmarkt Grab 6, Germany  
*Wrist-guard type* Unknown  
*Position in grave* On inside of lower left arm (B1)  
*Comment* The wrist-guard is located more-or-less alongside the radius & partly laying underneath it. This suggests an original position on the inside  
*Association* Beaker, flint, Iron stone, 11 arrowheads, blade, boar's tusk  
*Sex* Adult male (on basis of orientation)  
*Reference* Schmotz 1990, 60

- 22 (Fig. 29)**  
*Location* Künzing-Brück Grab 9, Germany  
*Wrist-guard type* 4Tpc  
*Position in grave* Inside of lower left arm (comparable to A1)  
*Association* Beakers, 6 arrowheads, 2 flint artefacts, 5 boars' tusks, frag. stone axe, arrow shaft smoother, frag. grinding stone, copper awl  
*Sex* Adult male (on basis of orientation)  
*Reference* Schmotz 1992; Turek 2006 297



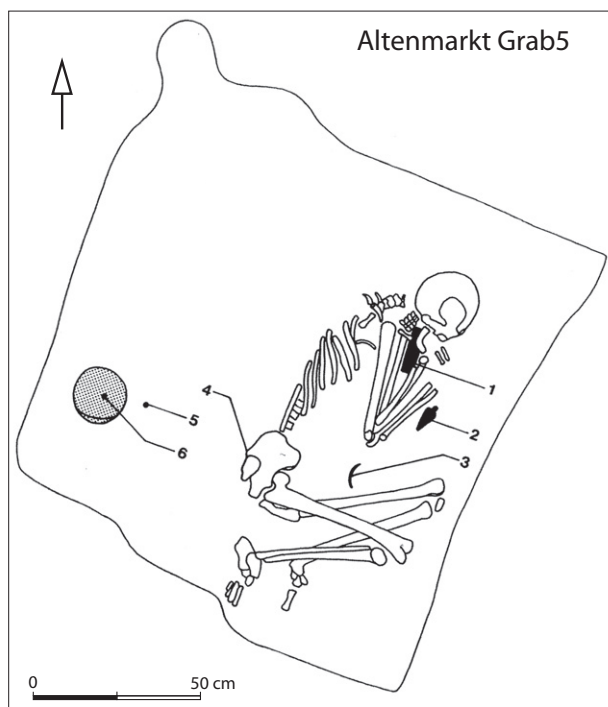


Fig. 27.  
Altenmarkt Grab 5 (after Schmotz 1990, 59)

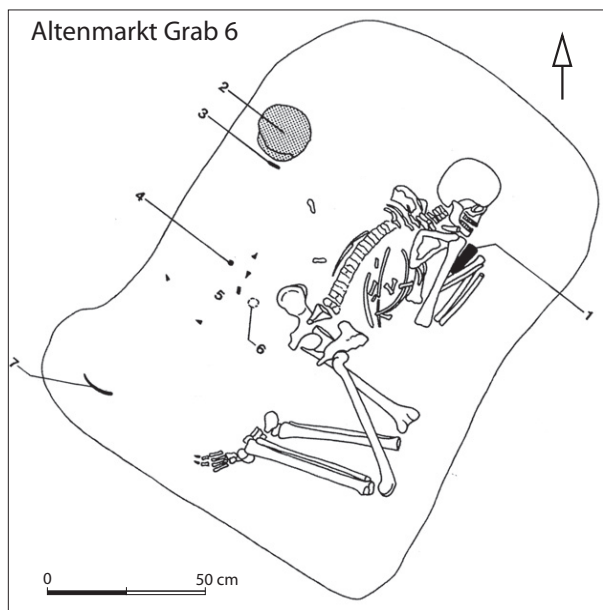


Fig. 28.  
Altenmarkt Grab 6 (after Schmotz 1990, 60)

**23 (Fig. 30)**  
*Location* Sewell, UK  
*Wrist-guard type* 4Spc  
*Position in grave* Inside of lower left arm? (A1?)  
*Comment* The position is rather difficult to derive because the original drawing is sketchy & on a small scale. The wrist-guard appears to lay in position A1 or A2  
*Association* Copper spiral headed pin, Beaker, bone toggle  
*Sex* Adult male  
*Reference* Matthews 1976, 19–22; Smith 2006.

