Not at all obsolete !The use of flint in the Bronze Age Netherlands

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Lithic technology in metal using societies

Proceedings of a UISPP Workshop, Lisbon, September 2006

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Not at all obsolete! The use of flint in the Bronze Age Netherlands

Annelou van Gijn

Abstract

Bronze Age flint from settlements has long been the Cinderella of lithic research in the Netherlands. Attention was only given to the beautifully shaped flint burial gifts and to the sickles made of imported northern flint. Lately, several late Neolithic and Bronze Age settlements have been excavated, their flint assemblages have been studied technologically and use wear analysis has been carried out. Thus, now it is possible to compare the use of flint in settlements, burials and hoards. It turns out that flint remains important for various household tasks in the settlements, such as fire making. However, the need for specialized toolkits is no longer present, probably due to the completely sedentary existence of these communities. These flint tools are produced in an ad hoc fashion, frequently making use of a bipolar reduction technique. In contrast, flint burial gifts often lack any traces of use. The sickles, frequently part of multiple hoards, are, for the most part, used for cutting sods; a task that may appear mundane, but which is probably connected with the construction of houses and the erection of burial mounds. By comparing the production of implements and their use in these various depositional contexts, the role of flint in the technological system will be examined; and its significance for the prehistoric communities will be assessed.

As in most of the rest of Europe, research into Bronze Age flint in the Netherlands was pretty much what Van Gijn and Niekus (2001) referred to a few years ago as the Cinderella of lithic research. Systematic studies of Bronze Age flint were not undertaken; and, even today, flint is still only cursorily mentioned in archaeological reports from this period. This pertains both to typo-morphological, technological and functional analysis and holds especially true for settlement flint. Only the "pretty" (that is, typologically classifiable) items are mentioned and depicted; but they are seldom discussed in any detail or put in a wider context. The common assumption is that flint had become obsolete by losing first its significance in expressing cultural identity (a role ceded to pottery), and, a little later with the advent of metal, its ideological and utilitarian significance.

However, it is during the Late Neolithic and Bronze Age that we find a particular abundance of beautifully crafted, often bifacially worked, flint objects, such as daggers, sickles and arrowheads. The larger objects are usually made from "exotic" raw materials. The skills with which these special objects are made far exceed utilitarian demands. These flint objects seem almost to compete with

the beauty, size and inherent complexity of the metal objects circulating at the time. Some of these special objects, notably the daggers and the sickles, are rarely found in settlements, at least not in complete form (reworked fragments *do* form part of settlement assemblages). In contrast, while Late Neolithic burials only contain "special flint objects", by the Bronze Age, flint has largely been replaced by metal as a burial gift. As will be argued below, Scandinavian daggers and crescent-shaped sickles predominantly derive from find contexts that may be interpreted as special depositions. This dichotomy, between settlement flint of poor quality on the one hand and "special flint" of high craftsmanship in burials and depositions on the other, is a feature that cannot be explained by the gradual replacement of stone by metal, but that must have a basis in Neolithic and Bronze Age society.

The objective of this paper is to examine the role of flint in Bronze Age communities, incorporating data from settlements, graves and ritual depositions. In doing so, the concept of biography, the life of the object, plays an important role. Questions that will be addressed include: whether flint really played such a subordinate role in domestic contexts after advent of metals and what the social significance of the special flint objects could have been. It will be shown that flint retained its utilitarian significance throughout the Bronze Age, and that flint objects even continue to play a role in the social and ideological realm. Thus, flint is far from obsolete during the Bronze Age. Finally, the so-called "demise of flint" will be discussed, in the light of the introduction of metals.

Methodology

The present article is based on use wear and residue analysis performed on a number of Bronze Age flint assemblages, deriving from settlements, burial contexts and depositions (Van Gijn 1999; Van Gijn & Niekus 2001; Van Gijn *in prep.*). It was believed that a functional analysis was meaningless without incorporating relevant technological information about the tools. In this way, insights could be gained concerning the biography of the object: from its conception (the selection of raw material), its birth (the manufacture), its life (the use of the tool or the role it played before ending up in the ground) and, finally, its death (the deposition of the object, the location where it was deposited). Information concerning the selection of raw material, reduction strategies, knapping techniques and knapping skills were therefore also recorded. Special information concerning the skill of the flint knapper was recorded where this was perceived. In some cases, the knapper's skill is evident from traces left behind on the object or is even emphasised. In other cases, such evidence has been removed, as if the intention was to conceal the human origin of the object. However, such information is very specific to each tool type and has probably not always been picked up by our outside (etic) point of view.

The functional analysis was done by means of a combination of what is commonly known as the low and the high power approach. A stereomicroscope (magnifications up to 160x) was used to locate residue and obtain an overall view of the wear traces on the tools, whereas the high power approach (with magnifications of 100-560x) enables more detailed inferences of tool use (Van Gijn 1990).

Settlement flint

Late Neolithic and Bronze Age settlement flint is not always in good enough condition to allow a functional analysis and through the years quite a number of sites had to be rejected. Also, in some cases late Neolithic and Bronze Age flint artefacts are found together, making it impossible to come to grips with temporal developments (Van Gijn 1983; Van Gijn & Niekus 2001). However, some general trends can be outlined; although clearly a systematic study of Bronze Age settlement flint from the Netherlands would be ideal.

The first trend that becomes apparent is the gradual decrease in the number of flint tools as we move through the Neolithic and Bronze Age. The Middle Neolithic site of Schipluiden yielded over 15,000 pieces of flint (Van Gijn *et al*. 2006), the site of Mienakker, dated to the Single Grave culture, produced c. 1225 flint objects (Peeters 2001), whereas Bronze Age sites commonly are charac-

terized by a few dozen to several hundred flint artefacts (Van Gijn & Niekus 2001). Although this may partially be attributed to differences in excavation and collection methods, Bronze Age excavations being predominantly directed at documenting large scale settlement features, the trend is nevertheless real: the number of flint artefacts decreases significantly with time.

