Branded axes, thrown into a pool?

The Hoogeloon hoard and the shape-based bronze economy of the Northwest European Bronze Age

David Fontijn and Jan Roymans

David Fontijn

Faculty of Archaeology

University of Leiden

PO Box 9514

2300 RA Leiden

The Netherlands

D.R.Fontijn@Arch.Leidenuniv.nl

Jan Roymans

RAAP Regio Zuid

De Savornin Lohmanstraat 11

6004 Weert

The Netherlands

J.Roymans@Raap.nl

Abstract

One of the biggest challenges for students of the European Bronze Age is to understand the reason behind the massive deposition of large amounts of recyclable metal in non-metalliferous regions. Such depositions are particularly puzzling when material was buried in a manner which directly seems to refer to trade itself, in so-called trade hoards. Starting from the observations on a recent find of such a hoard, in Hoogeloon (NL), we zoom out to Bronze Age metalwork economy in general and the deposition of trade stock in particular. We argue that Middle Bronze Age metalwork circulation in Northwest Europe may be understood as an aes formatum *system, with the serially produced axes in hoards displaying a* koinè *with a particular social evaluation: a 'brand'. We suggest that objects were selected on brands during deposition in the landscape and that this 'ritual' act was integral to the 'practical' economy of circulation.*

Axe-based trade hoards

So-called 'trade' or 'merchant's hoards' are among the most puzzling finds of Bronze Age Europe. With trade hoards, collections of one-typed, pristine bronze objects are meant that have been buried and supposedly intended for further trade (Butler 1963, 59-62). By evidencing serial production of standardised items, they evoke a kind of economic behaviour we feel familiar with. However, some of their characteristics challenge such views, and may lead us to reconsider our ideas on Bronze Age economy. This is particularly so in the case of 'trade hoards' that consist solely of axes.

Initially, with the rise of metalworking in the Early Bronze Age in the beginning of the 2nd millennium BC in north Alpine Central Europe, two kinds of trade hoards can be recognized. The first consists of copper-alloys of standardized shape and weight, which occur in the northern circum-Alpine zone in large numbers in one-typed hoards (ingots of rings – *Ősenringe*– and at a later stage ribs – *Rippenbarren* (Lenerz de Wilde 1995; 2002)). In the same region and period, there is also a second category. These are hoards consisting of large collections of similar Early Bronze Age axes (Lenerz de Wilde 1995, 302-10). Whereas the first group, with its rigid standardization, seems to match our perception of an economic attitude, the second poses more problems for interpretation. The axes in such massive hoards appear to lack the standardization in shape and weight as we see it in ring hoards, and they are sometimes of poor quality (Kienlin 2006). This indicates such axes were not standardized ingots like *Ősenringe* were, but it is often also difficult to see such collections of axes as pristine tools waiting to be converted to a use-life (ibid., 463). What did such massive collections of axes mean to prehistoric people and why were they buried?

During the Middle Bronze Age, hoards of ingots with standardized weight and shape disappear from the archaeological record (Lenerz de Wilde 1995, 317). However, in Western Europe hoards consisting of large numbers of axes – palstaves – now become the dominant type of 'trade hoards' (Butler 1963, 59-62). Especially in northwest France and Britain, large numbers of such axe hoards – consisting mainly of palstaves – are known (e.g. Gabillot 2003; O'Connor 1980, 56-7). Studying these, we are confronted with several problems which invite us to re-think ideas on their formation and function in prehistoric metalwork circulation.

Making sense of trade hoards: problems

The first problem is that in-depth studies defy the notion of such trade hoards evidencing serial production. Even though palstaves in one hoard may more or less have the same appearance, they are rarely truly standardized in shape or decoration. In northwest France, for example, there are dozens of hoards containing large numbers of what are usually called 'Normand' palstaves. However, as Gabillot (2003; 2006) has shown, such palstaves show strong variation in decoration (she recognized at least 18 varieties; 2003, 38-45). The same can be seen in British palstave hoards (Cf. O'Connor 1980, Figs. 4-7A, 11, 13-14). If there was a commitment to hoard axes that resemble each other, which obviously seems to have been the case, why was there still so much variety in decoration and shape among them?

Second, the assumption that axe collections in hoards represent a single production area (cf. Butler 1963, 59-60) is problematic. For French and British palstaves, it is often not that easy to determine purely on stylistic grounds whether a particular axe was produced in either Britain or France. Some archaeologists therefore chose to simply talk about generic 'West European' types instead (Butler and Steegstra 1997/98, 179-99). If the objects in what are supposedly buried stores of trade stock are so un-specific as to production place, what does this tell us on the prehistoric trade these items were supposedly figuring in?

Thirdly, although systematic surveys are lacking, it is clear that palstaves in these hoards are rarely just pristine examples, ready for use. Rather, the condition they are in varies considerably, ranging from as-cast specimens to items that have already been used. Some show (severe) casting errors (e.g Gabillot 2006, 290-2). This is hard to reconcile with the idea that we are dealing with palstaves stored for later use.

Fourthly, it is also unlikely that these hoards would simply represent 'some' collection of metal which was to be traded for further recycling. There is no doubt that recycling must have been the fate of the majority of Bronze Age metalwork, but in such cases *any* collection of metal would do (cf. Wiseman 2018). Why then this consistent focus to deposit collections of *palstaves* over such broad regions? And, even if not rigidly one-typed, why was there a focus on a *particular kind of palstave* (cf. on varieties of the so-called Normand type in northwest France)? Apparently, it was not 'any axe goes'; there was some kind of selection on shape and style. What was the reason for that?

The fifth and perhaps most puzzling problem of all has to do with the deposition itself. If these hoards all represent stores of stock which were temporarily buried, why then were they never taken out of the ground? Here we are confronted with the problem that we usually lack information on the conditions under which the material was buried (especially for many of the older finds in major syntheses like O'Connor 1980 and Gabillot 2003). In the few cases where such information is available, circumstances indicate that the hoard at least was potentially easily recoverable (e.g. Verney 1991), which makes their non-retrieval only more enigmatic.

The Hoogeloon 'one off' and deposition of trade stock in Bronze Age Northwest Europe

Some of the problems listed here are hard to overcome, as we run into the limitations of old finds and their documentation. Often not all objects found came down to us (e.g. Le Carlier/Marcigny 2011, 28). Particularly, a lack of knowledge on the manner in which objects were buried as well as on their location in the landscape hamper further understanding.

We were again confronted with these problems when we discovered a new Middle Bronze Age palstave hoard that was in its composition much like hoards from northwest France and also shows similarities to British ones. We observed the same puzzling features seen on previous finds. This time, however, there was no doubt as to its exact composition and manner of deposition: it was discovered during a professional excavation under good circumstances for observations on depositional practice and location. Remarkably enough, however, a hoard that seems so characteristic for the French hoarding zone lies hundreds of kilometres *outside* the zone where most palstaves hoards were found! It is situated in Hoogeloon in the southern Netherlands, a region where single depositions of bronzes seem to have been the norm and where Middle Bronze Age hoards are almost entirely absent (Fontijn 2002, ch. 6-7). What's more: the Normand-type and 'British' palstaves in this hoard have hardly any parallels among the hundreds of contemporary axes found in the southern Netherlands and even in the entire Low Countries (Butler and Steegstra 1997/98; Verlaeckt 1996). A one-off in the Low Countries, the Hoogeloon hoard is a more regular phenomenon when zooming out to a Northwest European scale. Apparently, we are dealing with a selection of axes that was consistent to the extent that it figured as a 'package' in depositional practices of people living hundreds of kilometres from the region where it was regular. What does this tell us on the nature of and motivation behind Middle Bronze Age palstave deposition in general?

Starting from the observations done on this unexpected find, we will zoom out to the bigger issue of Bronze Age metalwork economy in general and on the phenomenon of 'trade hoards' in particular. Our argument will be that seeing metalwork circulation, be it exchange of commodities ('trade') or gifts, as a *shaped-based system* would solve some of the problems we are having with axe-based trade hoards listed above. We then go on to argue that it helps to see serially produced axes as *koinè* with a particular social evaluation: a 'brand' (Becker 2015) and suggest that selection on brands took place when objects were deposited in the landscape. We end by arguing that their deliberate deposition was part and parcel of the economy of circulation, having ritual and practical sides at the same time. Through studying what seems to be a familiar phenomenon – trade stock – we end by finding indications Bronze Age 'trade' and economy also had aspects that are quite unfamiliar to us.

Hoogeloon: a 'Normand' trade hoard in the far north

The Hoogeloon hoard was found in a stream valley (kleine Beerze) that cross-cuts the Pleistocene (Weichselian) cover sand landscape of the southern Netherlands (province of Noord-Brabant; Fig. 1). This is a non-metalliferous region, which nevertheless had a thriving metal economy that must have mainly been based on recycling metal that was ultimately imported from distant regions like Britain (Wales) and Central Europe (Butler and Steegstra 1997/98). Many Middle Bronze Age bronzes have been found in the Low Countries that were imported both from Central European, Atlantic and to a lesser extent North European regions (cf. Fontijn 2002, ch. 7). Research shows that the majority of them are items that were singly deposited in the landscape, particularly in watery places like stream valleys, bogs or major rivers (ibid.). Palstaves of regional types are the most commonly deposited item. Objects usually were permanently deposited in the landscape after having been used for a while, implying that it was their cultural biography (Kopytoff 1986) that mattered for their selection as items to be sacrificed.

