

THE BELONGINGS OF A BELL BEAKER SMITH? A STONE HOARD FROM HENGELO, PROVINCE OF GELDERLAND, THE NETHERLANDS

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Abstract: This paper discusses a pit in which 23 stones were discovered during the excavation of a cover sand ridge at Hengelo, province of Gelderland, the Netherlands, in 2007. In all likelihood it concerns the isolated deposition or hoard containing (part of) the belongings of a smith dating to the Bell Beaker period. Amongst the stones are two cushion-stones and a hammer with two polished short ends. They have been interpreted as metal-working tools that served as anvils and percussion instrument respectively. Copper and gold traces, revealed by neutron activation analysis, on the cushion-stones and a whetstone support this theory.

Key words: Bell Beaker Culture, the Netherlands, stones, metal-working tools, neutron activation analysis, copper and gold traces, deposit

1. Introduction

During an excavation at Hengelo (toponym Elderinkweg), province of Gelderland, the Netherlands, a remarkable pit was discovered in the autumn of 2007 by the Dutch archaeological company ADC ArcheoProjecten (*Fig. 1*).

The feature (no. 35 in trench 3) contained 23 closely packed stones, among which were two anvils and a hammer(-stone) for metal-working. Although it has been published already three times, we have decided to present the Hengelo find once more. Our motives are various. Firstly, two of the previous publications, albeit of a detailed character, are in Dutch (*Drenth et al. 2009; Drenth – Williams 2011*). Their content may therefore escape the attention of many colleagues due to language barriers. Though this is not the case in the third study (*Drenth et al. 2013*), this English overview of stone metal-working implements from the Netherlands is far from comprehensive. Only the main characteristics with respect to the Hengelo discovery have been given. Lastly, the present paper offers us the opportunity to make small corrections on previous works and dwell once more on the Hengelo find.

Our paper has been structured in a ‘classical way’. This means that first the ‘raw’ data will be presented and that subsequently their interpretation is the point of focus. Accordingly, we start with the description of the pit containing the stones, followed by the presentation of the stones themselves with respect to typology, raw material and provenance. The focus is then on their dating. The next section deals with the interpretation of the Hengelo find, on the basis of the contextual evidence, the pit, the position of the stones within this feature and their intrinsic properties. The final section tries to answer the questions “Who did the stones belong to?” and “Why did they end up in a pit?” A catalogue presenting the stones individually in terms of metric and non-metric traits and contextual particularities completes the paper.

2. The pit

There is some uncertainty about the dimensions of the pit with the stones. In the field it was documented as a sub-rectangular feature, having a maximum length and width of c. 1.8 m and 1.6 m respectively. An assessment of the photographs of both the horizontal and vertical sections indicates the presence of two features, however. The 23 stones were lying in a pit with a brown homogenous infill containing no charcoal. Judging from the photographic evidence,



Fig. 1. Location of the site (marked by an asterisk).

the feature had horizontal dimensions of c. 1 x 0.5 m at most. The second, older feature had a distinctively different fill as it was heterogeneously coloured. Moreover, it was rich in charcoal. The pit with the stones had a remaining depth of c. 0,15 m. Judging from a nearby profile it must have been originally c. 0.4 m. The field drawing shows that the item lay c. 0,1 m above the bottom of the pit. One of photographs confirms that they were indeed not resting on the bottom.

3. The stones

3.1 General remarks and typology

Already at first glance the weathered state of most of the stones is noteworthy. The reasons behind this are unclear. Presumably it is due to chemical weathering, as the stones were surrounded by soil rich in humus. Contact with fire may also be a possibility, though evidence thereof in the form of discolouration and cracks has only been observed in two instances (cat. nos. 14 and 17)

Of the 23 lithics recovered 18 specimens display traces of working. With the help of works by *Beuker (1990)*, *Brandt (1967)*, *Butler – Van der Waals (1966)*, *Drenth – Kars (1990)* and *Hahn (1991)* the latter can be subdivided typologically as follows (*Fig. 2*):

- a non-flint stone axe with a rectangular cross-section or *Fels-Rechteckbeil*, variety A (width < half of the length) with a rectangular outline as viewed from above (cat.no. 3);
- a hammer-stone with two polished short ends (cat.no. 19);
- three hammer-stones (cat. nos. 6, 7 and 12);
- two cushion-stones (cat. nos. 1 and 2);
- two arrow shaft smoothers (cat. nos. 4 and 5);
- six to seven whetstones (cat. nos. 8, 9, 14, 18, 20, 22 and 23);
- one or two rubbing stones (cat. nos. 10 and 15).

In addition, a burnt lump of sandstone was found (cat. no. 17; *Fig. 2*). The remaining stones (*Fig. 2*) consist of macroscopically unworked and unused stones: two pieces of flint, a sandstone and a Révinien quartzite (cat. nos. 11, 13, 16 and 21).

3.2 Raw material and provenance

Table 1 lists the rock types from which the various artefacts, as far as typologically classifiable, have been manufactured. It should be pointed out that these petrological determinations were all made by naked eye or with the help of a binocular or a magnifying glass (maximum magnification 10x). Without exception it concerns rock types that can be found locally or regionally. They can be recovered from clay boulder outcrops, having been deposited at the time of the Saalian, or from its erosion product, boulder sand. This supposition is reinforced by the presence of an unworked flint nodule rich in bryozoans fossils (cat. no. 13). The material is regarded a variety of 'northern flint' (*Beuker 2010*, Chapter 1; see in this connection also *Högberg – Olausson 2007*) and illustrates the transportation of lithics to the Netherlands from Scandinavia during the Saalien. At that time the land ice reached up to roughly (the present course) of the river Rhine (*De Mulder et al. 2003*, 200–203, *Fig. 131*). As a consequence, bryozoan flint occurs within the northern and central Netherlands, where Hengelo is situated, in boulder clay and its erosion product, boulder sand. Hälleflinta, of which the hammer-stone with the two polished ends is made, is another example of a northern erratic, having its origin in Sweden (*Hellinga 1980*, 176, Pl. 49). One of the stones, showing no traces of human working or use, is a Révinien quartzite (cat. no. 16). Though the primary occurrence of this rock type is to be found in the Ardennes (*Hellinga 1980*, 198, Pl. 60), boulders and pebbles of this material are known from a secondary of tertiary geological context in Meuse and Rhine deposits (see for example *Van Straaten 1946*, 31). In other words, Révinien quartzite – sometimes written without the accent – is not foreign to the province of Gelderland and the Hengelo specimen may therefore have been collected locally.

	amphibolite	basalt/dolerite	diabase/dolerite	flint	granite	hällefrinta	quartzite	quartzitic sandstone	sandstone
arrow shaft smoothener	-	-	-	-	-	-	-	-	2
cushion-stone	-	1	1	-	-	-	-	-	-
<i>Fels-Rechteckbeil</i>	1	-	-	-	-	-	-	-	-
hammer-stone	-	-	-	1	-	-	1	-	1
hammer-stone with polished short ends	-	-	-	-	-	1	-	-	-
rubbing stone	-	-	-	-	(1)	-	1	-	-
whetstone	-	1	-	-	(1)	-	-	-	5
unburnt and unworked stone	-	-	-	2	-	-	1	-	1
unworked stone, with traces of burninig	-	-	-	-	-	-	-	-	1

Table 1. Petrological overview of the stones from Hengelo. In brackets are the numbers of uncertain instances.