There are also considerable changes in the flint technology. The raw material selected for the production of domestic flint tools is generally of very low quality and of small size. It consists of terrace flint, rolled riverine pebbles and erratic flint of Baltic origin, always collected in the vicinity of the settlement areas. No effort was put into obtaining larger flint nodules of better quality that would have enabled the production of larger and more standardized tools.[1] The limited size of the nodules and the low quality of the raw material also influenced the production technique. The nodules are worked by means of hard hammer percussion or through bipolar reduction. Platform preparation is generally absent and it is not uncommon to find two or more platforms on the cores. Apparently, the production is aimed at making small flakes; and these were created as the need arose. Evidence for a systematic blade technology is completely absent. Standardized tool types are rare, and are limited to types such as short end scrapers, borers, knives, strike-a-lights and arrowheads. Informal tools predominate, like flakes with some irregular retouch (figure 1). It seems that the knappers were not so much interested in obtaining standardized shapes as

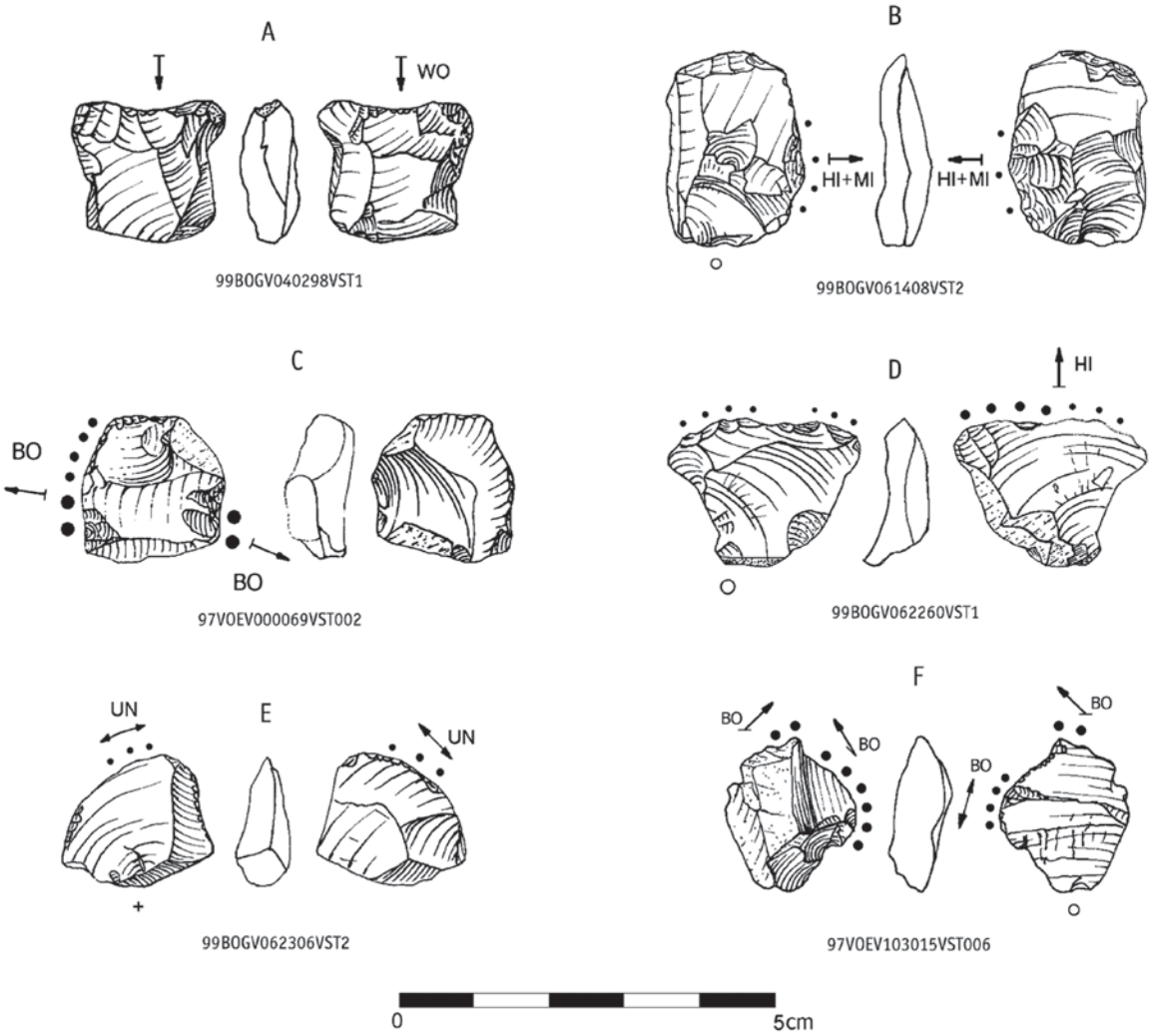


Figure 1. Retouched and unretouched flakes and splintered pieces with traces of use. Key to use wear symbols: WO= wood; BO= bone; HI= hide; HI+MI= hide with mineral additive; UN=unspecified (from Van Gijn & Niekus 2001, fig. 10).

in crafting flakes with suitable edges. It is the edge that counts, not the overall morphology of the flakes (Van Gijn & Niekus 2001). This apparent lack of interest in the aesthetics of domestic flint seems to result from a deliberate choice on the part of prehistoric people: although, in comparison to the Mesolithic, it may not have been so easy to obtain high quality stone locally, clearly no special effort was dedicated to obtain better flint from further away.

However, from the presence of highly crafted objects of non-local flint in burials and depositions, we know that craftsmen still possessed the knowledge and skill to produce objects of great technological complexity and beauty. This is also shown by the beautifully retouched arrowheads which are not only deposited as burial gifts, but which also regularly occur in settlement context. However, these arrowheads can be considered to belong to the more public domain of men, as these tools are linked with either hunting or warfare. Both these activities take place outside the domestic realm and away from the privacy of the settlement. Therefore, investing these objects with stylistic information remained highly relevant as they would have been visible to others outside of the local community. However, within the context of domestic activities, flint production was strictly local and probably very much linked to the immediate needs of individual agents, most probably women.

Looking at the function of domestic flint, it turns out that a wide range of tasks were been carried out with flint implements. Some tools like the scrapers display considerable wear, and their obtuse angles indicate that they were re-sharpened numerous times. Different stages of hide processing are represented by the observed wear traces, and there are indications that mineral or other additives were used during the scraping (figure 2). This would suggest that scrapers remained highly important for hide working, and that an effective tool would have been curated for a long time.