When a number of stream valleys in the southern Netherlands would be dug out in order to allow canalized streams to run a more natural course, one of us (JR) organized fieldwork to archaeologically monitor the digging activities. At one site (Loonsch Bosch site 2), a dam from the Roman Period was discovered that necessitated a rescue excavation. It was during this fieldwork in 2008 that the Middle

Bronze Age hoard was found that is the central to what follows (cf. Roymans and Sprengers 2012, 29-58).

Many imprints of cattle hoofs were recognized around the remnants of the dam that pre-date its construction. For stratigraphical and palynological reasons, these must relate to the walking around of cows during the Late Iron Age/ Early Roman Period (Roymans and Sprengers 2012, 42-3). Below this cattle-imprint layer ten Middle Bronze Age bronze palstaves were found. They were situated at what was the bottom of the stream valley and lie in a zone of c. 40 by 180 centimetres, in a loosely scattered position (Fig. 2).

Situated in an undisturbed zone at a distance of 0.50 to 1 metre from the Roman Period dam, we can be confident that these ten axes represent all that was once deposited here. Their packed distribution and the observation that they have shapes and decorations that are rather similar, though rare in the region as a whole (see below), makes it likely that their ending up in the water here represents a single event. For that reason, we consider it justified to speak of a hoard. Typo-chronology (see below) suggests that the palstaves date to the later Middle Bronze Age. The axes lay in waterlogged fine-grained sand, so the fact that no wooden shafts were found implies it was just the metal blades that ended up in the ground (Fig. 3). The axes are situated in a zone where water is continuously rising from lower levels, a seepage zone (Dutch: *spreng;* Roymans and Sprengers 2012, 53).

Peat is absent here, but present in the immediate surroundings. Pollen samples taken from the layer where the axes were found (unit 116-4; Van der Linden *et al.* 2011, 22-5) indicate the presence of open water at this location – a pool – in an environment where peat (*Sphagnum*) grew, and where alder brook forest stood (Van der Linden *et al.* 2011, 24-5). Palynological research showed that there was vegetation characteristic of places where water wells up (f.i. *Myriophyllum verticillatum;* ibid., 25). Thus, the axes ended their lives, not in a peat swamp, but rather in open water, in a natural spring that exists until today. Upward flow of sediment-ridden water would have given the pool a turbid outlook. Historical sources from the 19th century AD inform us that farmers used to bring their cows to such seepage zones, because they provide fresh, clear water (in contrast to water from the adjacent peat), which did not freeze during the winter (Burny 1999).

The objects

In what follows, we will briefly describe the bronzes and use these observations to discuss broader issues concerning the nature of palstaves deposited in such hoards. Attention will be paid to aspects that relate to their production, use, modification, shape, and finally how they ended up in the ground (Appendix 1).

Production related traces

In most cases, the Hoogeloon palstaves show the same sort of production related traces one can observe on palstaves usually found in the Netherlands (presence of casting seams on sides, minor casting errors, cf. Butler and Steegstra 1997/98), but there are three aspects that stand out. The first is that two of them have a considerable casting error – a cavity with a diameter of five millimetres or larger (nos. 20 and 21; Fig. 4, 5). The second is that the cutting edges of two others (no. 13 and 19)

still have casting seams, meaning they were never used (Fig. 5, 6). The irregular, unfinished butt of no. 17 suggests this one was also never used (Fig. 6). The unfinished nature of palstaves is unusual for finds from this region (cf. Fontijn 2002, app. 2.5-8). The third aspect that is uncommon for palstaves from the Low Countries is that all objects are decorated. Most of the Dutch palstaves are plain (cf. Butler and Steegstra 1997/98). Apart from no. 16 (Fig. 7), all have (rounded) triangles and/or midribs (Y's). In three cases, nos. 13, 15, 17, the palstaves have ribs in the septum suggesting its un-hafted appearance mattered (Fig. 4, 6).

Traces related to (preparation for) use

Seven out of ten axes were finished into functional tools after casting. Small impact marks or slight asymmetries in the blade (cf. Kienlin/Ottaway 1998, 275, 279, Fig. 2-3), and J-tips (Butler and Steegstra 1997/98, 218) may indicate some were indeed also put to use, though metallurgical research is needed to corroborate this (Appendix 1). No. 14 and, especially, no. 16 were much more damaged in antiquity than the others, probably indicating a more intensive or long-lived period of use (Fig. 5, 7).

No. 12 seems to have been marked. It has scratches forming an X-like mark on one side, a single scratch on the other and a deep vertical groove on one of the sides (Fig. 6). As it cross-cuts the casting seams, the latter must result from something done to the axe after it was finished.

How the axes ended up in the ground

The axes lie in a northwest-southeast oriented zone (c. 2.30 by 0.70 m) at a gentle slope (Fig. 2: 12 highest, 21 deepest) and it must only have been the metal blades that ended up in the pool (see above). There is nothing that indicates that the axes were bundled or deposited in an organic container (traces thereof would have been preserved here and observed during the excavation).

Most axes cluster at the eastern side and there is no clear ordering discernable (Fig. 2). This spatial distribution is best explained by assuming that the bronzes were stored in a container that was emptied by throwing it from some distance (like a few meters) into the water from the east side of the valley. The axes could have ended up in the pool by some accident, but given the rarity of this type of axe in general (see below) and the general rarity of Bronze Age metalwork in burials or on settlements in this region in general (cf. Fontijn 2002), we hold it more likely that the axes were thrown into the pool on purpose. A large part of the Bronze Age metalwork in this region is known to have been found in comparable watery locations like stream valleys (ibid.)

Comparisons: French-British affiliations

We compared the Hoogeloon palstaves with examples found elsewhere in both outline and decoration (see Appendices 1 and 2 for details and references).

It appears that most of our objects match type "Normand" palstaves of which over 1600 examples are known in (northwest) France and also in southern England (Gabillot 2003, 38-45; O'Connor 1980, 47-9; list 7A-B; map 5; Verney 1991, 124) and to what Gabillot (2003, 45) recently defined as an affiliated type "Orléans-La Chapelle". Appendix 2 shows that the Hoogeloon palstaves particularly share similarities to axes from the hoards in La Chapelle-du-Bois-des-Faulx in Normandy (Verney 1991). Type Normand and Orléans (hereafter referred to under the umbrella term type "Normand")

are very rare in the region where the Hoogeloon hoard is situated. Butler and Steegstra (1997/98, 189-90) mention just two finds from the Netherlands, one of which is unprovenanced. An overview of finds from eastern and southern Belgium is lacking, but among the corpus for West Belgium only a few are known (Verlaeckt 1996, 21).

No. 16 is different. It has an outline (broad cutting edge, side-flanged blade) and decoration that appears to be rare on finds from the continent, but more common on examples from England (see Appendix 2 for parallels and references). Following O 'Connor (pers. comm.) it is therefore most likely that this palstave was an import from Britain.

For nos. 13 and 17, the situation is more confusing. Decorative traits are known on French objects (see Appendix 2 for examples), but their crinoline shape from British ones (cf. Schmidt/Burgess 1981, 132). It remains unclear if the crinoline outline is a stylistic feature at all, it might also relate to the un-finished state of the axes. Some cross-Channel sharing of traits is also seen on nos. 12, 15, 18 and 20 as these have affinities with type Normand but also to other continental and/or even British palstaves (see Appendix 2).

So, even though the Hoogeloon palstaves are rare among axes known from the southern Netherlands, they do have striking similarities to objects found in northwest France in large numbers and – to a lesser extent – to palstaves known from Britain. This indicates that the Hoogeloon palstaves either were all produced in those (remote!) regions, or that they were locally made but with the intention to mimic objects that were common to northwest France *and* Britain.

Following the typochronological dating of type Normand/Orléans palstaves, and particularly the close links to items in the La Chapelle hoards, the Hoogeloon items likely date to the later stages of French Bronze Moyen (Gabillot 2003, 124-31), c. the late 16th to earlier half 14th century BC.

Aes formatum of French-British 'brand'?

Thus, the Hoogeloon hoard is an assemblage that was apparently deliberately deposited in a pool. As such, it is just one example of a Bronze Age practice that was common in Europe: the deposition of bronzes in watery places (Bradley 1990). Research has shown that this was a practice guided by widely-shared preferences (e.g. Hamon/Quilliec 2008). Whenever people decided to permanently deposit metalwork in the ground, there seem to have been strict and broadly shared ideas on how and where in the landscape this was to be done. This does not just apply to the region where Hoogeloon is located (the southern Netherlands; Fontijn 2002), but also to other parts of Northwest Europe (Hansen 1994; Needham 1989; Vandkilde 1996). Considering the rarity of the assemblage deposited here – a collection of palstaves unique for this region, but common in French 'trade hoards' – for Hoogeloon, the following question must therefore be raised: why did this particular selection of palstaves end up in this particular location?