4. Dating

There are good reasons to assign the Hengelo find to the Late Neolithic Bell Beaker Culture (further abbreviated as BBC), which dates in the Netherlands to between roughly 2400-1900 BC (*Lanting – Van der Plicht 1999/2000*, 36–42, 81–95; cf. *Lanting – Van der Plicht 2001/2002*, 138–139, 152–153). One of the arguments in favour of such date is the typological composition of the assemblage. In particular, the presence of three metal-working implements, the two cushion-stones and the hammer-stone with two polished short ends, is of significance. In a pioneering study, *Butler – Van der Waals*

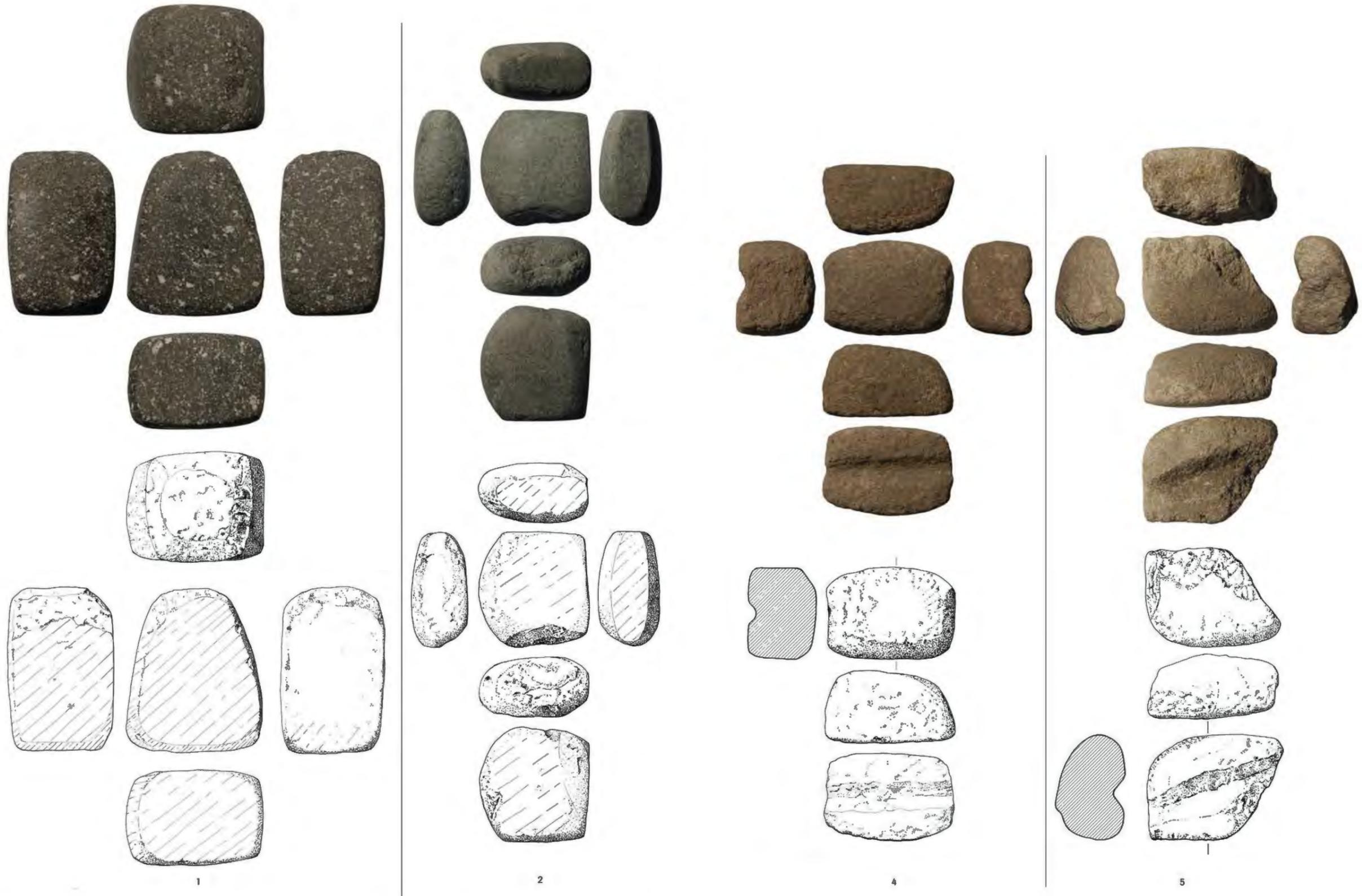


Fig. 2 (part 1). The artefacts from the Hengelo hoard. The numbers correspond to the ones in the catalogue at the end of this paper. This also holds for macroscopically unworked and unused stones.