Another tool type that occurs relatively frequent and that displays extensive wear traces is the strike-a-light. All strike-a-lights display

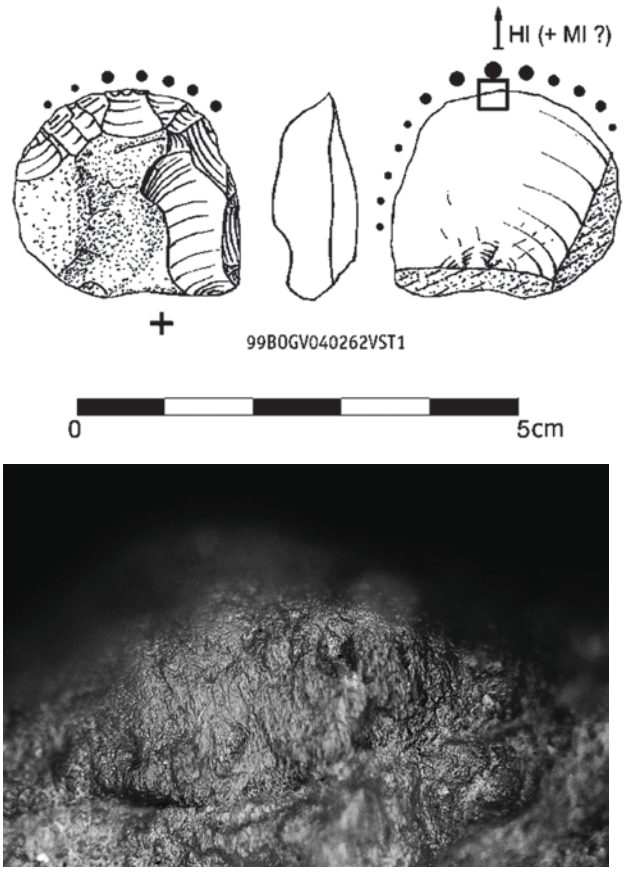
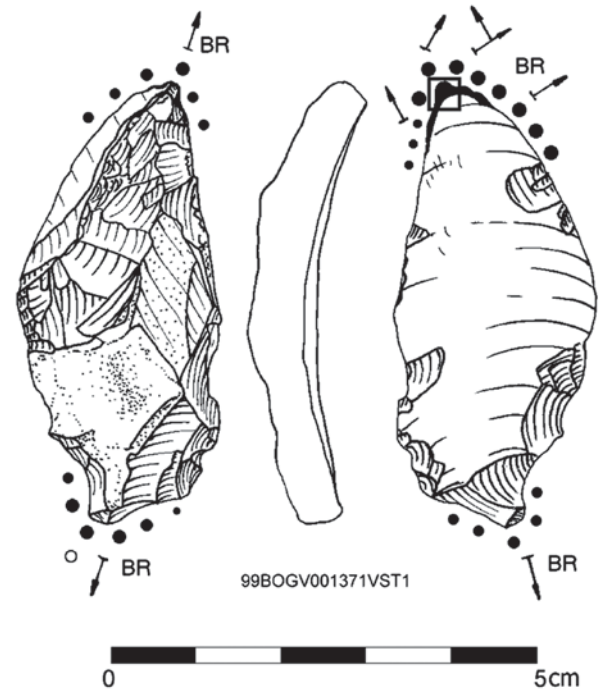


Figure 2. A) Scraper with wear traces from scraping hide with mineral additives. B) Wear traces observed (original magnification 200x). Key: HI= hide; MI?= possible mineral additive (from Van Gijn & Niekus 2001, fig. 6).

a heavily rounded tip and a rough, dull linearly distributed polish (figure 3). They are usually very intensively used and made on an elongated flake or blade-like flake, providing a firm hold and possessing a sturdy tip. Most strike-a-lights must have had extremely long use lives, as they display gloss all over their surface due to the abrasive effect of fine pyrite powder. In combination with the absence of hafting traces, this polished surface indicates that the strike-a-lights were handheld. The tools are interpreted as having been part of the personal toolkit. They are occasionally deposited with the dead as burial gifts, a practice that has a long tradition as evidenced by the presence of strike-a-lights in Linear Bandkeramik and Middle Neolithic burials (Van Gijn *et al.* 2006; Nieszery 1992).

The other, less standardized tools, like retouched flakes, display a variety of traces, usu-



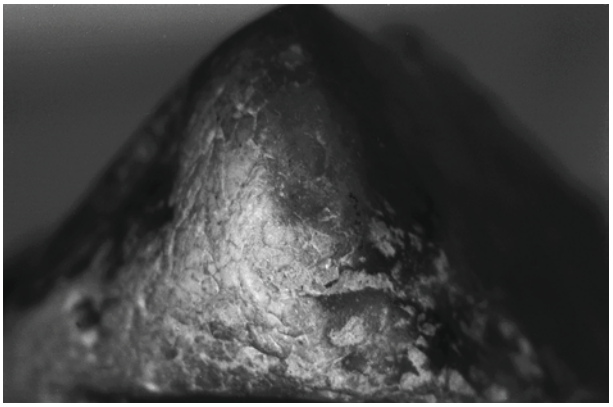


Figure 3. A) Strike-a-light. B) Wear traces observed (photo by stereomicroscope, original magnification 40x). Key: BR= briquette (strike-a-light)(from Van Gijn & Niekus 2001, fig. 8).

ally not so heavily developed but indicating that flint tools still had an important role in wood, bone, and hide working (see figure 1). This component of the technological system can be considered the *ad hoc* one, otherwise called informal tools. They constitute the majority of the implements from the Late Neolithic onwards and were probably, for the most part, made and used as the need arose. Many of these implements do not display heavily developed traces of use; therefore, they were not treated as personal (curated) tools. Still, they certainly had not lost their utilitarian significance.

Notably absent from settlement contexts are flint sickles, but this is the case even in some Neolithic periods such as the Michelsberg culture (Van Gijn *in prep.*). Flint axes also disappear and were probably replaced by metal counterparts for the felling of trees to clear land and re-organize the landscape. The Late Neolithic and Bronze Age also see the appearance of a variety of hard stone objects, ranging from various types of hammers, to whetstones and a variety of grinding, rubbing and milling stones.

Burial gifts of flint

During the Late Neolithic, burial gifts of flint occur relatively frequently. Famous examples are the Grand Pressigny daggers in later Single Grave barrows and the plano-convex knives and arrowheads in Bell Beaker barrows (Lanting & Waals 1976). The daggers in particular have been interpreted as being indicative of the veneration of martial qualities from the Beaker period onwards (Fokkens 1999). As we move into the Bronze Age, flint burial gifts become increasingly scarce, disappearing completely in the Late Bronze Age. In Early and Middle Bronze Age barrows we find the occasional projectile point; but it is impossible to determine whether such single points are burial gifts or whether they are the deceased person's cause of death, having been embedded in the body upon burial. The presence of wear traces is not conclusive in this respect as the traces may be due to an impact with the buried person, or the arrowhead in question may have been used for hunting or warfare during the life of the deceased and subsequently deposited as a necessary personal item.