As this is one of the few cases of trade hoards where there are no doubts regarding the completeness of the finds recorded, we will start by discussing the particulars of the objects first.

All the items in the Hoogeloon pool have an axe shape. Axes are the item that was most often deposited in this part of Europe (Fontijn 2002, 247-58 and references cited there) and as we have seen they also dominate in the hoarding landscapes of particular parts of Western Europe during the Middle Bronze Age. As discussed above, in the southern Netherlands axes usually show signs of a use-life, or refer to the significance thereof (by having sharpened cutting edges; ibid., app. 2.5-8).

This has been taken to imply that the axe's use-life, or its 'biography', mattered and was one reason that made people select a particular axe for permanent deposition in the land (ibid., 217). In Hoogeloon, seven palstaves show such use traces or were at least prepared to be used, but three out of ten palstaves, never were. This implies that a 'use-biography' or references to use cannot have been the characteristic that made Bronze Age people select *this particular assemblage* for a deposition. This fits in with the observation that it was just the metal blade that was deposited in this pool. This 'beyond biography' focus is rare for this region, but seems to be regular among palstave hoards in France. For the two hoards of La Chapelle the majority was unfinished and only received the most basic preparation (Verney 1991, 129-30). Hoard II is also one of the few cases where we can confidentially say that it was just the blades that were deposited, implying the objects were not deposited as axes.

There are three other characteristics that make the Hoogeloon assemblage a special one for this region. The first is the fact that it consists of *decorated* palstaves in a part of Europe where undecorated ones are the norm. The second is that among the decorated palstaves that are known in this region, the Hoogeloon ones are exceptional. Thirdly, the deposition of several palstaves at one moment seems to have been rare in this period in the Netherlands; deposition of a single axe was usual (cf. Butler and Steegstra 1997/98; Fontijn 2002, 212). However, as we have seen, all these characteristics are more common in northwest France and Britain (cf. O'Connor 1980, 56-7; Rowlands 1976).

Hoogeloon also illustrates some problems noted above when considering 'trade hoards' in general. Though adhering to some broad visual canon, each axe is different from the other by the details of its decoration. There is neither a standard shape nor weight (Appendix 1), ruling out that they were ingots in the common sense of the word (cf. Kienlin 2006, 464; Hansen 1994, 230-2). As we have already seen, the combination of finished and unfinished axes defies the view that trade hoards consist of pristine half-products or ready-for-use items. The presence of sizeable casting errors on two palstaves also seems undesirable if further use of the axes was the aim. One could at least imagine that there were better options to choose from. It is also something often seen on Normand-type palstaves in French hoards (Gabillot 2006, 290-1). The fact that Normand-type palstaves are so rare in the Netherlands, also suggests that the axes blades in the Hoogeloon hoard were not brought here to be used *in this particular form*. Rather, they may have been seen as metal units intended to be re-melted into regional palstaves. This brings us back to the idea that what was deposited in the Hoogeloon pool may have been perceived of as some sort of ingots after all.

Aes formatum

In his study of the development of Roman coinage, Haeberlin (1910) argued that before coinage was introduced in Rome and Middle Italy, there were several kinds of copper and later bronze units of metal that served as some sort of currency. Before the introduction of items (coins) where precise weight and shape mattered ("*aes grave*"), there was what he terms "*aes rude*": metal that lacked standardized weights and sizes (ibid., 2). One variety of "*aes rude*" could take any shape, but another, which he terms "*aes formatum*" (ibid., 4) lacks standardized weights but does have one specific shape by which it is recognizable as a medium in (supra-)regional exchange. Although the term *aes formatum* as Haeberlin conceived it (as a kind of money) may be anachronistic for the Bronze Age (cf. Kienlin 2010, 175-6), the general notion that in certain transactions the exchanged items ought to have prescribed and widely-accepted shapes is of interest for our case.

Some scholars have argued that it is precisely this sort of 'shape-based' rather than 'weight-based' items that were important in Bronze Age metalwork exchange (e.g. Borgna 1992; Pare 2013, 513-4; Pearce 2007, 88-91). After all, if it would just be the metal that matters, and if it does not need to circulate in standardized weights, why then go through the trouble of giving it a *palstave* shape?

Axes are so prominent in Bronze Age depositions in western Europe that their significance must have extended beyond their practical use in daily life (Barrett 1989, 315). Bradley (1990, 118-21) argues this is understandable if it is accepted they were not just tools but also widely accepted units of metal at the same time. This would make it easier to grasp why a region that was capable of producing its own axes, still imported axes from abroad, as the Hoogeloon find exemplifies (cf. Butler 1961; Fontijn 2002, 250-1). A point made by Pearce (2007, 90) is of particular relevance for our question on why pains were given to give units of metal the shape of a tool like an axe. He argues this shows off that the material has the capacity to be transformed into a new functional axe. This can be done simply by sharpening unprepared cutting edges, or, more drastically, by melting down the axe and re-casting it into a new one. The axe shape is functional because it proves the metal is appropriate, workable etc. The fact that most axes in Hoogeloon were finished (and used) could likewise work to demonstrate they have adequate physical properties (cf. Kienlin 2010, 175). Standardized weights or size, however, are less relevant: shape and general appearance (including basic finishing) in itself already shows that this object has potential for making something new out of it (Pearce 2007, 88-91). Using Gibson's (1979) terminology, its shape demonstrates the object has 'axe-affordance'. If the Hoogeloon palstaves were such 'shape-based' units of metal, this may explain why used and un-finished palstaves were combined in this assemblage, (Appendix 1). Shape, partial preparation and traces of use life are nothing but different visual clues that serve the same purpose: to demonstrate the potential of these ten objects for future transformation into functional palstaves (cf. Pearce 2007, 91). Put in this way, the Hoogeloon assemblage is about *potential*, not about *biography*.

Koinè and brand

If we are right to suppose the axes were deposited as *aes formatum*, we should take into consideration that there is more to the objects' forms than just their axe shape. Another intriguing feature of the Hoogeloon hoard is that all axes are decorated, whereas palstaves in this region usually are not. As it is relatively easy to copy imported (decorated) axes to make new ones, the absence of decoration on regional palstaves must have been just as deliberate as its presence on foreign ones. What would have been the function of this decoration and how would it relate to the axes' role as *aes formatum*?

First of all, it must be noted that although there seems to be a restricted set of decorative items (triangles, midribs, tridents), their variety on Normand-type palstaves (Gabillot 2006, 293) or palstaves found in Britain (O'Connor 1980, 51-4) is broad. Following Gabillot (2006), this probably reflects many local groups were active, all making their own varieties. At the same time, however, there seems to be a commitment to some general canon – they are varieties on one broad theme (one basic shape seems to be strictly adhered to; Gabillot 2006, fig. 5). Also, decorations are not wildly different but rather seem to be subtle variations taken from a limited stylistic pool. If we, for example, compare our axe 19 to 20 and 21 (Fig. 4-5), we all see that they have a trident decoration, but each one is executed in a different way. No. 18 is comparable, but here the uppermost part is

two- instead of three-dented. The shape language seen on Normand-type palstaves is more widespread than just France. As indicated in the Appendix, some of the decorations seen on the Hoogeloon axes are also known from palstaves found on British products. In some cases (nos. 13, 17) it is even difficult to say by appearance only whether we are dealing with a continental or a British product. We thus are dealing with '*koinè*', a common, trans-cultural, visual language, in this case apparently shared across the Channel (cf. Vandkilde 2014 and Versluys 2017 for the *koinè* concept; cf. Sørensen 1987 for a comparable point without using this term). Butler and Steegstra (1997/98) already realized this previously and often dropped geographical notions in typology in favour of the generalizing term 'West European'.

Second, there must have been a motivation behind the choice to adopt such visuals. Effectively, such appearances are about communication through objects (cf. Becker 2015). Just like the shaping of metal into axes testifies to its 'material affordances' (*sensu* Gibson 1979), we argue that adopting this decoration functioned to evoke that the objects came from a particular metal supply and circulation network imbued with a specific social evaluation. By their appearance, the Hoogeloon community may have understood that the provenance network of these axes was different from what circulated locally (like undecorated regional palstaves or decorated but much differently styled palstave imports from Central Europe; cf. Butler and Steegstra 1997/98). A particular appearance may not only have worked to link objects to a specific circulation network, but also to include a particular social evaluation. Which communities were involved? How trustworthy is this exchange network? Following Wengrow (2008) and Becker (2015; 2017), for such palstaves, we may speak of a 'brand'. As Becker (2015, 72-3) points out, this modern concept is well applicable to non-modern societies like those from the Bronze Age. In particular, it seems relevant to our case as Becker argues that 'brands' particularly work at the intersection between local and trans-local identities. The above mentioned example of our axes 18-21 are a case in point. All decorations seem to be variations on a general decorative theme, but if these products originally represent different workshops, they retain some individuality for insiders who knew which workshop produced what.