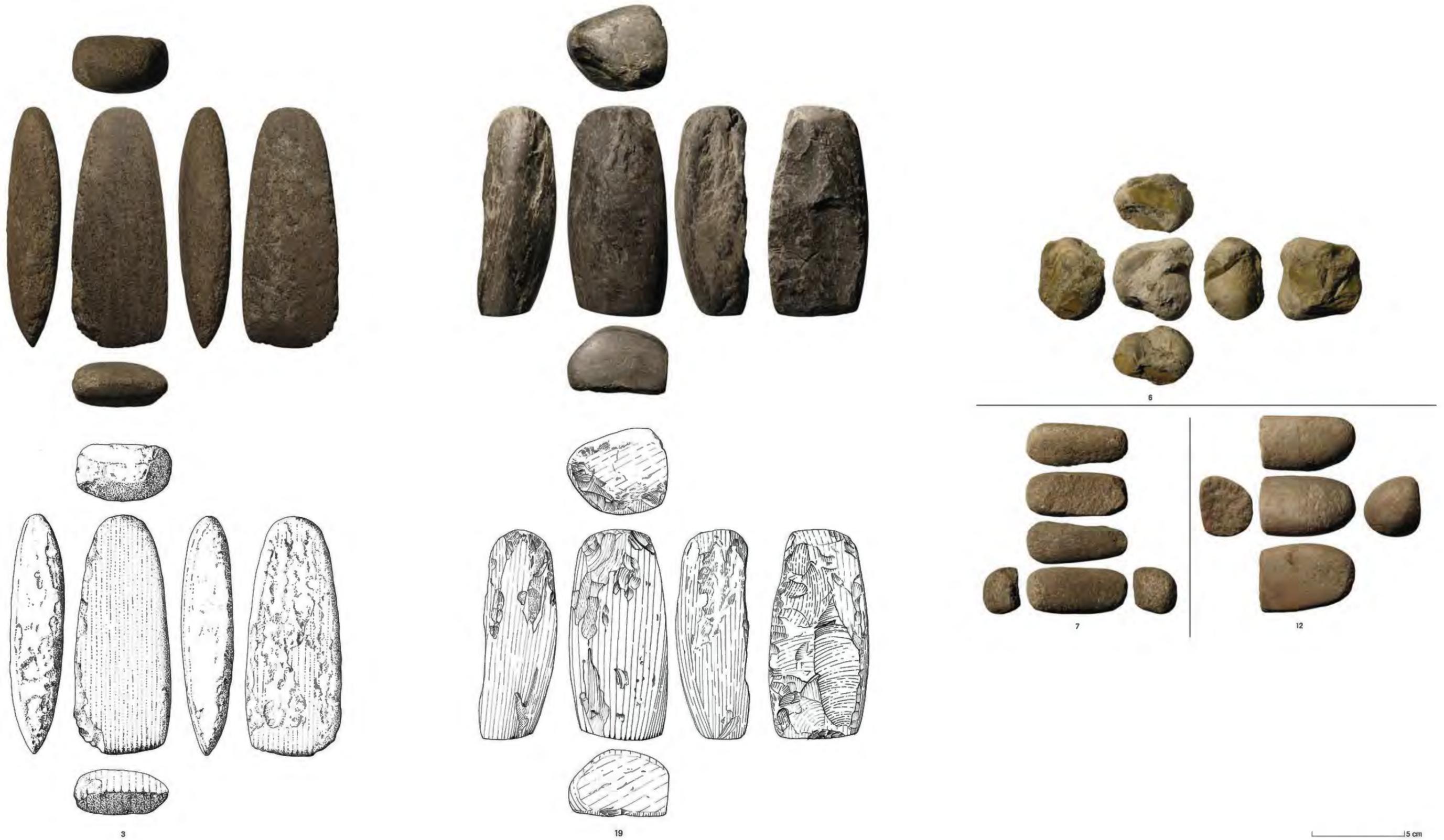


Fig. 2 (part 2).



8



20



23



9



14



18



22



10

Fig. 2 (part 3).

10 cm

5 cm



Fig. 2 (part 4).

(1966) associate such tools from the Netherlands to the BBC. Their standpoint is based in discoveries at Lunteren-estate 'de Valk' (province of Gelderland) and at Soesterberg (province of Utrecht). The former is a grave inventory encompassing four stone metal-working tools including a whetstone, a copper awl, a stone bracer or wristguard, two bell beakers, flint arrowheads and a flint axe. The Soesterberg find, a grave gift set from a barrow or a hoard, includes apart from three metal-working implements two boars tusks, a stone wristguard and presumably a bell beaker. Discoveries since have not seriously challenged Butler & Van der Waals' hypothesis. Indeed they seem to support their theory as illustrated by for example a cushion-stone from Ermelo in the province of Gelderland (Metz 1975). It concerns a surface find which was accompanied by pottery, mainly from the Early Bronze Age (c. 1900-1575 BC; Lanting – Van der Plicht, 2001/2002). At the location fragments of Beaker pottery (in any case a bell beaker fragment and presumably also a fragment of a Single Grave Culture beaker) were also found. A precise date therefore cannot be given, though judging from the associated ceramics, it must be within the range of Late Neolithic and Early Bronze Age. Near Eext (province of Drenthe) a cushion-stone and a hammer were recovered by an amateur archaeologist on a field lying about 1 m from one another (Drenth – Freudenberg 2009). Apart from the two metal-working tools the location yielded numerous artefacts, several of them from the BBC or Early Bronze Age, the most noteworthy being a worn down and therefore lozenge-shaped Scandinavian dagger of type I. The picture emerging from the afore-mentioned finds is that cushion-stones and hammer-stones, like the ones from Hengelo, are related to the BBC. Discoveries elsewhere in Europe reinforce this idea. They show that stone metal-working tools are frequently encountered in this cultural context, though not exclusively (e.g. Bátorá 2002; Freudenberg 2006; 2009; Moucha 1989; Müller 1987; Needham 2011; Schwarz 2008, 92ff).

Typologically, the other artefacts from Hengelo do not contradict the attribution of the assemblage to the BBC. Of these the arrow shaft smoothers and the axe with the rectangular cross-section are the most striking. The formers have parallels from BBC near the Uddelermeer, a lake in the province of Gelderland (tumulus E; Holwerda 1911), and at Meerlo-Postbaan, province of Limburg (Verwers 1964). The *Fels-Rechteckbeil* has Dutch counterparts dating to the Middle and Late Neolithic (Schut 1991, 24–25, cf. Brandt 1967, 146–148). A specimen was for example recovered together with a bell beaker and a hammer-stone made of an axe fragment from a BBC pit – a grave? – at Schipborg, province of Drenthe (Van der Waals 1962, 236 (56), Fig. 23). According to Brandt's typology the axe of Hengelo belongs to variety A. Such an axe was recovered from a barrow on the Elspeetse Heide, province of Gelderland, alongside with a stone wristguard and a bell beaker (Elzinga 1964, 14–15, 18, Fig. 14: 4, 6A-B). Together they may constitute a BBC grave inventory (cf. Schut 1991, 25), though Elzinga suspects that the axe belongs to the preceding Single Grave Culture.

Thanks to scientific analyses copper and gold traces were discovered on three of the stone objects (see below). These findings are in line with what was known about the kind of metals worked during the Bell Beaker period in the Netherlands (see in this connection Butler & Van der Waals 1966; Drenth et al. 2011; cf. Moree et al. 2011, 69–70, Fig. 36).

The Late Neolithic date of the above also finds support in a ¹⁴C date of a charcoal sample from the pit intersected by the feature containing the stones. The result, 3755 ± 40 BP (Ua-36482; 2σ calibration with OxCal 4.2: 2289-2111/2104-2036 BC), fall neatly within the chronological range of the BBC. This date is a terminus post quem for the secondary pit and thus for the deposition of the lithics. Judging from the afore-mentioned chronological evidence probably little time elapsed between the digging of both features. Moreover, the two pits were lying at the same spot and other Late Neolithic features and artefacts were not encountered in Hengelo. The chronological proximity and spatial coincidence therefore suggest that the location of the older pit was very well known to the person(s) who constructed the feature with the stones. Accordingly, we do not rule out the possibilities that the former was marked above ground and that both features were sunken into the ground by one and the same person or persons. It should furthermore be emphasised that nothing indicates that the features and their contents have anything to do with the Iron Age settlement remains at the Hengelo site. In other words, the chance that the 23 stones represent Late Neolithic objects which were re-used and/or buried during the Iron Age is negligible.

To conclude this section, the assignment of the lithic assemblage from Hengelo to the BBC can to some degree be further endorsed by pointing out the overall distributions of Bell Beaker metal-work and stone metal-working tools from the Netherlands (Fig. 3–4). As previously noted by Butler – Van der Waals (1966), they show clusters in the centre of the country. Hengelo is no great distance from these concentrations.