If more than one arrowhead is present, we can assume that it probably represents intentionally buried grave goods. Such is the case with the spectacular Middle Bronze Age barrow of Drouwen in the northern province of Drenthe (Butler 1990). Here, nine flint arrowheads of the so-called Sögel type were found along with a flint strike-a-light and several metal objects including a beautiful sword (figure 4). Use wear analysis of the flint points, along with residue analysis, has shown that two definitely bear traces of impact, while some of

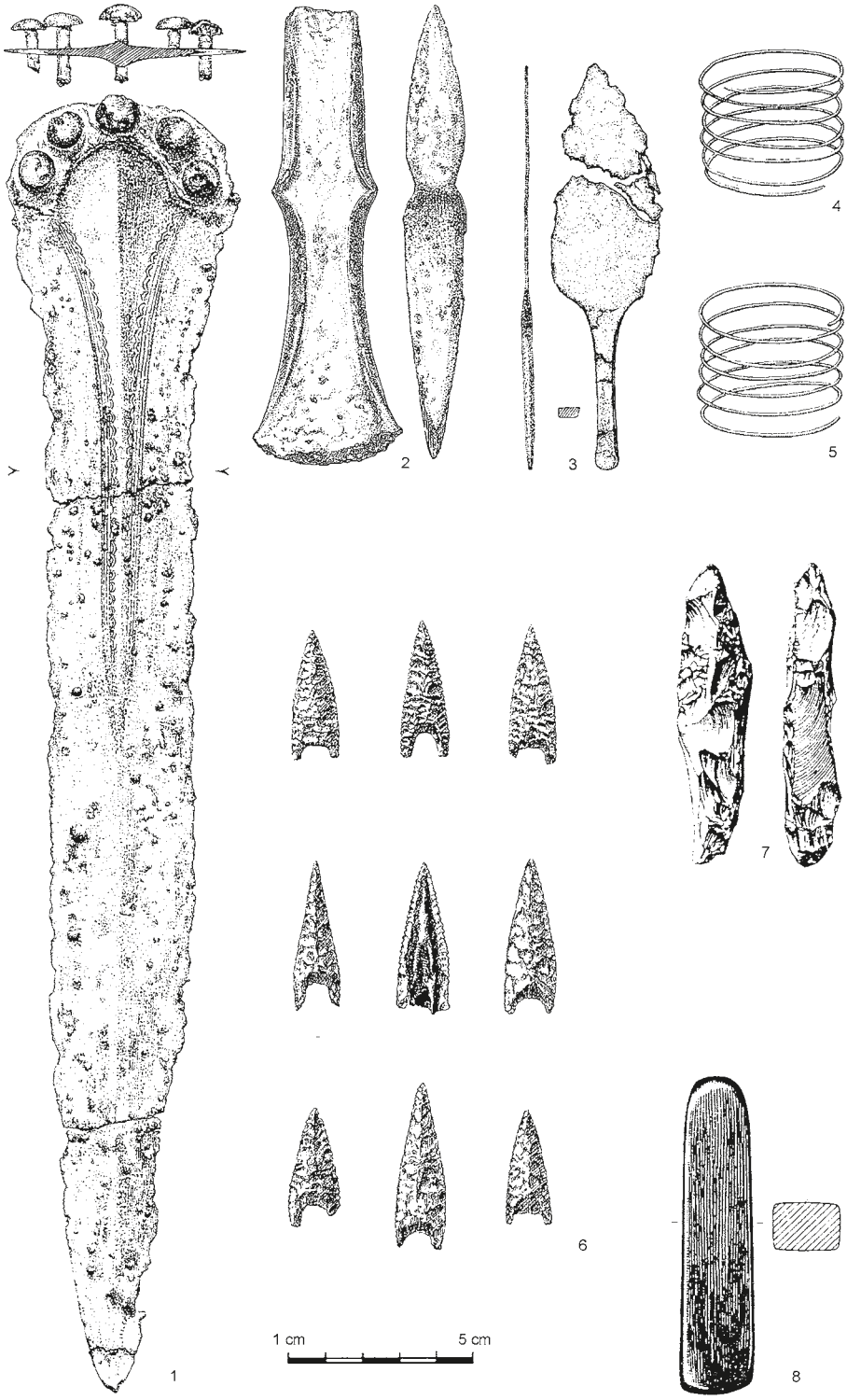


Figure 4. The inventory of the Sögel burial of Drouwen, province of Drenthe (from Louwe Kooijmans et al. 2005, fig. 19.11).

the others might display traces of use as well. One had extensive residue traces which probably correspond to birch bark tar. Several points of the same type were also found in a barrow at Eext, again in Drenthe (Jager 1985). As with the points from Drouwen, the evidence for use is ambiguous, with one point showing impact traces, one possibly, and one not at all. It must be recalled that experiments have shown that only two-thirds of the arrowheads display traces of wear after impact (Fischer *et al.* 1984; Odell & Cowan 1986). This indicates that more of the points deposited in the graves of Drouwen and Eext had been used before deposition. This observation, and the fact that arrowheads are also found

in settlements, suggests that they were not specifically made to serve as burial gifts. I would therefore interpret these points bearing traces of prior usage, as personal items deposited in the grave in order to symbolize and commemorate the deceased as an individual. Interestingly, the Middle Bronze Age barrows were re-used in the same or the next generation (Arnoldussen & Fontijn 2006) so the memory of the identity of the deceased would still have been alive. This observation lends additional support for the interpretation of Bronze Age burial gifts as personal items of the, admittedly, very few individuals buried in barrows (Lohof 1991, 1994). This is in contrast to the earlier Bell Beaker period, where we occasionally find a series of points with no traces of use deposited in the graves. These points formed part of a highly structured set of burial gifts, shared by communities living at a distance to each other, referring to communal values rather than individual ones.

Other burial gifts of flint in Bronze Age barrows consist of occasional unretouched flakes and strike-a-lights. The former have not been studied for traces of wear so far. The fact that strike-a-lights constitute one of the few distinct flint artefacts displaying long term use in settlement contexts suggests that they too can be interpreted as personal items that could subsequently be deposited in the grave. Not enough systematic research on the strike-a-lights from burial context has been done to make a comparison between those from settlements and those from graves. If indeed the flint grave goods from the Bronze Age are linked to the identity and past life of the deceased, as is argued here, the presence of a strike-a-light in a grave might indicate a special position of the deceased such as was argued for the Middle Neolithic case of Schipluiden (Van Gijn *et al.* 2006; Gijn & Houkes 2006).

Special Deposits

The daggers

Flint objects in which much skill and knowledge was invested, have also been found in special contexts. Although most special deposits during the Bronze Age involve metal objects (Fontijn 2002), there are two types of flint implements whose find circumstances suggest that we may be dealing with special deposits as well: daggers and sickles. The daggers are made of northern, non-erratic flint and were produced in specialized workshops of individual craftsmen in Denmark, from 2350 until about 1500 BC (Apel 2001). They are distributed across large areas of north and west Europe (Barrowclough 2004). In the Netherlands 131 have been reported, for the most part of Lomborg type I, II and III (Beuker & Drenth 1999, 2006; Bloemers 1968)(figure 5). Very few of these are found in datable context but it seems that the type I is associated with the late Bell Beaker culture, type II to the transition of the Bell Beaker and Barbed Wire (Early Bronze Age) culture, while type III daggers are clearly dated to the Early Bronze Age. Types IV-VI are dated to the Middle Bronze Age, but are very rarely found in the Netherlands and will be left out of consideration for the purpose of this paper. It should also be noted that the chronology of the daggers is also a matter of debate in Denmark (for a dis-

Figure 5. Photograph of Scandinavian dagger (photograph Quentin Bourgois).

cussion of this issue, see Apel 2001). As we find no production waste in the Netherlands, it is likely that they were imported as finished products.