Zooming out, for the far-away Hoogeloon community probably at the end of the long-distance exchange chain, such detailed knowledge may be unavailable and to them decorative varieties may blur into one broad category. Given the strong affiliation of stylistic traits between some British and French palstaves, communities at the outer reaches of the metal exchange zone like the Hoogeloon one, may even have regarded all this material simply as one generic inclusive 'brand', perhaps perceived as 'coming from the extensive southern metal exchange network' (Fontijn 2009, 140-2).

Zooming in, following Becker (2015, 72-3), the 'openness' of branded style can also have the effect to connect the trans-local to the local. For the Dutch palstaves, Butler and Steegstra (1997/98, 245) argued that regional specimens do share some traits with Normand-type palstaves, like basic outline and minor decorations (they speak of local 'derivatives'). This stylistic openness is one-sidedly aimed at French-British bronzes; there are no instances for regional palstaves sharing traits with those from Central Europe, which are also known to have circulated in the southern Netherlands (Butler and Steegstra 1997/98, 199-200; Fontijn 2002, 119-21). These hints at openness *and* closure suggest visual appearances mattered greatly (cf. Pearce 2007, 88; Sørensen 1987), and that these came with a certain social assessment perhaps about issues of quality, trustworthiness and level of intra-group interaction (like other exchanges done in such networks, f.i. marriage partners). In sum, we may be dealing with 'branded' networks.

The deposition of 'branded trade stock'?

Following on from this, we should now ask why it was branded *aes formatum* axes that were buried in the landscape? Perhaps more adequately phrased: why was it more or less the same selection of items that ended up in all hoards from France up until the Netherlands, in spite of all the cultural differences between communities living in that vast region?

The Hoogeloon find provides the best starting point for this discussion. After all, the axes in this hoards are rare in the region, and if the intention would just have been to just deposit generic *aes formatum* axes, then there would have been a broad variety of palstaves to choose from in this region: many kinds of regional types, and occasionally also continental ones (Butler and Steegstra 1997/1998). However, none of such axes were part of this hoard and the find and excavation circumstances warrant that we can state that absence of evidence indeed is evidence of absence here. We already mentioned that the Hoogeloon axes in their condition, used/un-used combination are similar to what we see in Normand-type palstaves hoards from northwest France. We also emphasized that we could see the varieties in appearances as expressing one *koinè* and used the theory of brands to make sense of this.

One may object that in Hoogeloon there is one axe that does have a deviant appearance, and this is the side-flanged palstave no. 16 (Fig. 7) which is in all likelihood a British import (Appendix 2). Interestingly, however, even the presence of one exceptional visually deviating British item alongside axes of 'Normand' shape is not unique among 'Normand-type' hoards. Such deviating British axes are occasionally known from large Normand hoards in France as well. The French hoards from La Chapelle (I) and Gisor also contains a side-flanged palstave of a type which is common in Britain (O'Connor 1980, 57; Verney 1991, 124). Vice versa, in Britain, the largest palstave hoards contain Normand-type palstaves (O'Connor 1980, 56). Apparently, an occasional British-styled axe was an accepted part of the 'Normand' palstave package', and the same seems to hold true for French-styled palstaves in British hoards. Thus, also for this aspect, Hoogeloon seems to match what happened in hoards in the far south.

So even though Hoogeloon is a one-off regionally, it is coherent to what was regularly deposited hundreds of kilometres to the south in northwest France. We suggest this is best explained by assuming that what we are seeing in such 'packages' in hoards is metal in the state in which it was circulating in large-scale networks. It probably was not generic 'metal' that was deposited, but stock of a specific French-British 'branded' network. Without there being any kind of evidence for direct cultural contact, communities in French La Chapelle were dealing with the same brand of metal as communities who lived hundreds of kilometres to the north in Dutch Hoogeloon. The material that was buried in the ground in La Chapelle is consistent with what was thrown in the pool in distant Hoogeloon in shape, state and composition. This is particularly surprising for Hoogeloon, where by their appearances, the palstaves are likely to have been perceived as 'foreign', or at least as different from what was produced locally. Sørensen (1987, 94) argued that a different appearance may be grounds for a separate treatment in deposition, and we suggest this was exactly what happened here.

That material was deposited as it circulated matches observations previously done on another famous 'trade hoard': the one from Voorhout on the Dutch coast. As Butler (1990, 78-84; Butler and Steegstra 1997/98, 180-5) argued, this is another example of a collection of British and French axes that is very rare on the continent – this time mainly of Welsh (Acton Park variety) palstaves that are unknown in the region beyond this single hoard. Similar hoards are known from Britain however (like the eponymous Acton Park hoard; ibid. for references). What is in the Voorhout hoard is consistent with what we find in its British counterparts, though in Voorhout a few French axes seem to have been added to the 'package' (Butler/Steegstra 1997/98, 184). This might underscore our point that British and French imports apparently were seen as comparable and convertible and a normal part of the 'packages' in circulation.

As a hypothesis in need of further testing for other regions, we therefore suggest material may have been deposited in line with how it travelled to the region and was hoarded as 'branded' trade stock.

Burying stock in the ground (and leaving it there…)

This brings us to the final and perhaps most difficult question: why were *aes formatum* axes buried in such large numbers? Here we are confronted with one of the biggest problems of the data we have from Northwest Europe. For many trade hoards, information on the context in which they were deposited is often lacking. This is where the new information from Hoogeloon is a valuable asset.

If we start with evidence from the hoard-rich zone of Middle Bronze Age central and northwest France, Gabillot's (2003,13-5) recent inventory shows that for many cases we simply do not know much about context, and this particularly seems to apply to palstave hoards (although this situation is now improving; Le Carlier/Marcigny 2011). When circumstances are known, it is clear that it was just the axe blades that were buried in pits, underlining that they were buried as metal, not as tools (f.i. the Gatteville hoard; ibid., 30). One of the best known examples are the two hoards from La Chapelle-du-Bois-des-Faulx, our best match with the Hoogeloon hoard (Verney 1991). One consisting of 30 (hoard I), the other of 39 (II) palstaves, almost all of the Normand type. They are situated some 20 metres from each other (ibid. 119) in dry ground. Excavation of the immediate surroundings yielded no traces of other activities or the presence of a settlement during the Middle Bronze Age. At least one of them could be meticulously excavated (hoard II). It was just the bronze blades which were placed in a pit closed with some sort of chalk slab, and the palstaves were bundled in groups of two or three (Verney 1991, 119). Finds in such contexts at first sight seem to fit with situations in which metalwork was temporarily stored, which is the established explanation for such trade hoards.

The situation for the Hoogeloon hoard is different. Here we are clearly dealing with axe blades that were thrown into a pool from which it would have been difficult to retrieve them. This strongly suggests that trade stock was taken out of society forever. When hoards appear to have been placed in watery environments, this is usually seen as a purely ritual act (as it seems opposed to an economic rationality; cf. Brück 1999; Fontijn 2002, ch. 2). There is also a strong tendency to label the areas where it took place as 'sacred' or 'ritual' locations (e.g. Hänsel and Hänsel 1997). The one-sided emphasis on ritual is problematic, however, as it downplays economic and mundane concerns (Fontijn 2002, 13-22; Needham 2001, 277ff.). Although there need be no doubt that it represents an

act of sacrifice intended to be permanent, there are two reasons to suggest that mundane aspects were quintessential for the Hoogeloon situation.

First of all, this is because the hoard appears to have been left in a pool with economic potential (as a potential source of fresh drinking water for cattle, see above). In the daily life of local Bronze Age farmers, such locations may have been valued and if they were used as such, would perhaps also have served as local meeting places.

Secondly, the pool is located in a part of the stream valley that has significance in local social geography. It provides the physical boundary between two inhabited areas and is situated in the zone where the valley narrows from north to south, close to an elevation at the west side of the valley that protrudes to the east (Fig. 1). This is the zone that offers the best conditions for crossing the peaty stream valley. The dam and road built in the Roman Period demonstrates it at least had this function by then. There are indirect indications to suggest the same for the Bronze Age. (Probable) Middle Bronze Age barrow locations nearby (seen on air photographs) and the Zwartenberg-barrow; Roymans and Sprengers 2012, 53-8; fig. 33) are roughly in line with the hoard location, suggesting there might have been a route crossing the stream here (Fig. 1).

For any economy in which items circulate that are tools and (recyclable) resource at the same time, there will have been practices in which what was traded/exchanged had to be stored. But if this is true, why was so much of this 'stored' material in France never taken out again? Is the situation in France really that different from what we see in Hoogeloon in the far north, where the same material ended its life in an act up permanent sacrifice?