Fig. 3. Distribution of BBC metalwork (daggers, awls, a bracelet and a Schleifennadel, all in bronze or copper, and golden ornaments) from the Netherlands. Only certain instances have been included, with the exception of a copper lump from Barendrecht (Carnisselande, site 3) and Wageningen. The latter finds belongs either to the BBC or the Early Bronze Age. 1 = Barendrecht, 2 = Wageningen, 3 = Beers-Gassel, 4 = St. Walrick, 5 = Odoorn, 6 = Eelde, 7, 8, 12-15 = various sites in the Ede-Lunteren region (Ede-Ginkelse Heide, -de Kwekerij, -Lettense Berg and Lunteren-Lunterse Berg, -Lunterse Heide and -estate 'de Valk'), 9 = Bennekom, 10 = Stroe 11 = Vaassen, 16 = Hilversum, 17 = Laren, 18 = Nieuw-Milligen. No. 1 is located in the province of Zuid-Holland, nos 2, 4, 7-15 and 18 in the province of Gelderland, no. 3 in the province of Noord-Brabant and nos 5 and 6 in the province of Drenthe. The map has been compiled after data from Butler - Van der Waals, 1966; Drenth et al., 2013; Drenth - Hogestijn, 2007; Lanting - Van der Plicht, 1999/2000; Lanting - Van der Waals, 1976; Moree et al., 2011, several of them with further references.



Fig. 4. Distribution of stone metal-working tools (cushion-stones and hammer-stones). 1 = Eext, 2 = Ede-Manen, 3 = Ermelo-Ermelose Heide, 4 = Hengelo, 5 = Lunteren-estate 'de Valk', 6 = Roekel, 7 = Soesterberg, 8 = Speuld, 9 = probably Wieringermeer (southern part), 10 = Mildert, 11 = Oudemolen; 12 = Kessel. Nos 1 and 11 are located in the province of Drenthe, nos 3-6 and 8 in the province of Gelderland, no. 7 in the province of Utrecht, no. 9 in the province of Noord-Holland and nos 10 and 12 in the province of Limburg. After Drenth et al., 2013 (with further references and additions).

5. Interpretation

The interpretation of the Hengelo stones is open to debate. However a plausible reading is that of a deposit or hoard of (mainly) a smith's toolkit buried in a dry context. We have arrived to this conclusion, after having examined four aspects: a) the context, i.e. the environmental setting and the presence of other archaeological remains in the neighbourhood, b) the characteristics of the pit from which the stones were recovered and c) the position of the stones within the pit and d) the stones themselves. The following presents our findings with respect to each of these components.

5.1 The context

The pit under consideration came to light in a zone containing few features and other archaeological vestiges (Fig. 5). It had been sunken into a cover sand ridge. As mentioned above, no other features were found that can be assigned to the Bell Beaker Culture. Inhabitation at the spot by this culture therefore is unlikely.

The environment was such that unburnt organic material in the pit, if originally present, would not have survived.

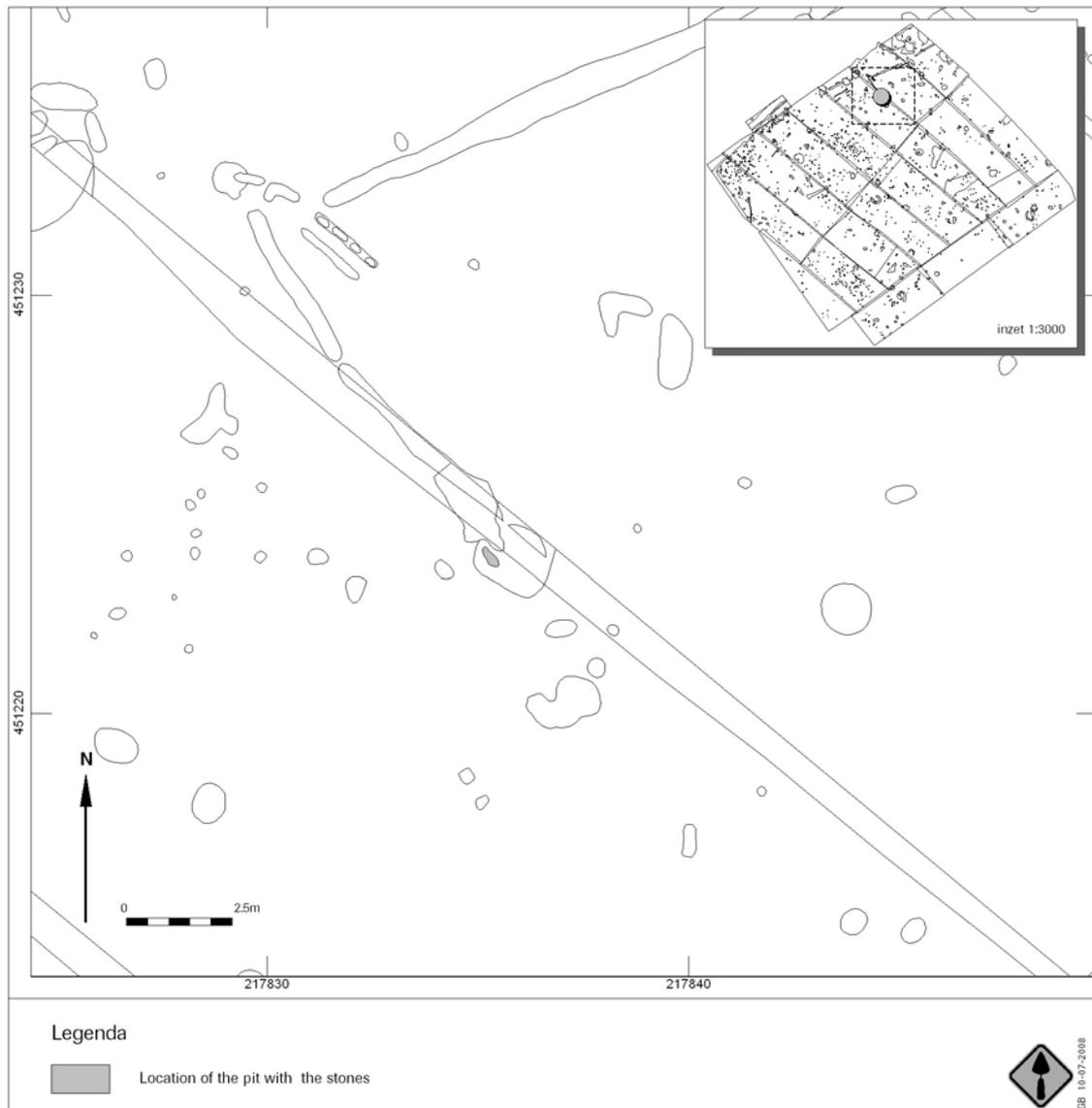


Fig. 5. The location of the pit with 23 stones (marked in grey) within the excavation. Other features, including a recent ditch, are indicated with black lines and a white infill.