A total of twelve Scandinavian type daggers were examined for traces of use, one of which was not interpretable. Two daggers, a type III and a type VI, did not display any traces of wear but had been treated with ochre prior to their deposition. Nine daggers display very curious wear traces: a polish resembling the wear that results from contact with siliceous plants, but with a rougher texture more like polish obtained from cutting hide or mineral material (figure 6). This type of polish is located all along the edges but is also found far into the piece, on the ridges. The polish displays a very strict directionality being oriented parallel to the long axis of the implement. Unlike a tool used to cut plant or hide, the direction of the polish does not follow the shape of the cutting edge but is strictly parallel to the long axis on all surfaces and edges.

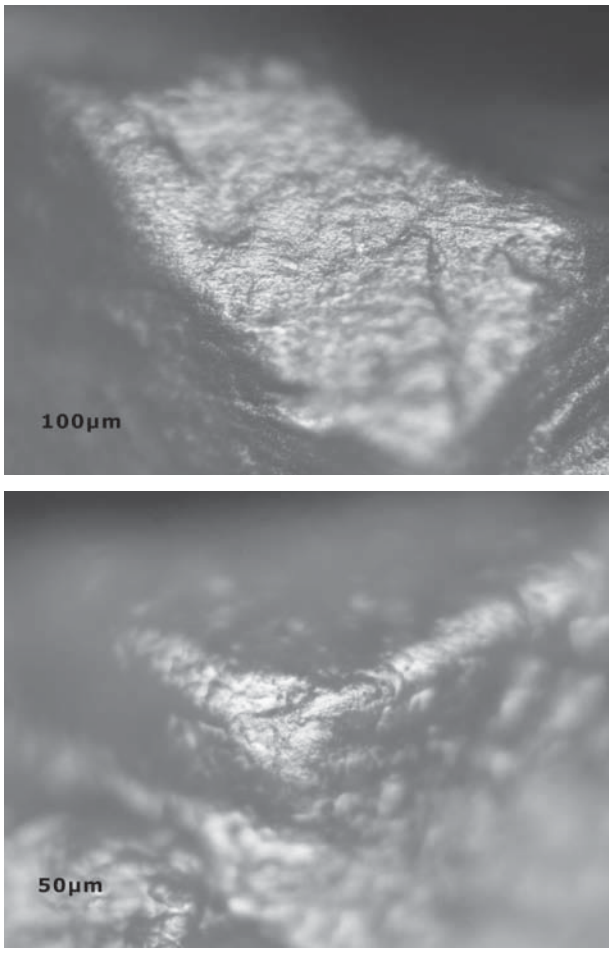


Figure 6. Wear traces seen on the Scandinavian daggers, both of type III, oriented longitudinally and resulting from frequent contact with a sheath probably made of a combination of hide and plant fibres (orig. magnif. 200x). A) "hide-like" polish. B) "plant-like" polish.

Seven of the daggers with wear traces also revealed hafting marks. Four of these, all of them type III daggers, were hafted in hide. It should be noted that the type III daggers are characterized by a handle with a seam, applied by means of the punch technique. This seam may simulate the handle of a metal dagger around which a leather sheath was stitched (Callahan 2006). Type III and IV daggers in particular are basically *skeuomorphs* of metal counterparts; and it has been suggested that they were produced in order to compete with metal look-alikes.

At first sight the daggers seem to have been used to cut plants. However, if they had been used for this purpose, use polish would have been best-developed on the edge and gradually fading out towards the interior. The daggers in question also display polish far away from the edge on the interior ridges, and the density on the edge is quite limited. Therefore, I interpret these traces as resulting from contact with a sheath woven of plant material or of a combination of plant and hide. The implement must have been pulled in and out of this sheath numerous times to account for the development of the wear traces.

It is remarkable that the daggers did not display evidence of having performed utilitarian tasks. Apparently, even a long distance from their original production centre, it was clear to their new owners that these tools had to have a special life, that they were sacred and not to be used for mundane tasks. An interpretation as display item, to be taken out of the sheath on special occasions, is therefore not too far-fetched. However, the social and ideological context in which these daggers were displayed is difficult to substantiate. In order to come to some understanding, it may be useful to contrast the Scandinavian daggers with the earlier daggers of French Grand Pressigny (GP) and Romigny-Léhry flint.[2]

The French daggers were made on long blades that were retouched along the sides and often ground on their dorsal surface while the ventral

surface was left unaltered. They date to the later Single Grave Culture, from 2600 to 2450 cal BC. Great effort seems to have been made to avoid leaving any visible evidence of their production: the bulb of percussion was always absent; and percussion waves could only be detected with great difficulty, if at all. Following Helms ideas, it is conceivable that this absence of indications of human interference was intentional, and meant to stress the non-human origin of these exotic objects, thus establishing their link with the mythical ancestors (Helms 1988). The wear traces on these southern daggers are very similar to the ones on the Scandinavian daggers: a "plant-like" polish was found across the entire surface of the blade. This polish was not particularly well-developed along the edge, but was ubiquitous. The French daggers also show traces of hafting and were interpreted in much the same way as their later, Scandinavian successors, to be display items.

However, the archaeological context in which the earlier French and the later Scandinavian daggers were found is entirely different. This is most clearly visible in the province of Drenthe where the landscape is more differentiated and where there has been intensive archaeological research. Whereas the French daggers were exclusively found in burials[3], the later daggers of Scandinavian origin are almost never found in graves[4], but instead are located along rivers or near bogs, usually as single finds (figure 7). This pattern may suggest that the southern daggers were related to individual members of society, possibly belonging to an emerging elite, and that they symbolized the martial values prevailing in Single Grave society (Fokkens 1999). However, I would argue that this individual member of the elite was very much part of a larger society and may actually be considered a *dividual*, embedded in the larger society through social links (Fowler 2004). This can be deduced from the apparently very strict regulation of the burial package, indicating that it is not so much the identity of the individual that is referred to in the burial goods, but a position in the social fabric and, possibly, even the position of the community in the larger Single Grave universe. This position may be legitimized by reference to exotic objects like the GP dagger. These daggers may have been believed to embody special powers not present in ordinary, readily accessible objects, because they were made from a foreign raw material and with extraordinary skill. In many traditional societies, craftsmen are believed to be imbued with supernatural power, their skills and knowledge to have a cosmological origin and their trade to be some sort of magic (Helms 1988, 1993). This is supported in the prehistoric, Dutch archaeological record by the fact that the ventral side of the GP daggers does not show any technological information about the manner of production: there is no bulb of percussion and rings of percussion are very hard to see. GP daggers, because of their beautiful honey coloured material, also clearly have a foreign, and therefore mythical, origin. The powers inherent to these daggers are believed to be shared by those within local society who could display to a wider audience the objects of exotic origin, made by magical means, to which they had access or which they possessed. However, the exact social and ideological context in which this display of daggers may have occurred is difficult to specify.