Why deposit trade stock at all? Short-term and Moral economies

Concerning the 'oddity' of permanently buried trade stock, we refer to the point we started this paper with: such depositions are common in Bronze Age Europe (cf. Innerhofer 1997; Kienlin 2006; Lenerz de Wilde 2002; Menke 1978/79). The problem rather lies in accepting that such finds do not so much evidence of exchange between people itself, *but rather its interruption*. Some scholars have argued that the presence of so many trade hoards simply implies the burial of at least a significant part of it, was intended to be permanent, regardless whether the location was easily or difficult to access at later stage (f.i. Innerhofer 1997, 54). For reasons we fail to grasp in detail, Bronze Age people may have 'sacrificed' a sample of their trade stock as some sort of 'gift to gods' (e.g. Fontijn 2008; Hansen 2016; Hänsel/Hänsel 1997; Innerhofer 1997; Menke 1978/79). Can we reconcile such seemingly economically irrational actions to the very practical nature of what was being sacrificed, namely trade stock? Some, like Shennan (1993), suggests we can. He argues that the implication must be that Bronze Age people perceived the circulation of metalwork as being somehow linked to the practice of intentionally burying metal under the ground to remain there forever (cf. also Fontijn 2002, 255; Hansen 2016). Referring to the economic theory of Bloch and Parry (1989), Shennan argues that dealings with the 'supernatural' may have been seen as fed by the sphere of commodity exchange. Like sometimes happened at Greek and Roman temples (Hansen 2016, 186; Needham 2001, 288), a sample of the trade stock might have been 'sacrificed' in order to make the economic transactions at large – citing Bloch and Parry (1989, 25) – "morally acceptable" and "subordinated" to the "long-term social or cosmic order" (ibid. 24). This would explain why other classic examples of

trade hoards, like the Voorhout hoard, were also deposited in a peaty environment from where it is unlikely that things put in could be easily taken out again (Fontijn 2002, 255; 2008).

At the same time, it may be possible that after having been consecrated in such a way, a part of the material was retrieved and entered circulation again (Hansen 2016, 186; Needham 2001). This is the kind of scenario one could envision for easily retrievable stocks of material buried in separate pits in dry land, as for example at the La Chapelle-du-Bois-des-Faulx hoards (Verney 1991). The careful ordering of axes in the hoard II pit may indicate ritual overtones, at the same time keeping all options open on a future re-entry of the material in society by its accessibility (the pit was sealed with a stone and probably could be simply opened again; Verney 1991, 119; cf. Needham 2001, 288-91 who explored such a line of thinking). Thus, there seems to have been ambiguity between lasting consecration of things to a higher moral order by leaving them as 'gifts to gods' in the landscape and a new biography of circulation in human society (cf. Kienlin 2006, 471-2). In the La Chapelle-case, the pendulum clearly swung to the side of the former.

In the Hoogeloon case, the fact that the axes were deposited into a turbid pool indicates there was no intention of any retrieval potential. Cases of trade hoard in watery sites elsewhere indicate that this happened more often in Europe (cf. Fontijn 2008; Sampaio 2015, 63). So bronze from the south was reaching distant communities in the non-metalliferous Low Countries, and conventions on appearance and composition ('brand') of the supra-regional metalwork circulation network as a whole were carefully maintained up in sites as far from each other as La Chapelle in northwest France to Hoogeloon in the Netherlands. In our view, in Hoogeloon local communities deliberately sacrificed what probably was only a part of the imported foreign material, but *in doing so strictly maintained conventions on composition and brand as valid everywhere in the network*. Thus, cases like Hoogeloon not only represent practicalities of long-distance trade, but also the working of a 'moral economy' (Fontaine 2014). Following Bloch and Parry's (1989) theory, the Hoogeloon case shows that some of the foreign material apparently could only become an acceptable part of the local world by having been inserted and sacrificed in the most enduring context of all: the local landscape of daily life.

Acknowledgements

We are grateful to Sebastian Becker, Bart Beex, Maréva Gabillot, Maikel Kuijpers, Cyril Marcigny, Brendan O'Connor, Mark Pearce, Joanne Porck, Ben Roberts, Sasja Van der Vaart-Verschoof and , Marc Verhoeven for providing help, information and/or comments. The in-depth research was made possible by the 'Economies of Destruction' project, funded by the Dutch Organisation for Scientific Research (N.W.O.-VICI grant 277-60-001).

References

BARRETT, J. 1989: Food, Gender and Metal: Questions of Social Reproduction. In SØRENSEN, M.L.S and THOMAS, R. (eds.), *The Bronze Age-Iron Age Transition in Europe. Aspects of continuity and change in European societies c. 1200 to 500 B.C*., (Oxford, BAR Int. Ser. 483), 304-320.

BECKER, S. 2015: Birds on Bronzes. A study of religious branding in later prehistoric Europe. (Unpublished PhD thesis University of Cambridge).

BECKER, S. 2017: Creativity as Sensual Cosmology: Bird iconography on Metalwork in Late Bronze Age Europe. In JØRGENSEN, L. B., SOFAER and SØRENSEN, M.L.S. (eds.), *Creativity in the Bronze Age. Understanding Innovation in Pottery, Textile, and Metalwork Production* (Cambridge), 207-20.

BLOCH, M. and PARRY, J. 1989: Introduction: money and the morality of exchange. In PARRY, J. and BLOCK, M. (eds.), *Money & the morality of exchange* (Cambridge), 1-31.

BORGNA, E. 1992: *Il ripostiglio di Madriolo presso Cividale e I pani a piccone del Fruili-Venezia Giula*. (Rome, Studi e ricerche di Protostoria mediterranea 1).

BRADLEY, R. 1990: *The Passage of arms. An archaeological analysis of prehistoric hoards and votive deposits* (Cambridge).

BRÙCK, J. 1999: Ritual and rationality: some problems of interpretation in European Archaeology. *European journal of Archaeology* 2, 313-344.

BUTLER, J.J. 1961: A Bronze Age concentration at Bargeroosterveld. *Palaeohistoria* VIII, 101-126.

BUTLER, J.J. 1963: Bronze Age connections across the North Sea. A study in prehistoric trade and industrial relations between the British Isles, The Netherlands, North Germany and Scandinavia, c. 1700-700 B.C. *Palaeohistoria* IX, 1-286.

BUTLER, J.J. 1990: Bronze Age metal and amber in the Netherlands (I). *Palaeohistoria* 32, 47-110.

BUTLER, J.J. and STEEGSTRA, J. 1997 / 1998: Bronze Age Metal and Amber in the Netherlands (II:2). Catalogue of the Palstaves. *Palaeohistoria* 39 / 40, 163-275.

BURNY, J. 1999: *Bijdrage tot de historische ecologie van de Limburgse Kempen (1910-1950). Tweehonderd gesprekken samengevat* (Stichting Natuurpublicaties Limburg).

FONTAINE, L. 2014: The Moral Economy. Poverty, Credit and Trust in Early Modern Europe. (Cambridge).

FONTIJN, D.R. 2002: Sacrificial landscapes. Cultural Biographies of person, objects and 'natural' places in the Bronze Age of the southern Netherlands, c. 2300-600 BC. *Analecta Praehistorica Leidensia* 33/34, 1-392.

FONTIJN, D.R., 2008: 'Traders hoards': reviewing the relationship between trade and permanent deposition: the case of the Dutch Voorhout hoard. In HAMON, C. and B. QUILLIEC (eds.), *Hoards from the Neolithic to the Metal Ages in Europe: Technical and codified practices* (Oxford, BAR Int. Ser. 1758), 5-17.

FONTIJN, D.R. 2009: Land at the other end of the sea? Metalwork circulation, geographical knowledge and the significance of British/Irish imports in the Bronze Age of the Low Countries. In CLARK, P. (ed.), *Bronze Age Connections. Cultural Contact in Prehistoric Europe*, (Oxford), 129-148.

GABILLOT, M. 2003: Dépôts et production métallique du Bronze moyen en France nord-occidentale (Oxford, BAR int. Ser. 1174).

GABILLOT, M. 2006: Les manipulations après la fonte des objets en alliage cuivreux: caractéristique sociale, éonomique, culturelle? L'exemple des haches à talon du Bronze moyen du Nord-Ouest

français. In ASTRUC, L., BON, LÉA, V., MILCENT, P.-Y. and PHILIBERT, S. (eds), *Normes techniques et pratiques de la simplicité des outillages pré- et protohistoriques (Antibes, XXVIe rencontres internationals d'archéologie et d'histoire d'Antibes)*, 287- 295.

GIBSON, J.J. 1979: The ecological approach to visual perception (Hillsdale NJ).

HAEBERLIN, E.J. 1910: *Aes Grave. Das Schwergeld Roms und Mittelitaliens einschliesslich der ihm Vorausgehenden Rohbronzewährung*, vol. 1. (Frankfurt am Main).

HAMON, C. and QUILLEC, B. (eds.) 2008: Hoards from the Neolithic to the Metal Ages. Technical and codified practices. Session of the XIth Annual Meeting of the European Association of Archaeologists (Oxford, BAR Int. Ser. 1758).

HÄNSEL A. and HÄNSEL B. 1997: *Gaben an die Götter*, (Berlin).

HANSEN, S. 1994: Studien zu den Metalldeponierungen während der älteren Urnenfelderzeit zwischen Rhônetal und Karpatenbecken Teil 1 (Bonn, Universitätsforschungen zur Prähistorischen Archäologie).