5.2 The pit

Above it was already noted that this feature was small, its length and width respectively c. 1 and 0.5 m at most. An interpretation as a grave pit in which an articulated corpse had been interred, seems unlikely, despite the fact that the BBC used to bury their deceased in a crouched position (*Beuker et al. 2001; Lanting – Van der Plicht 1999/2000, 41–42; Lanting – Van der Waals 1976*). In addition, the grave hypothesis loses substantially in likelihood due to the presence of the stones. They covered a considerable portion of the pit, horizontally an area of c. 0.6 x 0.3 m, leaving no room for even a ‘crouched burial’ unless it concerned an infant. In our opinion an interment of this kind is far from likely. Although direct evidence from the Netherlands is lacking, finds from abroad indicate that within the BBC across Europe stone metal-working tools were as grave gifts reserved for adults (e.g. *Bátora 2002; Bertemes et al. 2000; Fitzpatrick 2011; Moucha 1989*).

Another possibility is that the find from Hengelo represents the burial of disarticulated human bones, the lithics being the grave gifts. We find this view equally unconvincing. There are practically no examples of such graves for the BBC in the Netherlands. Only the sites Ottoland-Kromme Elleboog, province of Zuid-Holland (*Lanting – Van der Plicht 1999/2000, 91–92; Louwe Kooijmans 1974, 312, Appendix III: no. 37*) and tumulus G4 at Niersen (province of Gelderland) can be mentioned; the latter grave is either of BBC or Single Grave Culture age (*Bourgeois et al. 2009*). Striking

is that these two graves contained the bones of two and three individuals respectively. Apart from disarticulated bones they have each produced an articulated skeleton of someone interred in a couched position. It goes without saying that if the Hengelo pit would have been a double or multiple burials it would in all probability have had larger dimensions. In conclusion, from an assessment of the length and width follows the possibility that the Hengelo pit is a grave is far from plausible.

5.3 Position of the stones

The stones were strongly packed within the pit. In other words, they were concentrated on an area of c. 0.6 x 0.3 m. Strikingly, they were not lying on the pit's bottom but some cm above it. This suggests their interment in some kind of organic container.

With the help of photographs the position of the majority of the stones within the pit could be reconstructed (*Fig. 6*). In several cases it was even possible to recognise on which side or face they were laying. This holds not true for the stones with the cat. nos. 1, 2, 4, 9, 10, 13, 14, 17 and 21. Unfortunately both the cushion-stones are not among them. Besides, the exact position of the axe is a point at issue, since during the investigation the object has been relocated. That is why it seems that the axe was lying somewhat apart. However there is a photograph taken of a relatively high excavation level indicates the opposite. We therefore assume that all stones were deposited within the same organic container.



Fig. 6. Location of the stones within the pit on different levels, seen more or less from the South. The numbers in the photograph refer to the ones in the catalogue.

Apart from the axe, the photographs do not indicate a significant rearrangement or relocation of the stones during the excavation for the sake of shooting photographs. Accordingly, the large grinding stone was lying with its main grinding surface upwards, covering a number of tools. With certainty these were the cat. nos. 12 and 16. As far as deducible, the whetstones (including the fragment of a possible rubbing stone) had their (major) work surface, or to put it differently grinding surface, facing downwards. This suggests a careful placement in order to protect them from getting damaged. At first glance the large grinding stone appears to have been an exception to this rule, as its main work surface was lying upwards. However on further investigation the position of the grinding stone reinforces the theory of a deliberate and careful placement. Since there were several stones lying underneath the large grinding stone – which in itself may be taken as a measurement for protection - the major grinding surface was thus better spared from being scratched, pitted etc.

The above is clearly indicative of a carefully arranged deposition. The afore-mentioned observations and deductions allow for a reconstruction of the deposition. Though alternatives cannot be completely ruled out the following scenario appears to us to be the most likely:

Step 1: The digging of a pit, in a relatively high and dry environment.

Step 2: An organic container was placed into the pit.

Step 3: The stones were inserted into the container, the work faces of the smaller whetstones laid downwards.

Step 4: The large grinding stone was deposited with its main grinding face upwards over other stones.

Step 5: The pit was filled in.

5.4 The stones themselves

A closer look at the stones themselves reveals that they may once have been the possessions of a BBC smith. Indicative are first of all the two cushion-stones and the hammer-stone with polished short ends. As already noted such tools are related to metal-working, in particular copper and gold (inter alia *Bátora 2002; Bertemes 2004; Bertemes et al. 2000; Butler – Van der Waals 1966; Freudenberg 2006; 2009; Moucha 1989; Müller 1987*). In the 1960's Butler – Van der Waals (1966, 72) had several of such finds from the Netherlands subjected to x-ray fluorescence analysis in order to detect metal traces, however without positive results. Like these scholars we think that this is likely to be due to weathering. After all, analysis with REM/EDX of a hammer-stone in *Amphibolitschiefer* from grave 1 at Zwenkau (Saxony, Germany) has revealed minuscule metal flakes, consisting of silver and copper, gold and silver (*Conrad 2009/2010, 72*). A similar find was made in grave 9 at Künzing-Bruck (Bavaria, Germany). In this instance a fragmented axe with a dulled edge had been used as a hammer for metal-working, as attested by copper and gold traces found by REM/EDX (*Bertemes 2004, 148; Bertemes et al. 2000, 58*). Traces of gold were also found on an axe with a blunted edge from Turovice, Olomouc region, Czech Republic (*Bertemes – Heyd 2002, 216–217; Schwarz 2008, 94*). To conclude this issue, both cushion stones from Groß Sarau (Kr. Herzogtum Lauenburg) in Germany show traces of metal on one side respectively. The REM-analysis executed by GEOMAR Technologie GmbH in Kiel revealed traces of copper, sulphur and even iron. The conclusion is, however, that there is no definite proof of ancient metal-working. All traces show sulphide minerals and might therefore be secondary deposits, they could originate from the surrounding soil (*Freudenberg 2009, 343–344*).

In order to see if they were indeed related to metal-working, six artefacts from Hengelo (cat. nos. 1, 2, 8, 9, 19 and 20) were subjected to neutron activation analysis, among them the three supposed metal-working tools. Traces of copper and gold were encountered on the two cushion-stones and on the whetstone with cat. no. 9 (Pernicka in: *Drenth et al. 2009*). Like the above mentioned implements from Künzing-Brück and Zwenkau the use of these artefacts was apparently not confined to one specific kind of metal. Be this as it may, remarkably metal traces were not discovered during the subsequent analysis of the three stones from Hengelo with REM/EDX. Nonetheless, the scientific analyses may be taken as an indication that the cushion-stones had served for metal-working. However, it is questionable whether they had the function that Pernicka ascribes to them on the basis of the afore-mentioned analyses. Since the copper and traces on these items could only be detected by neutron activation analysis – clear metal residue has not been observed – he (*Ibid.*, 87) suspects both items to have been hitting instruments rather than implements for grinding or polishing. The former activities would have left considerably more metal traces, in the form of scratches and stripes. Experiments carried out by the second author (*Freudenberg 2009*), however, suggest that the amount of metal residue is largest in the instance of the hammer-stones. They were followed by anvils, while whet- or grinding stones – used in a wet condition in third place. The experimental-archaeological observations are in line with the findings as regards to the whetstone with cat. no. 9. The scientific analysis does not indicate clear metal concentrations such as scratches and stripes, though the neutron activation analysis hints at raised copper and gold values. Nonetheless, we are reluctant to accept this whetstone as a confirmation of the experimental-archaeological results. The object shows signs of weathering, which may have caused a distortion. This suggestion seem to be backed up by the fact no metal traces whatsoever were observed on the hammer-stone, despite displaying clear use wear.