In contrast, the later Scandinavian daggers which were deposited in marginal areas away from settled land[5] may have had significance for a larger social entity, without the intermediate intervention of a person with a special position in society. The fact that they were displayed numerous times, as well as being deposited in places not immediately related to the personal identity of a particular individual, supports the idea that they had a relatively "public" role: they were made for high visibility. However, again, the exact social and ideological context in which this display took place cannot be specified any further without much more detailed contextual evidence. For example, it is possible either that the context in which they were displayed was restricted to those initiated or that the display and deposition in a river or bog was actually related to the glorification of a particular individual; but I consider the latter less likely.

In this context, it is noteworthy to mention another feature of the distribution of the Scandinavian daggers: an apparent shift in depositional practice between the Bell Beaker period and the Early Bronze Age. Whereas the type I and II daggers are found at the edge of bogs and in river val-

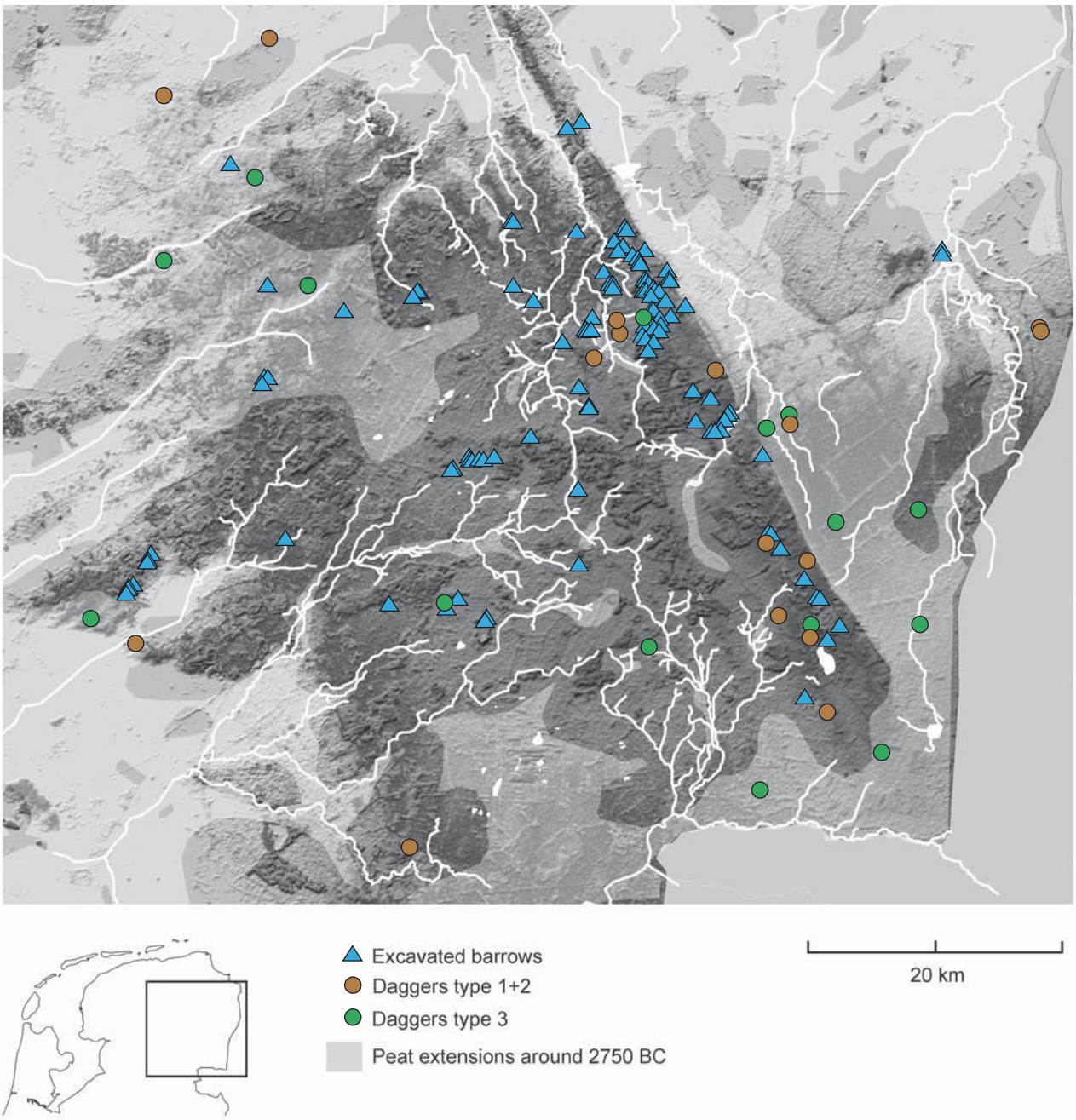


Figure 7. Distribution of the Scandinavian daggers.

leys, many of the type III daggers seem to be located further into the large peat bogs (figure 7). Although the edges of bogs and rivers can be designated liminal zones, that is, boundary areas between groups' territories or between the lived-in area and nature, the bog itself is beyond that: either a no-man's land or the territory of the mythical ancestors, spirits or gods. The deposition of Scandinavian type I and II daggers may possibly be compared to depositional practices during the Funnelbeaker period when large ceremonial axes were deposited in river valleys between the territories of different groups, indicating their affiliation not with an individual lineage or group but with the common mythical ancestors (Wentink 2006). The deposition of type III daggers, far into the uninhabitable bog, can be seen as a way to stress the communal nature of these items even more: they are not put in a boundary zone between communities, but in the very land of the spirits and the gods.

On the basis of their metrical properties, the Scandinavian daggers from Dutch territory have, for the most part, not become shorter through use and re-sharpening. This indicates that the daggers were made with a specific non-utilitarian purpose in mind. This observation lends further support to their interpretation as "special objects" that were not meant to have a utilitarian function and be used again and again. Instead, they were specifically made in order to be displayed and made visible to an audience to whom this display was relevant. It may well be argued that this display should be seen in the context of the extensive metal trade which linked far apart communities in Europe at this time. The presence of the daggers in the northern Netherlands may be seen as way to connect with long distance metal trade networks using easily accessible flint as an alternative, exotic raw material.