**24**  
*Location* Dorchester site xii, UK  
*Wrist-guard type* 6Spc  
*Position in grave* Outside of left arm (B2–B3)  
*Comment* The published drawing is not clear enough to verify, but the description indicates a B3 position: ‘Beneath the left wrist, lying at an angle to the bones of the forearm, was a stone wristguard or bracer, concave side uppermost’ (p. 176). The latter indicates a Br–B3 position.  
*Association* Copper dagger, riveted copper dagger, fragments of 2 Beakers  
*Sex* Young adult male, 20–30 yr  
*Reference* Whittle *et al.* 1992, 181, fig. 23

**25 (Fig. 31)**  
*Location* Hemp Knoll, UK  
*Wrist-guard type* 4Wcc  
*Position in grave* Outside of left arm (B3)  
*Comment* The wrist-guard appears to have slid off the arm during decomposition but it only could have arrived in this position if it was originally tied to the outside  
*Association* Copper dagger, bone ring/toggle, Beaker  
*Sex* Adult male, 35–45 yr  
*Reference* Robertson-Mackay 1980, 146

**26 (Fig. 9)**  
*Location* Barnack grave 28, UK  
*Wrist-guard type* 18Wcc  
*Position in grave* Outside of lower left arm B3  
*Comment* Cf discussion in this paper  
*Association* Beaker, copper dagger, bone toggle  
*Sex* Adult male, 35–45 yr  
*Reference* Donaldson 1977, 209

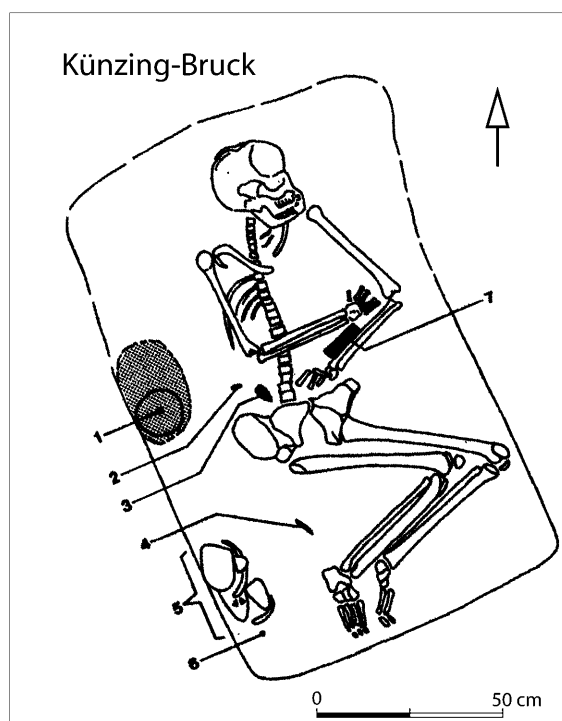


Fig. 29.  
Künzig-Bruck (after Turek 2006, 297)

27 (Fig. 6)  
Location Amesbury, UK  
Wrist-guard type 2Fpc  
Position in grave B3  
Association 2 gold hair tresses, wrist-guard, 15 arrow-heads, 5 beakers, bone pin, cushion stone, 4 boars' tusks, flint tools including large knives, antler tool for working flint, 3 copper daggers  
Sex Adult male, 35–45 yr  
Reference Fitzpatrick 2003

28 (Fig. 32)  
Location Borrowstone cist 6, UK  
Wrist-guard type 2Wcc  
Position in grave Inside of lower right arm (A2)  
Association Bone belt ring, sinew (bow string?)  
Sex Adult male  
Reference Shepherd 1984, 13; Shepherd 1986, 15