Instead of the function as suggested by Pernicka we consider the two cushion-stones from Hengelo to have been anvils. Most probably they were fixed into a wooden block, as indicated by a Swiss find from a lakeside dwelling of the lac de Neuchatel near Auvèrner (*Gross 1883, Pl. 6: 17*). Both the shape and the surface treatment of these stones are adapted to their use as anvils. They are polished to a high degree, as pits, scratches etc. on the work surface would leave their marks on the metal to be worked; the same holds for hammer-stones deployed in metal-working. Both from an aesthetical as well as an economical point of view this is far from desirable. The cushion-stones, as the ones from Hengelo adequately illustrate, display either faceted or rounded edges. In metal-working they have a crucial advantage over non-faceted edges making a 90° angle. In the case of serious damage to the rim zones, due e.g. to a mishit with a hammer-stone, a reparation is much easier to carry if the anvil has faceted or rounded edges. Experiments by the second author show that such problems are really overcome if the sides and faces constitute an angle larger than 110°.

It will come as no surprise that not every stone is suitable to make adequate metal-working tools of. The raw material should be tough, hard and easily to be polished or smoothened. The Dutch finds meet these demands, as they are usually made of quartzite or a closely related rock (see for more information *Drenth et al. 2013*). A substantial portion of these implements are made of a specific variety of quartzite Zement-Quartzit. *Butler – Van der Waals (1966, 71)* comment upon

its properties that it concerns an extremely tough kind of stone that is very consistent against heat, which makes it very suitable for the manufacture of hammers and anvils. The examples from Hengelo fit these requirements. The two cushion stones are in diabase/dolerite and basalt/dolerite respectively. Both rock types are tough and mechanically strong (Beuker *et al.* 1992, 10–11 (114–115)). In addition, they are hard and their surface can be made very smooth. Hälleflinta, of which the hammer is made, has properties comparable with Zement-Quartzit. It is relatively hard, though not as tough as e.g. diabase (*pers. com. Prof. Dr H. Kars*). The rock type is therefore vulnerable, as is exemplified by the hammer from Hengelo. Due to internal fractures it was no longer usable (see below under cat. no. 19).

As indicated by the neutron activation analysis the whetstone registered under cat. no. 9 must have been used for the processing of metal; what the function of the small cup on one of the sides in this process was eludes us. The question arises if the other whetstones and more generally the remainder of the Hengelo lithics were also related to metal-working. If so, we would possibly be dealing with the toolkit of a smith. No undivided positive answer can be given, but there are some hints in this direction. Firstly, the *Fels-Rechteckbeil* is not necessarily to be regarded a tool for wood-working, such as tree-felling. The axe is made from amphibolite, a rock which combines hardness and toughness (Beuker *et al.* 1992, 10–11 (114–115)). The axe may have been a blank for a metal-working tool, be it an anvil or a hammer. Such a transformation is illustrated by the already mentioned hammer from grave 9 at Künzing-Brück (see in this connection also Hundt 1975). Another example is a hammer from Soesterberg, which is made of an axe with an oval cross-section (Butler – Van der Waals 1967, 68, Fig. 14: 7507). From Nahe (Schleswig-Holstein, Germany; Freudenberg 2010, 25, Fig. 4) comes a battle-axe of the Funnel Beaker Culture has been remodelled into a metal-working tool. To take a polished axe or battle-axe as a blank for a metal-working tool has the major advantage that less time has to be invested in shaping and smoothening. This is underlined by the fact that it took about 80 hours to produce the cushion-stone with which the second author has conducted several experiments (Freudenberg 2009).

With respect to the whetstones, they may all have been metal-working implements. Alternatively, they, or at least a part of them, together with the ‘regular’ hammer-stones played perhaps a crucial role in the maintenance and reparation of the anvils and hammers used in metal-working. By pecking and grinding the damage which the stone metal-working tools had suffered during use could be undone. The hammer- and whetstones could render the cushion-stones and hammer smooth and free of imperfections, of the utmost importance if one wants to leave the metal with as few as possible marks.

According to Bertemes – Heyd (2003, 217) some of the arrow shaft smoothers from a BBC context were possibly tools for metal-working, to be more precisely grooved anvils (*Rillenambosse*). The two specimens from Hengelo do not offer a decisive answer, as they have yet to be analysed scientifically for metal traces. But their rough surface as opposed to the finely polished cushion-stones raises in any case doubt about this suggestion. At present we therefore assume they were implements for the smoothening of arrow shafts. The coarse texture of the raw material, sandstone, supports this theory. The two arrow shaft smoothers are therefore an indication that not all of the stone tools in the Hengelo hoard need to be linked, either directly or indirectly, with metal-working. The same holds for the burnt piece of sandstone, the unburnt and unworked lumps and the one or two rubbing stone fragments.

6. Who and why

Although not each and every stone from the Hengelo find can be related to metal-working, we hold the view that these items were most probably mainly or exclusively the belongings of a BBC smith. This claim implies that they were once (partly) possessed in all likelihood by an adult male.

From the BBC graves with preserved human skeleton material known from central, eastern and northwestern Europe, including the British Isles emerges the overall picture that axes, arrow shaft smoothers and metal-working tools, all of them in stone, were typical male attributes (e.g. Bátorá 2002; Brodie 2001; Clarke 1970, volume 2, Appendix 3.3; Fitzpatrick 2011; Moucha 1989; Schwarz 2008). With one grave the contribution to that picture by Dutch discoveries is very limited. Nonetheless, this grave inventory from a barrow at Meerlo-Postbaan in the province of Limburg is keeping with findings abroad. Cremation remains of a 44–65 years old man have been found accompanied by amongst other things two arrow shaft smoothers in stone (Van der Beek 2004, 170; Verwers 1964).

It should be noted that presumably not the entire toolkit of a smith had been buried at Hengelo. In carrying out expe-

riments it was discovered that the presence of only one hammer sets clear limits to metal-working (see in this connection *Freudenberg 2009*). That is why we suspect that usually a BBC smith was equipped with a series of hammers, their weight having a wide range and the working edges being of different shapes.