The sickles

The Dutch Late Bronze Age sees the import of yet another Scandinavian flint implement: crescent-shaped sickles made of high quality Northern flint originating from Helgoland (Beuker 2005). They date to the Late Bronze Age and Early Iron Age and have most frequently been found in the northern and western parts of the Netherlands (Van Gijn 1988, 1999; Groenman-van Waateringe & Regteren Altena 1961). So far 115 complete specimens and 65 fragments have been published. Of the complete implements a total of 32 have been studied for traces of wear (Van Gijn 1999). Several multiple depositions, composed of 3-5 objects, of these tools types have been found. Traditionally, these have been interpreted as travelling merchants' hoards; but, there are arguments to consider, at least some of them, as structured depositions. A famous example is the "hoard" from Heiloo, in the province of North-Holland, consisting of one metal and four flint sickles (figure 8). Whether we should interpret the occurrence of a single sickle as an intentional deposition is a matter for debate, but the fact that they were generally found outside settlements may support this idea. On the other hand, it can also be argued that they were lost in the places where they were used. The sickles were found mainly on the sandy higher grounds and only occasionally in the peat (figure 9). The broken fragments occur more frequently in settlement context and are often modified into other types of tools like scrapers. Apparently, when sickles were broken they could be recycled into domestic tools to be used and discarded in settlement

Figure 8. The hoard of Heiloo comprising four flint sickles and a bronze one (photograph by the Rijksmuseum voor Oudheden in Leiden).

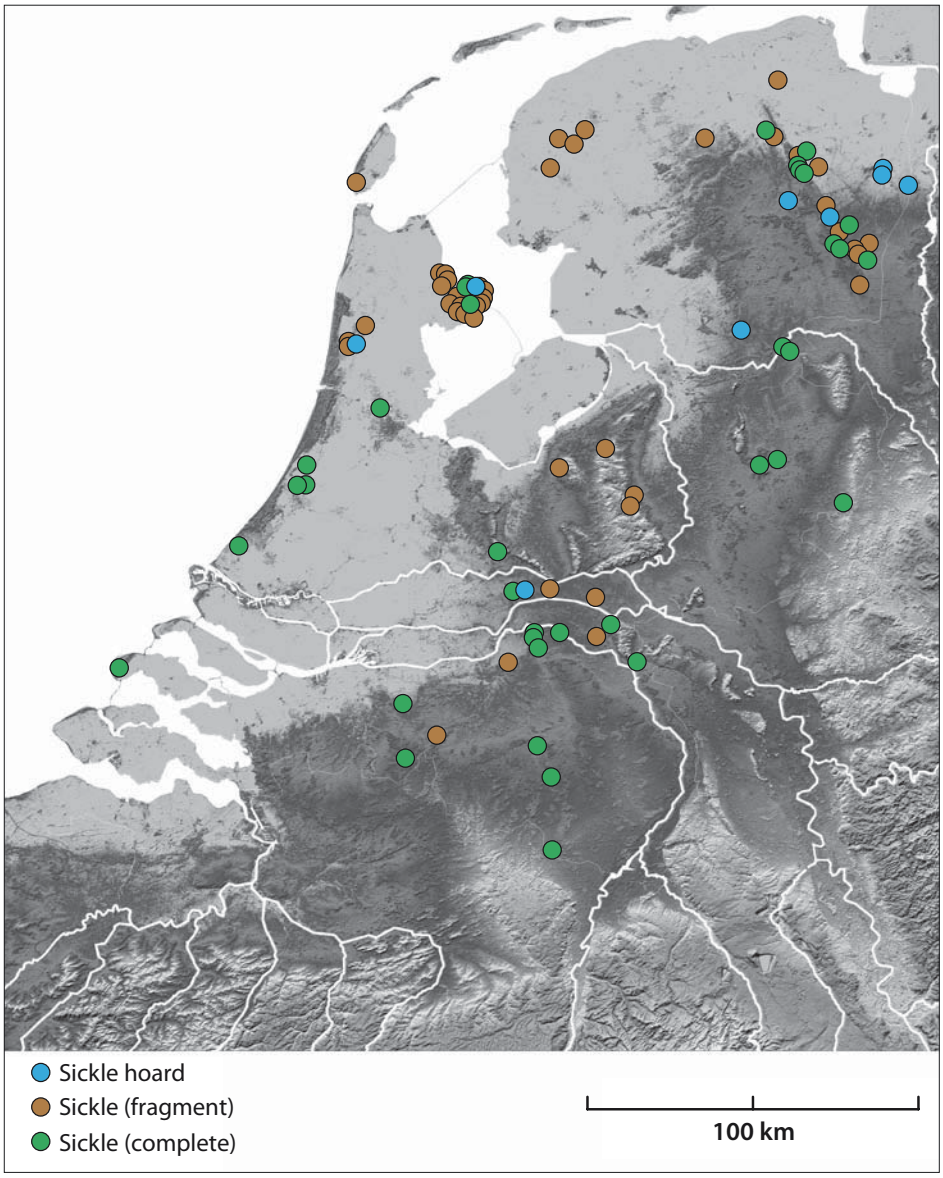


Figure 9. Distribution of the sickles.

contexts. For example, Niekus reports two sickle fragments that were re-used as strike-a-lights (Niekus pers. comm.).

As these tools display a very extensive gloss, commonly referred to as sickle gloss, and because of their crescent shape, they have always been classified as sickles and considered typically agricultural tools. Yet, the functional study revealed that most of them cannot have been used for harvesting cereals. Some of the edges are so blunt that they are 3-4mm thick. Randomly oriented striations abound, and the polish is matte and flat (figure 10). Experiments have shown that sickle gloss never extends further than c. 1.5 cm, at most, across the surface of the sickle. Also, you need to re-sharpen the tool for it to continue to be effective as a harvesting implement (Van Gijn 1988, 1999). One alternative explanation that was proposed in the past was a use as a coulter, a device mounted in a plough to cut through the vegetation cover for easier passage of the plough proper (Bruyn 1984). However, detailed use wear analysis has refuted this hypothesis. The fact that the use wear polish extends almost to the butt indicates that most of the tool came into contact with the soil. If only the very butt end had been hafted in a plough, the leverage pressure would have caused the tool to break. Also, the absence of clear hafting traces, and the fact that polish attributable to contact with soil is also

Figure 10. Wear traces seen on the sickle of Heiloo (orig. magnif. 100x).

located on the butt end, indicated that many of these tools were handheld. Therefore, we experimented with using them to cut sods, an activity that caused identical wear traces, and that was not at all hampered by the tool getting blunt (Van Gijn 1988, 1999).