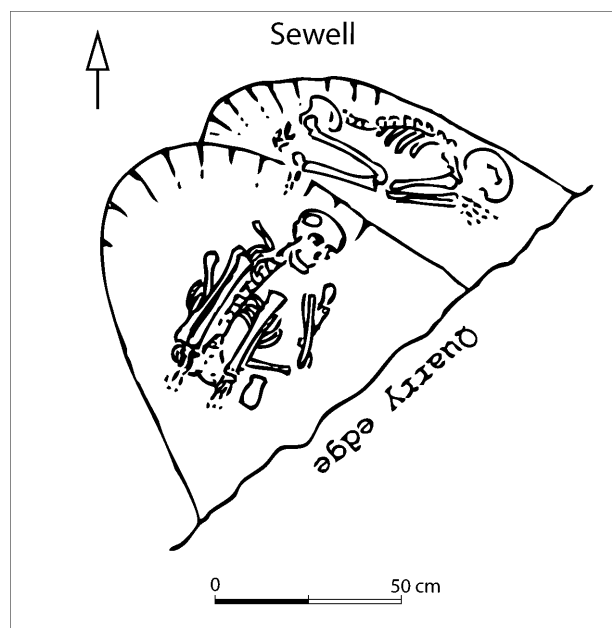


Fig. 30.  
Sewell (after Matthews 1926, 20)

29 (Fig. 3)  
Location Driffield, UK  
Wrist-guard type 4Tcc  
Position in grave Outside of right arm (B4)  
Comment The drawing is really a 19th century artist's impression, not an accurate field drawing  
Association Beaker, copper dagger, copper or copper alloy buckle or fastener  
Sex Adult male?  
Reference Londesborough 1882

30 (Fig. 33)  
Location Thomas Hardye School, Dorchester, grave 1643, UK  
Wrist-guard type 4Sp(?)  
Position in grave Outside of left arm (B2)  
Comment The arm/wrist bones appear to be positioned on top of the wrist-guard, indicating a B2 position  
Association Copper alloy dagger, perforated bone object, 3 arrowheads, Beaker  
Sex Subadult/adult male  
Reference Gardiner et al. 2007