HANSEN, S. 2016: A short History of Fragments in Hoards of the Bronze Age. In BAITINGER (ed.)., *Material Culture and Identity between the Mediterranean World and Central Europe.* (RGZM-Tagungen Band 27), 185-208.

INNERHOFER, F. 1997: Frühbronzezeitliche Barrenhortfunde – die Schätze aus dem Boden kehren zurück. In HÄNSEL A. and HÄNSEL B. (eds.), *Gaben an die Götter*, (Berlin), 53-9.

KIBBERT, K. 1980: *Die Äxte und Beile im mittleren Westdeutsland I*, (München, Prähistorische Bronzefunde IX: 10).

KIENLIN, T. 2006: Waffe- Werkzeug- Barren: Zur Deutung frühbronzezeitlicher Randleistenbeile in Depotfunden des nordalpinen Raums. In WOTZKA, H.-P. (ed.), *Grundlegungen. Beiträge zur europäischen und afrikanischen Archäologie für Manfred K.H. Eggert* (Tübingen), 461-476.

KIENLIN. T. 2010: *Traditions and Transformations: Approaches to Eneolithic (Copper Age) and Bronze Age Metalworking and Society in Eastern Central Europe and the Carpathian Basin*, (Oxford, BAR Int. Ser. 2184).

KIENLIN, T. and OTTAWAY, B. 1998: Flanged axes of the North-Alpine Region: An Assessment of the Possibilities of Use Wear Analysis on Metal Artifacts. In MORDANT, C., PERNOT, M. and RYCHNER, V. (eds.), *L'Atelier du bronzier en Europe du XXe au VIIIe siècle avant notre ère* (Paris), 271-286.

KOPYTOFF, I. 1986: The cultural biography of things: commoditisation as process. In APPADURAI, A. (ed.), *The Social life of Things (*Cambridge), 64-91.

LE CARLIER, C. and MARCIGNY, C. 2011: Nouveaux Travaux sur les dépôts de l'âge du bronze dans la Manche. *Bulletin du Groupe de Recherches Archéologiques du Cotentin* 14, 28-31.

LENERZ DE WILDE, M. 1995: Prämonetäre Zahlungsmittel in der Kupfer- und Bronzezeit Mitteleuropas. *Fundberichte aus Baden-Württemberg* 20, 229-327.

LENERZ DE WILDE, M. 2002: ´Bronzezeitliche Zahlungsmittel´. *Mitteilungen der Anthropologischen Gesellschaft in Wien* 132: 1–23.

MENKE, M. 1978 / 1979: Studien zu den frühbronzezeitlichen Metalldepots Bayerns. *Jahresbericht des Bayerischen Bodendenkmalpflege* 19 / 20, 1-305.

NEEDHAM, S. 1989: Selective deposition in the British Early Bronze Age. *World Archaeology* 20, 229-248.

NEEDHAM, S. 1990: Middle Bronze Age ceremonial weapons: new finds from Oxborough, Norfolk and Essex / Kent (with a contribution from D. Hook). *The Antiquaries Journal* LXX-II, 239-252.

NEEDHAM, S. 2001: When expediency broaches ritual intention: the flow of metal between systemic and buried domains. *The Journal of the Royal Anthropological Institute incorporating Man* 7, 275-298.

O'CONNOR, B. 1980: *Cross-Channel relations in the Later Bronze Age. Relations between Britain, North-Eastern France and the Low Countries during the Later Bronze Age and the Early Iron Age, with particular reference to the metalwork*, (Oxford, BAR Int. Ser. 91).

PARE, Ch. 2013: Weighing, Commodification, and Money. In FOKKENS, H. and HARDING, A. (eds.), *The Oxford Handbook of the European Bronze Age* (Oxford), 508-27.

PEARCE, M. 2007: *Bright Blades and Red Metal. Essays on north Italian prehistoric metalwork*. (London, Accordia Specialist Studies on Italy 14).

ROYMANS, J. and SPRENGERS, N. 2012: Tien Bronzen bijlen bij een Romeinse dam. Herinrichting beekdal Kleine Beerze, deeltraject Hoogeloon-Vessem, gemeenten Bladel en Eersel. Resultaten archeologische begeleiding en opgraving. *RAAP rapport* 2537.

ROWLANDS, M.J. 1976: The organisation of Middle Bronze Age metalworking (Oxford, BAR 31).

SAMPAIO, H. A. 2015: Late Bronze Age monotypical deposits of palstave axes between the hydrographic basins of rivers Minho and Ave (Iberian Northwest): spatial contexts and interpretations. *Estudos do Quaternáro* 13, 55-67.

SCHMIDT, P. and BURGESS, C. 1981: The axes of Scotland and Northern England (München, Prähistorische Bronzefunde IX, 7).

SHENNAN, S. 1993: Commodities, transactions, and growth in the central-European Early Bronze Age. *Journal of European Archaeology* 1 (2), 59-72.

SØRENSEN, M.L.S. 1987: Material order and cultural classification: the role of bronze objects in the transition from Bronze Age to Iron Age in Scandinavia. In I. Hodder (ed.), *The archaeology of contextual meanings*, (Cambridge, New directions in archaeology), 90-101.

SØRENSEN, M.L.S 2015: 'Paradigm lost'- on the state of Typology within Archaeological Theory. In KRISTIANSEN, K., . ŠMEJDA, L., TUREK, J. (eds.), *Paradigm Found. Archaeological Theory Present, Past and Future* (Oxford), 84-94.

TALON, M. and LEHOÈRFF, A. 2012: The Discovery at Guînes (Pas-de-Calais) Goldsmithing. In LEHOÈRFF, A, BOURGEOIS, J., CLARK, P. and TALON, M. (eds.), *Beyond the Horizon. Societies of the Channel and North Sea 2500 years ago* (Paris), 62-69.

VAN DER LINDEN, ROYMANS, J. and HIDDINK, H. 2011: Hoogeloon-Klein Beerze. De resultaten van het eco-archeologisch onderzoek aan een Romeinse dam. *BIAXiaal* 440.

VANDKILDE, H. 1996: *From stone to bronze, the metalwork of the Late Neolithic and Earliest Bronze Age in Denmark* (Aarhus, Jutland Archaeological Society Publications XXXII).

VANDKILDE, H. 2014: Breakthrough of the Nordic Bronze Age: Transcultural Warriorhood and a Carpathian Crossroad in the Sixteenth Century BC. *European Journal of Archaeology* 17 (4), 602-633.

VERLAECKT, K. 1996: *Between river and barrow. A reappraisal of Bronze Age metalwork found in the province of East-Flanders (Belgium)*, (Oxford, BAR Int. Ser. 632).

VERSLUYS, M.J. 2017: *Visual Style and Constructing Identity in the Hellenistic World. Nemrud Dağ and Commagene under Antiochos I* (Cambridge).

VERNEY, A. 1991: La production en série d'objets métalliques à l'Age du Bronze: les dépôts de la Chapelle-du-Bois-des-Faulx (Eure), *Matières et Figures, Etudes et Travaux Ecole du Louvre Ecole du Patrimoine (*Paris, La documentation francaise), 117-135.

WENGROW, D. 2008: Prehistories of commodity branding. Current Anthropology 49 (1), 7-34.

WISEMAN, R. 2018: Random accumulation and breaking: The formation of Bronze Age scrap hoards in England and Wales. *Journal of Archaeological Science* 90, 39-49.

Captions Figures

Fig. 1. Location of the Hoogeloon hoard in the kleine Beerze stream valley in relation to other relevant Middle Bronze Age features. Background: contourlines following www.ahn.nl. By J. Porck, based on Roymans/Sprengers 2012, Fig. 35.

Fig. 2. Position of palstaves as found during the excavation (Roymans/Sprengers, Fig. 29; copyright RAAP Zuid).

Fig. 3. Detail show how the axes were situated in the sediment (left: no. 15), showing the waterlogged conditions (photograph Bart Beex).

Fig. 4. Hoogeloon hoard, axes no. 15, 18, 20 (Normand-type). Drawing by T. Kriek, copyright RAAP Zuid.

Fig. 5. Hoogeloon hoard, axes no. 14, 19 and 21 (Normand-type). No. 19 is unfinished. Drawing by T. Kriek, copyright RAAP Zuid.

Fig. 6. Hoogeloon hoard, axes no. 12 (Normand-type with X-mark) and 13 and 17 (unfinished, crinoline shape). Drawing by T. Kriek, copyright RAAP Zuid.

Fig. 7. Hoogeloon hoard. Axe no. 16 (Side-flanged, British type). Drawing by T. Kriek, copyright RAAP Zuid.