We can only guess at the why of the deposition. The far majority of the implements show clear use wear (*Table 2*). But this does not imply they were discarded through deposition, because the tools were worn-out. In our opinion no less than eleven specimens were still usable for the same tasks as before (*Table 2*). By contrast, in the case of five to six tools a prolongation of their function was out of the question or unlikely. Several artefacts seem to have been deliberately fractured (*Table 2*). Moreover, one of the ‘non-usable’ stones is burnt. Earlier on we have pointed out the careful way in which the (possible) rubbing stones and whetstones had been placed, presumably to minimize the risk of the work surfaces getting damaged. The fact then that a number of the tools were no longer viable as working tools is striking. It is therefore hardly imaginable that the Hengelo hoard was one with a temporary character, i.e. that the stones were buried with the intention to pick them up later. The meticulous placement of the (possible) rubbing stones and smaller whetstones, for whatever reason, bears witness to a respectful treatment of the items. This is reinforced by the large grinding stone placed on top. What puzzles us is the presence of five stones (including a burnt specimen) without any traces of working. Two of them, both in flint, are of such a bad quality that they are unsuitable to the making of tools.

Type (cat. no.)	Used?	Still usable for the same function?	Recycled (from tool to tool)?	Deliberately damaged?
arrow shaft smoother (no. 4)	probably yes	yes	no	no
arrow shaft smoother (no. 5)	probably yes	?	no	possibly yes
axe (no. 3)	?	yes	no	no
cushion-stone (no. 1)	yes	yes	no	no
cushion-stone (no. 2)	yes	yes	no	no
hammer-stone (no. 6)	yes	yes	no	no
hammer-stone (no. 7)	yes	probably not	no	probably not
hammer-stone (no. 12)	yes	yes	no	?
hammer-stone with polished ends (no. 19)	yes	no	no	no
rubbing stone (no. 10)	yes	no	no	probably yes
rubbing stone? (no. 15)	yes	yes	no	possibly yes
whetstone (no. 8)	yes	yes	yes	?
whetstone (no. 9)	yes	yes	probably yes	?
whetstone (no. 18)	yes	no	no	probably yes
whetstone (no. 20)	yes	yes	no	no
whetstone (no. 22)	yes	yes	yes	probably no
whetstone (no. 23)	yes	no	no	?
whetstone? (no. 14)	yes	no	no	no

Table 2. Overview of the artefacts from Hengelo in terms of use, usability, recycling and deliberate damage.

7. Acknowledgements

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Appendix 1 Catalogue

To elucidate the catalogue, the following remarks should be made:

Unless otherwise stated, fractures are ancient. Cortex refers to the natural surface in the widest sense of the word.

The greatest length equals the length axis of the object or an axis running parallel to it. The largest width and thickness are the greatest distance perpendicular to the former distance in the horizontal and vertical plane respectively.

As far as possible, the original position of the fragment was taken as the point of departure in measuring broken artefacts.

Gr. l. = greatest length, gr. w. = greatest width, gr. th. = greatest thickness and w. = weight.

No. 1: A complete cushion stone, seen from above trapezoid, on cross-section rectangular with slightly rounded off/faceted edges; unburnt. Gr. l.: 8.3 cm. Gr. w.: 6.8 cm. Gr. th.: 5.1 cm. W.: 624 g. Rock type: Diabase/dolerite. Description traces of working and/or use: All six faces and sides smoothed to polished (locally lustre), with the exception of a weathered short end, the 'top' of the trapeze. Eight of the twelve edges are rounded off or faceted, having a width of 0.4-1.2 cm. Neutron activation analysis points to the presence of copper and gold traces attached to the surface. Position within the stone concentration: Unknown. Particularities: Most probably the larger part of the surface was originally lustrous and polished, but due to weathering it has been degraded.

No. 2: A complete cushion stone; seen from above practically square; on cross-section rectangular with convex sides; unburnt. Gr. l.: 5.8 cm. Gr. w.: 5.5 cm. Gr. th.: 3 cm. W.: 185 g. Rock type: basalt/dolerite. Description traces of working and/or use: The upper and lower face are slightly convex; they are smoothed. Two of the smaller sides, constituting together an angle of over 90°, are somewhat lustrous and therewith polished. Directly adjacent are two oblique facets (width up to 1.6 cm) on both faces. On one of the edges, from the transition of the upper face to one of the small sides, hammering marks or damage are present over a length of 2.3 cm. Traces of pecking are visible on two of the small sides. Copper and gold traces have been detected by neutron activation analysis. Position within the stone concentration: Unknown. Particularities: Weathered, originally without doubt polished lustrously.

No. 3: A (practically) complete *Fels-Rechteckbeil*, variant A (according to the typology by *Brandt 1967*, 140-143); unburnt. Gr. l.: 12.9 cm. Gr. w.: 5.2 cm (at c. 2 cm from the edge). Gr. th.: 2.8 cm. W.: 324 g. Rock type: Amphibolite. Description traces of working and/or use: Apart from weathered parts (see below) ground to polished surface. Position within the stone concentration: In any case part of the stone cluster; see the text. Particularities: Weathered; recent damages near the edge, on one of the short sides and on one of the faces.

No. 4: A complete arrow shaft smoother; seen from above sub-rectangular with convex long sides; on cross section bowl-shaped; on the upper face runs centrally though slightly obliquely runs a groove (bowl-shaped in cross-section; c. 1.2-1.3 cm wide and c. 0.3 cm deep). Gr. l.: 6.6 cm. Gr. w.: 4.4 cm. Gr. th.: 3.5 cm. W.: 161 g. Rock type: Sandstone (coarse-grained). Description traces of working and/or use: Pecking traces across the entire outer surface, the flat face including the groove smoother than the remainder, possibly because of use. Position within the stone concentration: Unknown. Particularities: Weathered; small recent damages.

No. 5: A broken arrow shaft smoother, presumably about one fifth missing; seen from above rectangular though broken off obliquely, one of the long sides being straight, the other convex; in cross-section bowl-shaped with one straight side; on the upper face runs centrally though obliquely a groove (width 1.2-1.6 cm; depth 0.3 cm); unburnt. Gr. l.: 6.4 cm. Gr. w.: 5.2 cm. Gr. th.: 3.5 cm. W.: 151 g. Rock type: Sandstone (coarse-grained). Description traces of working and/or use: Both faces are smoothed, with splintering offs on the lower face. The groove displays traces of pecking. Position within the stone concentration: Lying in the W, NE-SW oriented, the pointed part of the fracture pointing to the NE; the grooved face upwards. Particularities: Possibly a part of one of the sides has been struck off. From the fracture downwards runs a flake negative; small recent damages; weathered impression.

No. 6: A complete, more or less subrectangular hammer-stone, locally covered with abraded cortex; unburnt. Gr. l.: 5.2

cm. Gr. w.: 4.9 cm. Gr. th.: 3.5 cm. W.: 93 g. Rock type: Flint. Description traces of working and/or use: About 60% of the surface covered with hammer marks, present both on the faces and sides. Position within the stone concentration: Lying in the SE, the larger, rounded knob pointing to the E. Particularities: —

No. 7: A damaged long-oval hammer stone with a more or less D-shaped cross-section; unburnt. Gr. l.: 5.5 cm. Gr. w.: 2.4 cm. Gr. th.: 2.4 cm. W.: 49 g. Rock type: Sandstone. Description traces of working and/or use: Traces of hammering cover both short ends (in total about 5% of the surface). A flake negative runs along over the object's entire length; its origin is probably due to use. Position within the stone concentration: Found in the SW; NW–SE oriented, lying on one of its sides. Particularities: In view of the splintering off probably refuse.