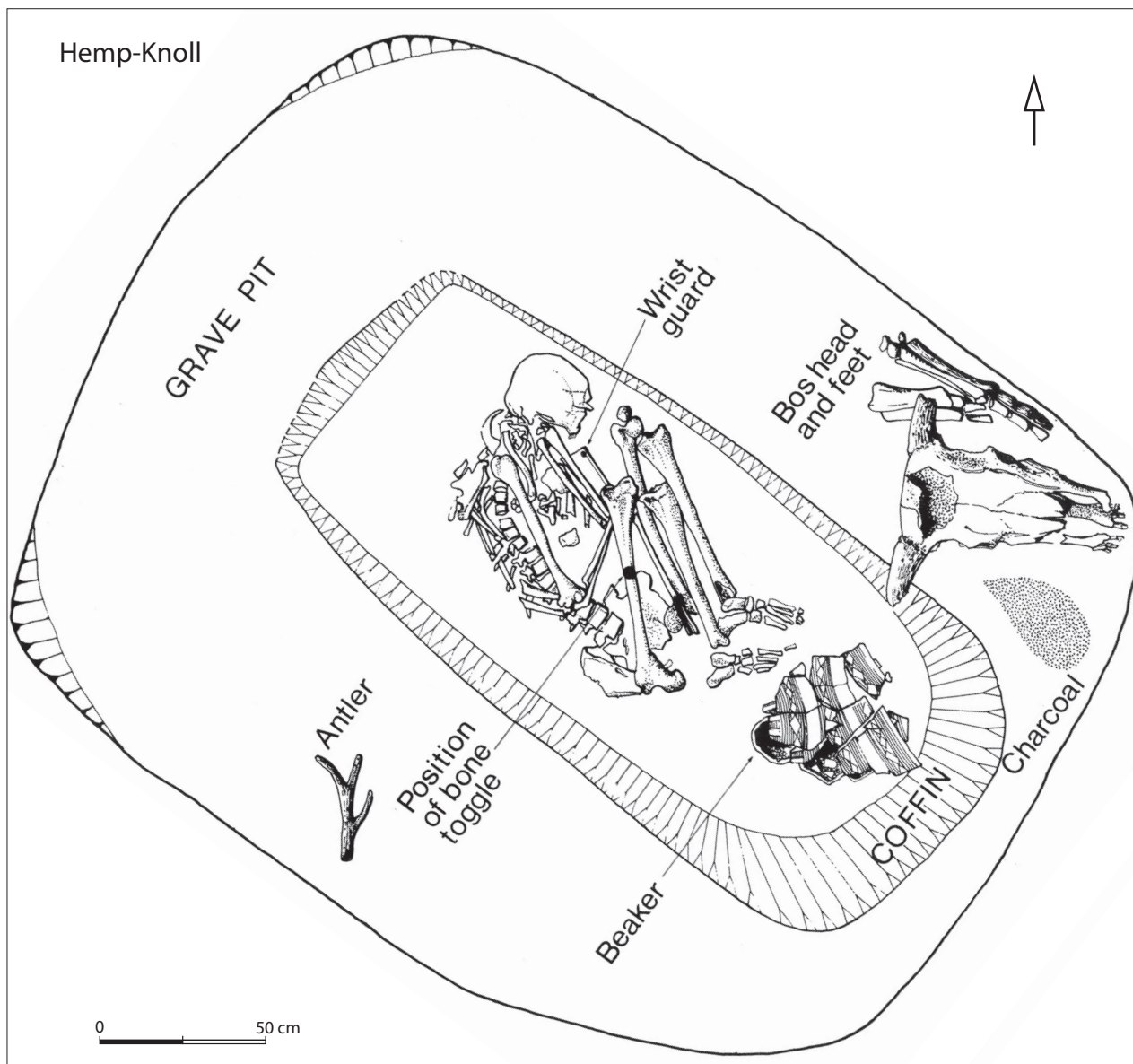


Fig. 31.  
Hemp-Knoll (after Robertson-Mackay 1980, 146)



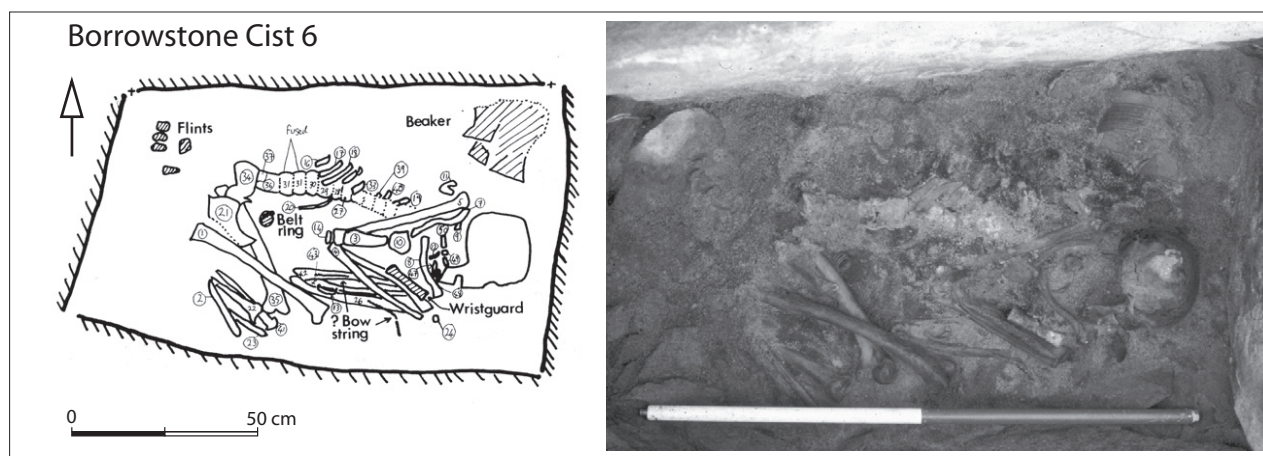


Fig. 32.

Borrowstone Cist 6

(courtesy of Ian Shepherd, Aberdeenshire Archaeology; to be published in Curtis and Shepherd in prep.)

31 (Fig. 34)

Location Stonehenge, UK

Wrist-guard type 2Tf

Position in grave Inside of upper left arm

Comment

The skeleton was disturbed & probably the radius was moved from the original position (rodents?). It may have been laying on top of the wrist-guard. The man appears to have been shot dead & buried face down in a shallow grave in the ditch. Hence, he may have been buried with a 'workaday' wrist-guard in its functional position. His wrist-guard is less well-finished, & is of a different stone, from those found in more normal graves (pers. comm. Sheridan & Woodward April 2008). Careful observation, however, shows that the left arm is not in a usual position. It is laying on the breast & the left hand is underneath the right arm. The wrist-guard is located near the upper end of the ulna instead of at the lower arm. Therefore we have recorded its position as a inconclusive.

Association

5 Arrowheads, probably not grave gifts but embedded in the body (pers. comm. Alison Sheridan)

Sex

Adult male

Reference

Atkinson & Evan 1978 pl. xxvii, figs 10 & 11.