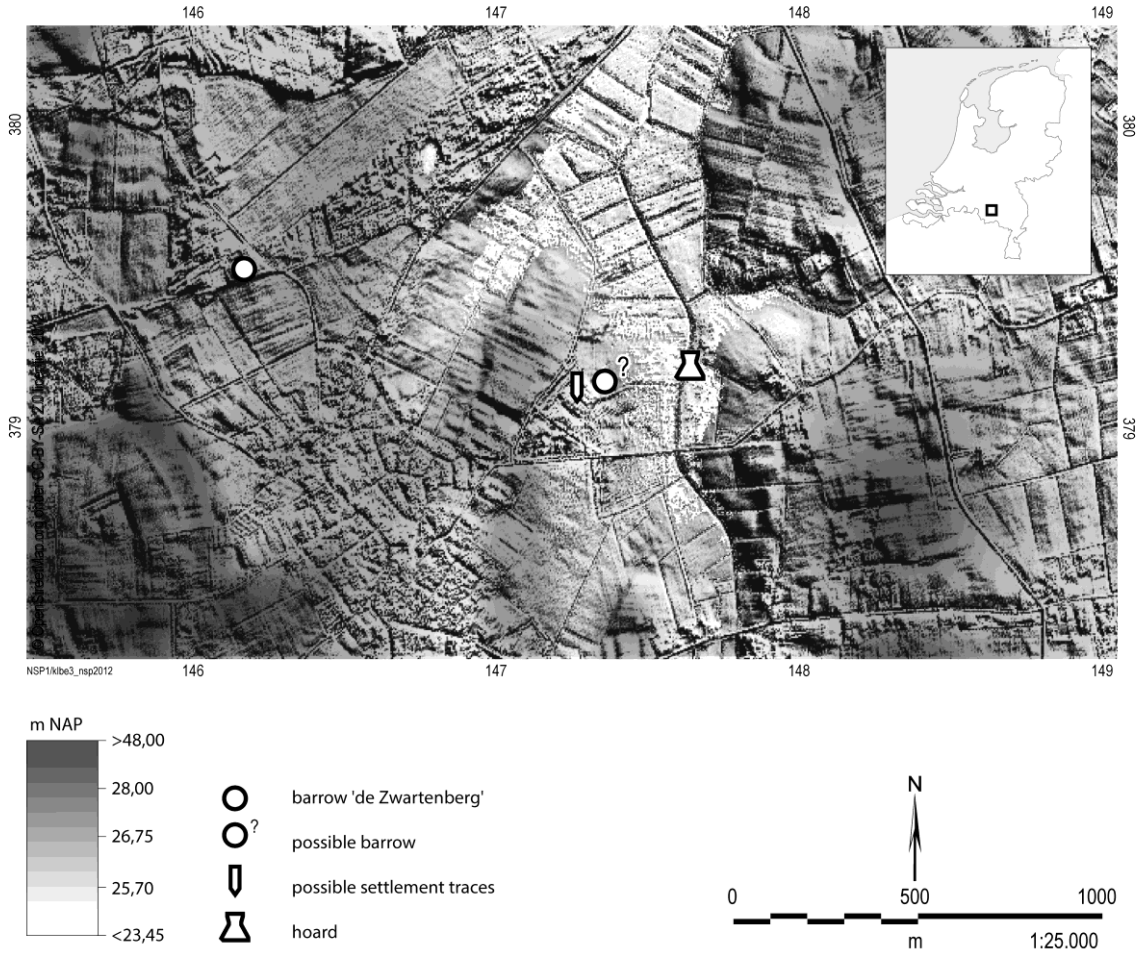

Fig. 1. Location of the Hoogeloon hoard in the kleine Beerze stream valley in relation to other relevant Middle Bronze Age features. Background: contourlines following www.ahn.nl. By J. Porck, based on Roymans/Sprengers 2012, Fig. 35.

Fig. 2. Position of palstaves as found during the excavation (Roymans/Sprengers, Fig. 29; copyright RAAP Zuid).

Fig. 3. Detail show how the axes were situated in the sediment (left: no. 15), showing the waterlogged conditions (photograph Bart Beex).

Fig. 3. Detail show how the axes were situated in the sediment (left: no. 15), showing the waterlogged conditions (photograph Bart Beex).

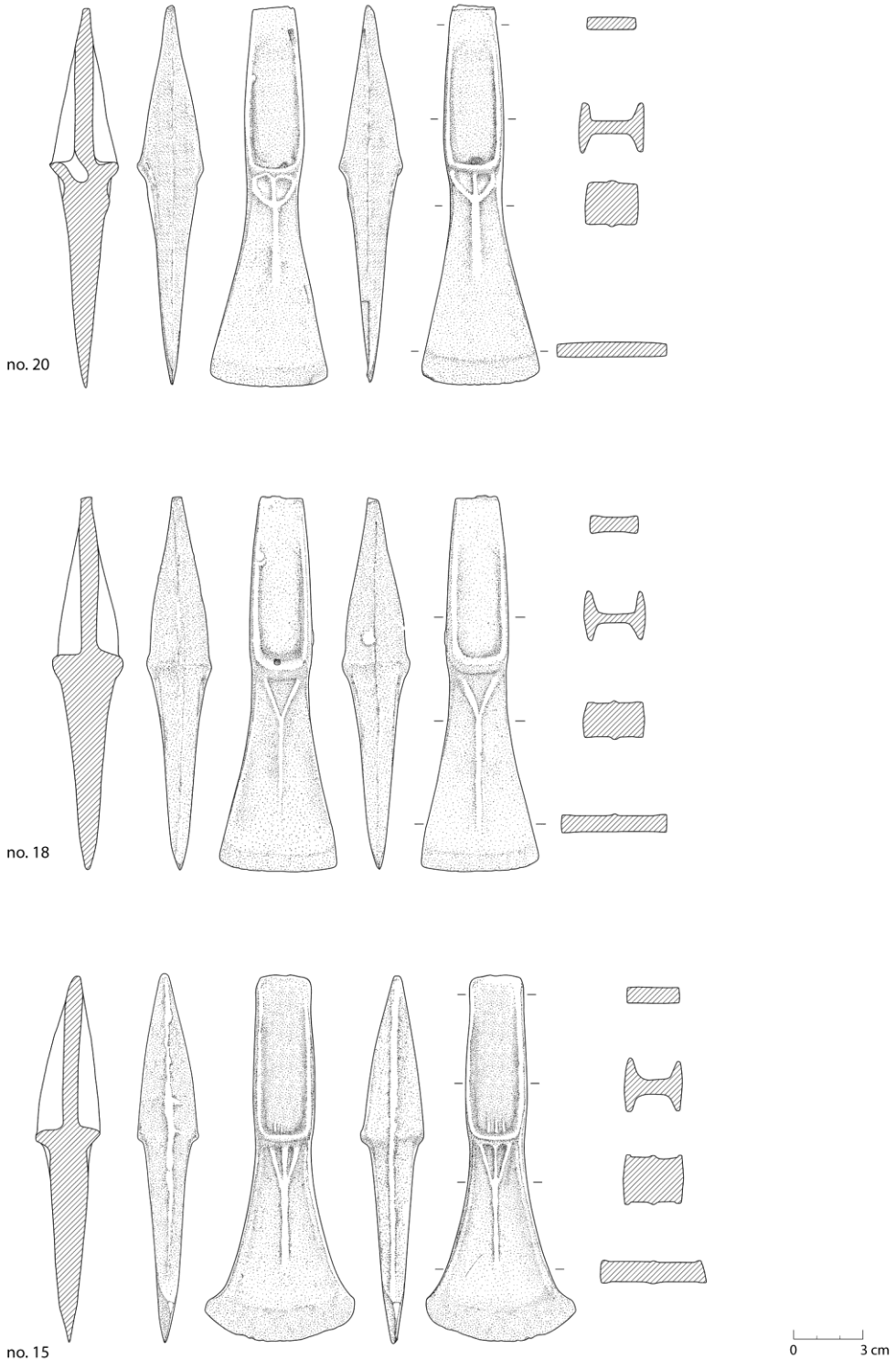

Fig. 4. Hoogeloon hoard, axes no. 15, 18, 20 (Normand-type). Drawing by T. Kriek, copyright RAAP Zuid.