Cutting sods may not have been such an unlikely task as it may seem to us. It should be remembered that sods provided essential building material for the houses of the living and the dead alike, in the tree- and stone-free landscape of the western and northern Netherlands. Barrows were erected with sods; and we know that, in any case, some of the Iron Age dwellings were made with sods as well, a practice that continued into historic times. However, the question remains as to why an object made by skilled craftsmen in a place far away, was selected for cutting building material. In this context, it must be mentioned that the classification of these tools as "sickles" is actually not totally unjustified as functional analysis of similar implements in Denmark has shown them to have been used for harvesting cereals (Helle Juel Jensen, pers. comm.). Clearly, the interpretation or meaning of these crescent shaped tools is different for the communities living in southern Scandinavia, compared with those living in our region: harvesting tool for one, a sod cutting implement for the other. However, plant working traces are also found on some Dutch sickles, suggesting that the typical crescent shape was perceived of as appropriate for harvesting. Still, whatever the motivation behind the choice of tool, I would contend that cutting sods may not be an inferior task at all, as it was involved in the construction of the houses for the living and the dead alike.

The significance of flint in Bronze Age societies

The present study shows that flint was still important in Bronze Age societies. It kept its utilitarian function in domestic activities for a long time, probably into the Iron Age (Niekus *et al.* 2001). However, little time and effort was put into the production of these domestic tools. People selected only easily accessible local flint of small size and of low quality, features that greatly limit the technological possibilities. Nevertheless, some tool types, notably scrapers and strike a lights, continue to be very distinct. Although not much use wear analysis has been done on Bronze Age settlement flint, results obtained so far indicate that certain formal tool types such as scrapers and strike-a-lights were used for a long time. Thus, curation was part of Bronze Age flint technology. It may be suggested that the scrapers were part of a personalized toolkit, to be kept and used over a long period. The same may have applied to strike-a-lights. The presence of broken and used arrowheads in settlement contexts indicates that they may have been retooled there (Van Gijn 1983; Van Gijssel *et al.* 2002). As flint points also end up in Bronze Age burials, sometimes with use wear traces, they too were probably personal items. The fact that the less formalized implements display traces from a range of activities, including bone and wood working, further supports the notion that flint all but lost its utilitarian significance in the technological system.

However, despite the fact that flint continued to be widely used, most flint tools were no longer invested with stylistic information, and had lost their role in the constitution of social identity. As Edmonds expressed it, they were "no longer caught up in the maintenance or negotiation of social categories and interests" (Edmonds 1995). Although, clearly, pottery had superseded flint millennia earlier as a material category for

expressing social identity, flint had long maintained its significance in this respect because foreign raw materials could be imported, linking the local group to wider exchange networks. Considering the treatment these exotic objects usually received in the course of their use life, it is clear that these long distance contacts, made tangible by this exotic flint, were extremely important for maintaining the social and ideological fabric of these Neolithic groups (Van Gijn *in prep.*). This continued throughout the Middle Neolithic. However, in the Late Neolithic, these long distance contacts started to be limited to the import of very specific flint implements, produced by far away skilled craftsmen and imported as finished products. As we have seen above, this process continued into the Late Bronze Age.

The importance of flint objects as burial gifts seems to have greatly diminished in the Bronze Age. For the most part, we find single arrowheads that are difficult to interpret, as they may not be grave goods at all, but the buried individual's cause of the death. Exceptions include the few instances of multiple points, like in the famous Middle Bronze Age barrow of Drouwen and the barrow of Eext, where the arrowheads clearly were the result of intentional deposition. I have argued above that I would interpret these arrowheads as personal items, symbolizing and commemorating the achievements of the buried individual.

However, flint did play a part in the long distance exchange networks that were so important in Late Neolithic and Bronze Age society. Flint from diverse sources looks very different; and it is to discern whether a flint object has an exotic origin. Long distance exchange of characteristic flint objects, like the GP dagger, must be seen in the context of an ever intensifying trade in metal, starting with the incidental scraps of copper in Funnelbeaker contexts. The later Scandinavian daggers are most likely inspired by metal counterparts that became increasingly available in southern and central Europe. Thus, Scandinavian flint daggers can be seen as an attempt to use relatively easily accessible flint as a prestige item in competition with metal objects (Apel 2001). This is most apparent in the Early Bronze Age varieties of the dagger in which morphological characteristics of metal daggers are copied in flint (Callahan 2006). The wear traces from frequent display observed on the Scandinavian daggers, can be seen from the perspective of visibility: only when shown to a relevant audience is it possible to demonstrate the exotic origin of the flint object, thus supporting and validating the place of the local society in a wider European setting that relied on long distance exchange networks. It is by the very visibility of their exotic origin and skilful manufacture that these flint objects can compete with metal items. The fact that their life ended in special places indicates that these tools had a very important social and ideological role in the local community, possibly linking them with a cosmology relevant to a much wider society.

It is often proposed that the introduction of metal made flint tools obsolete. In the long run, this is true as, by the Iron Age, flint hardly plays a role anymore, at least not in the Netherlands. Moreover, from the Late Neolithic onwards, we see a steady decrease in the number of flint items recovered from archaeological sites. This is often connected with the introduction of metal as a general category. However, I would argue that it is the ready availability of iron that pushed flint into oblivion, not so much copper or bronze. This is clear from the observation that flint continued to be used for domestic tasks throughout the Bronze Age, and only lost its utilitarian significance with the introduction of iron. However, the introduction of metals certainly had an effect on the significance of flint objects as prestige items; and this is very much related to the importance of the metal trade across Europe. Since flint can be obtained from far away locations, and therefore acquire mythical properties, it constituted a viable alternative to bronze in the maintenance of the long distance social networks that seem to have been so important for Bronze Age society at large. In this sense, it may be proposed that the introduction of metal not so much caused the demise of flint technology as it initially resulted in the very opposite: the rise of highly skilled craftsmen who produced some of the finest flint items ever made in prehistory.

These beautiful objects played an important role in the ideology of Bronze Age communities and gave them a role in wider exchange networks. It was only with the beginning of the Iron Age that flint lost both its utilitarian and ideological significance.

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Notes

1. Obviously, easily accessible eluvial flint or moraine outcrops may, by this time, have been completely depleted, leaving only the inferior raw material.
2. It is not always easy to differentiate between these two types of flint (Polman 1993) and in the context of this paper both types of flint will hereafter be referred to as "French" or "GP" daggers.
3. There are some fragments of French daggers from settlement contexts, but they are always modified into other types of tools such as scrapers.
4. One Scandinavian dagger was found in a secondary burial in the barrow of Eext, Visplaats (Mun. of Anloo, in the province of Drenthe)(Waterbolk 1964).
5. Fragments of Scandinavian daggers are occasionally found in settlement contexts.

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