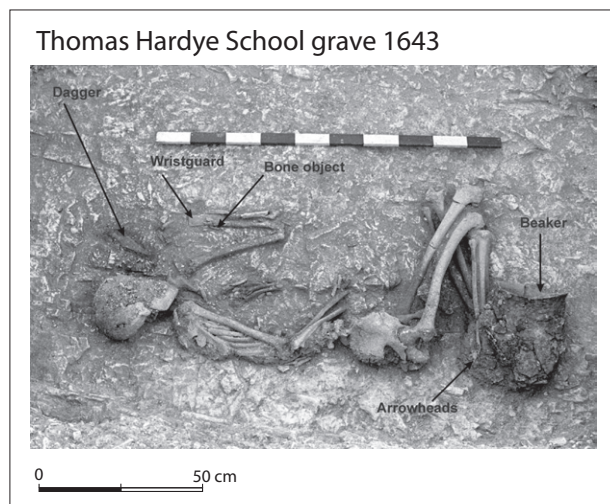


Fig. 33.

Thomas Hardy School grave 1643 (after Gardiner *et al.* 2007, fig. 9)



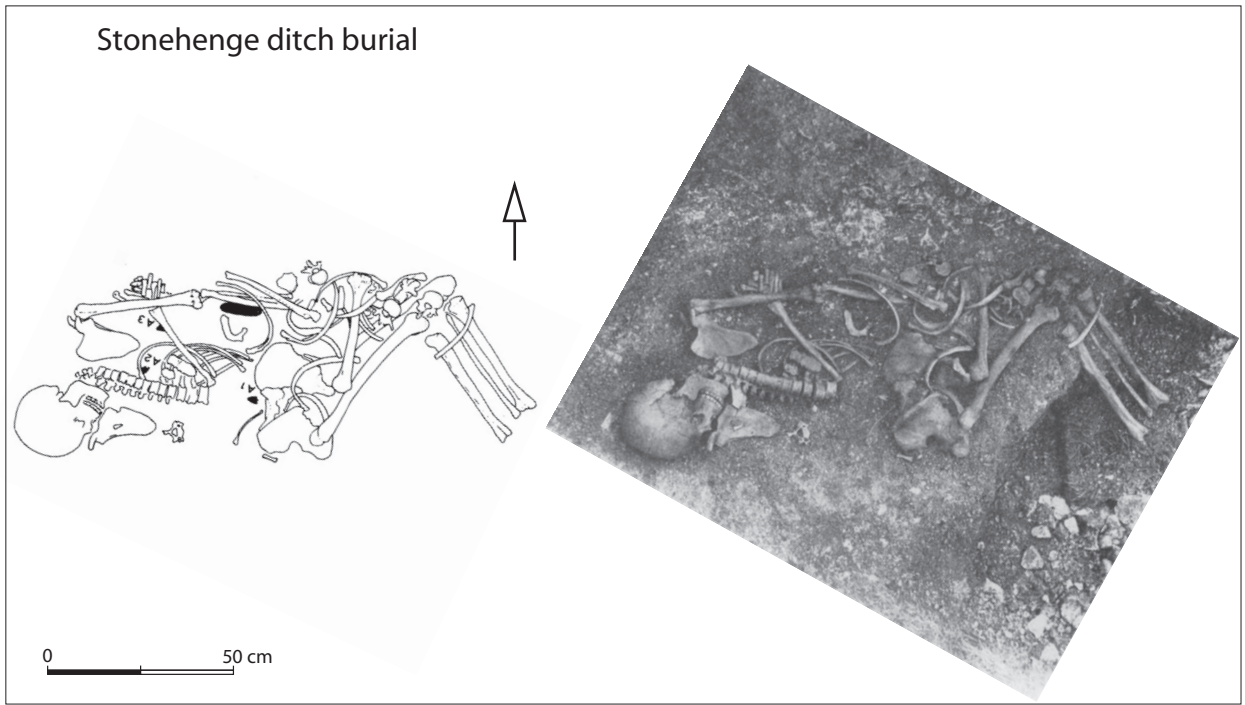


Fig. 34.  
Stonehenge (after Atkinson & Evan 1978 figs 10 & 11)