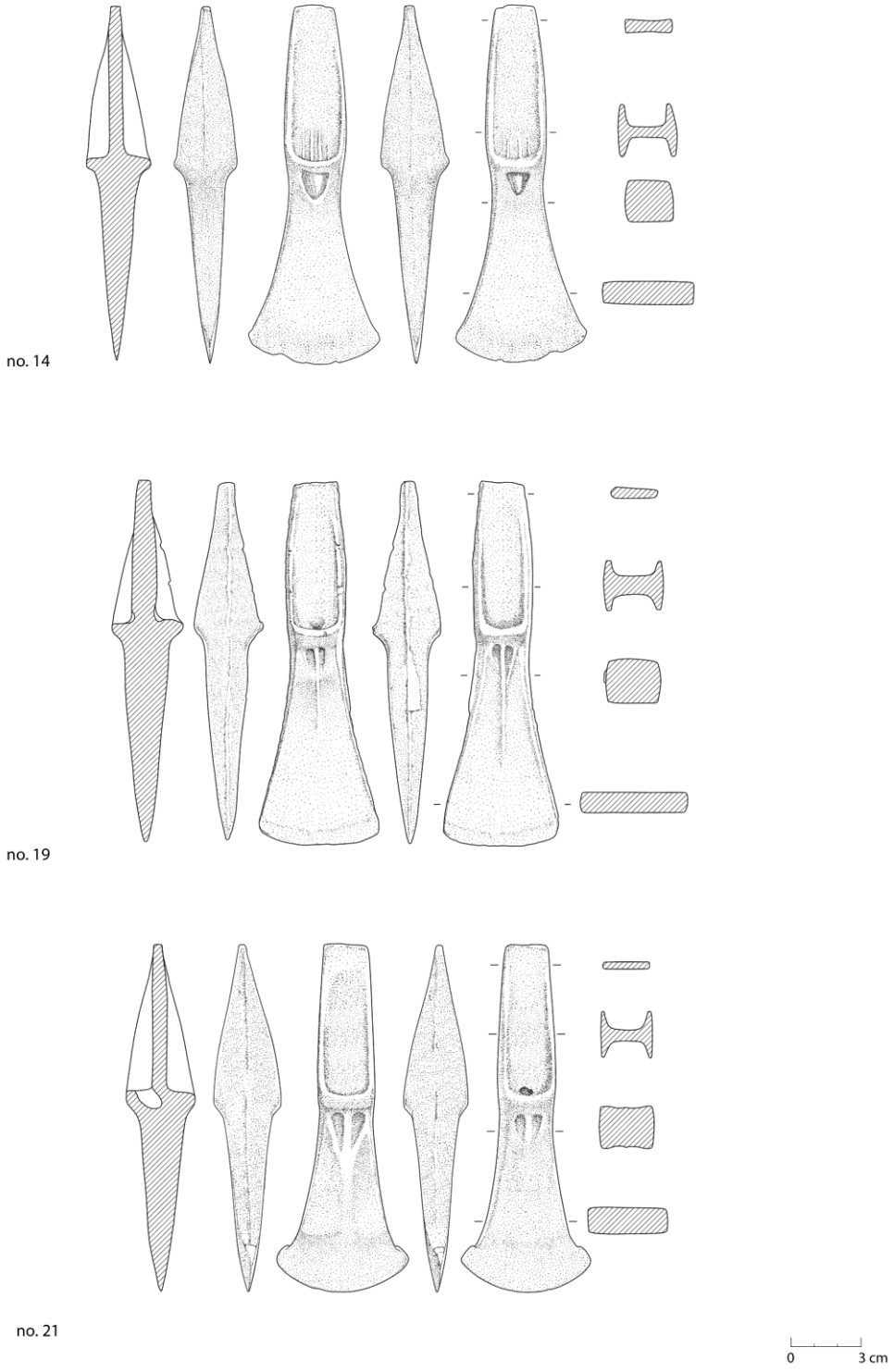

Fig. 5. Hoogeloon hoard, axes no. 14, 19 and 21 (Normand-type). No. 19 is unfinished. Drawing by T. Kriek, copyright RAAP Zuid.

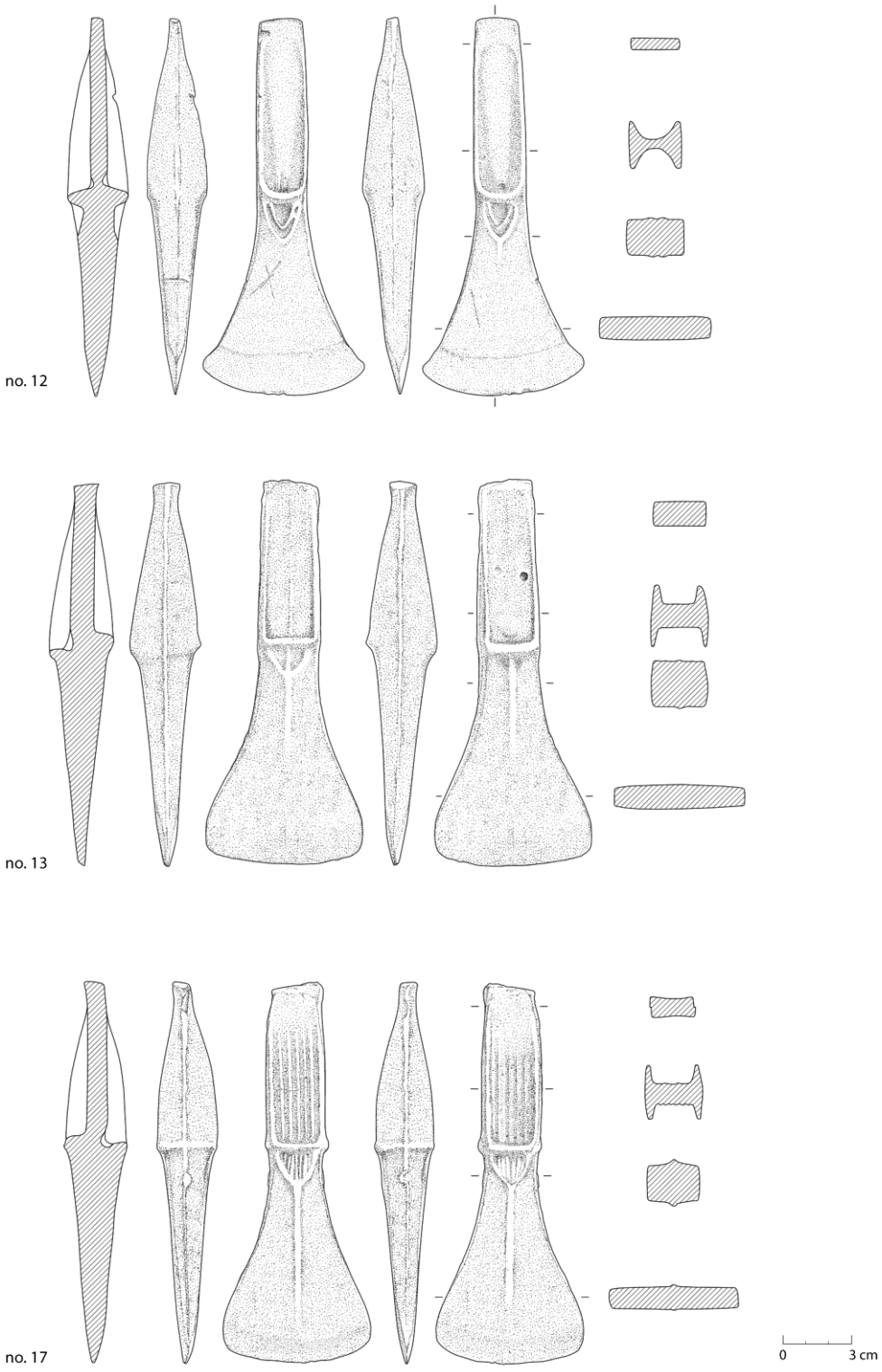

Fig. 6. Hoogeloon hoard, axes no. 12 (Normand-type with X-mark) and 13 and 17 (unfinished, crinoline shape). Drawing by T. Kriek, copyright RAAP Zuid.

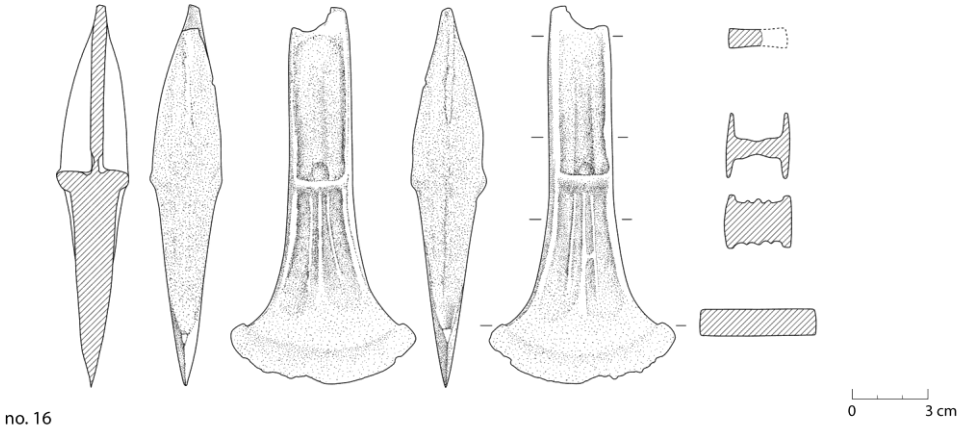

Fig. 7. Hoogeloon hoard. Axe no. 16 (Side-flanged, British type). Drawing by T. Kriek, copyright RAAP Zuid.

Appendices

Appendix 1. Overview of relevant features of palstaves in Hoogeloon. No. 12: as in excavation records; RAZ: equivalent in restoration reports *Restaura BV Haelen*. D. green: dark green. * determination by dr B. O'Connor.

Appendix 2. Comparisons for outline and decoration of the Hoogeloon palstaves. "La Chapelle hoards" is short for the La Chapelle-du-Bois-des-Faulx hoards in Normandy (Verney 1991).