No. 8: A complete (?) grinding stone – in the opinion of drs. K. Wentink a quern, however – with concave upper face, the opposite face divided by nearly central rib (length 15 cm, width 4.4 cm and thickness 0.8 cm) into two parts. One of them is concave, the other irregularly wavy; unburnt. Gr. l.: 34.4 cm. Gr. w.: 16.8 cm. Thickness in the middle: 2.9 cm. Thickness near the rim: 4.7 cm. W.: 2689 g. Rock type: Sandstone. Description traces of working and/or use: The central part of the upper face, an area of c. 26 x 9.5 cm is nicely polished (modestly lustrous), the remainder is less polished (only partially lustrous). Occasionally this face displays traces of pecking, particularly the periphery. Along one of the edges a sharp transition from polished to pecked is discernable. The upper face also shows more or less parallel grinding traces. These scratches run parallel or slightly obliquely to the object's length axis. A central rib, partially polished (modestly lustrous) and partially covered by pecking traces, divides the opposite face more or less into two halves. One half is concave, showing a weakly developed lustre and traces of pecking. The other part is irregular and partially matt glossy, its entire surface furthermore displaying pecking traces. Position within the stone concentration: Recovered from the eastern section, the object NW–SE oriented. The main work surface was facing upwards. The grind stones covered various other stones. Particularities: Possibly parts of the whetstone have been deliberately broken off, since the rim displays impact points. The circumference has further been partially worked, judging from flake negatives; this side shows also two small recent damages. It possibly concerns a grinding stone that was manufactured from a larger, recycled grinding stone. The object is too thin to roughen.

No. 9: A whetstone, seen from above sub-rectangular, one short end frayed due to a fracture; on cross-section (sub-)rectangular; unburnt. Gr. l.: 8.2 cm. Gr. w.: 3.8 cm. Gr. th.: 2.8 cm. W.: 159 g. Rock type: Basalt/dolerite. Description of traces of working and/or use: Both faces are smooth for the greater part. Presumably they were originated polished, but due to weathering the faces have degraded. Examination with a magnifying glass shows scratches that can be related to grinding. Longitudinally the upper face is convex, the opposite face flat. A similar distinction is shown by the long side. When hit by floodlight both sides shine up locally, which indicates that the crystals are polished. The long sides as well as one of the short ends display fine hammering marks, probably caused by pecking. The opposite short end is covered with several flake negatives and traces of hammering. Perhaps they indicate secondary use or the beginning of recycling. Be it as it may, they hint at the object being originally longer. Judging from the curvature the convex upper face has this must have been at least 9 cm. One of the sides shows a small cup (diameter c. 0.7 cm; deep c. 0.2 cm). Possibly concentric rills are visible inside, attesting perhaps drilling. By means of neutron activation analysis copper and gold traces have been detected. Position within the stone concentration: Unknown. Particularities: Weathered and several recent scratches.

No. 10: A fragment of a rubbing stone; seen from above D-shaped; unburnt. Gr. l.: 7.4 cm. Gr. w.: 3.2 cm. Gr. th.: 3.7 cm. W.: 134 g. Rock type: Quartzite. Description traces of working and/or use: Fine traces of pecking occur on the convex sides; the (practically) straight face is smooth, though locally showing fine traces of pecking. Position within the stone concentration: Unknown. Particularities: Most probably the object was shattered on purpose, as vestiges of an impact from aside are observable. Furthermore, there are two flake negatives starting from one of the fractures.

No. 11: An irregular broken nodule with frost fractures; partially covered with rounded-off cortex; unburnt. Gr. l.: 4.4 cm. Gr. w.: 3.1 cm. Gr. th.: 2.7 cm. W.: 29 g. Rock type: Flint. Description traces of working and/or use: No such traces are visible. Position within the stone concentration: Found in the centre, NW–SE oriented. Particularities: —.

No. 12: A broken more or less long oval hammer-stone met a D-shaped cross-section; unburnt. Gr. l.: 5.2 cm. Gr. w.: 3.4 cm. Gr. th.: 3 cm. W.: 91 g. Rock type: Quartzite. Description traces of working and/or use: Traces of hammering on a short end and the adjacent zone of the lower face (in total c. 10% of the surface). Position within the stone concentration: Presumably found in the E; NNE–SSW oriented, the fracture facing towards NNE. Covered by the grinding stone with cat. no. 8. Particularities: Uncertain whether the fracture originated haphazardly or is due to deliberate shattering.

No. 13: A flat piece with mainly frost fractures and a small remnant (c. 5% of the entire surface) of the cortex; more or less triangular in plan; unburnt. Gr. l.: 9.7 cm. Gr. w.: 8.3 cm. Gr. th.: 2.1 cm. W.: 163 g. Rock type: Bryozoan flint. Description traces of working and/or use: No such traces were found. Position within the stone concentration: Unknown. Particularities: —

No. 14: A fragment of a whetstone (?); burnt. Gr. l.: 1.9 cm. Gr. w.: 1.3 cm. Gr. th.: 2.5 cm. W.: 9 g. Rock type: Granite. Position within the stone concentration: Unknown. Description traces of working and/or use: Visible is a small, smoothed spot. Particularities: Heavily weathered due to heat, therefore also partially reddish discoloured.

No. 15: A fragment of probably a rubbing stone; seen from above about D-shaped; unburnt. Gr. l.: 9.4 cm. Gr. w.: 5.9 cm. Gr. th.: 4.4 cm. W.: 287 g. Rock type: Granite. Description traces of working and/or use: The upper face is smooth and practically flat with centrally an ancient damage (c. 0.5 cm across); furthermore on this parallel longitudinal grinding traces are found, occasionally ones running perpendicular. Position within the stone concentration: Found more or less in the centre, NE–SW oriented. Slightly slanting with the pointed end directed towards the NE, the work surface facing downwards. Particularities: Heavily weathered. Possibly shattered on purpose.

No. 16: A broken flat stone; unburnt. Gr. l.: 5.9 cm. Gr. w.: 5.7 cm. Gr. th.: 2.6 cm. W.: 136 g. Rock type: Révinien quartzite. Description traces of working and/or use: No such traces are visible. Position within the stone concentration: Found in the easternmost section; lying more or less flat on one of its faces (unclear which one); situated underneath the whetstone with cat. no. 8. Particularities: —

No. 17: A broken piece of stone; irregularly triangular in plan; burnt. Gr. l.: 8.2 cm. Gr. w.: 4.8 cm. Gr. th.: 4 cm. W.: 154 g. Rock type: Sandstone. Description traces of working and/or use: No such traces are visible, with the exception of burning. Position within the stone concentration: Unknown. Particularities: Contact with heat has caused several hair cracks.

No. 18: A fragment of a whetstone; unburnt. Gr. l.: 2.9 cm. Gr. w.: 6.9 cm. Gr. th.: 2.3 cm. W.: 82 g. Rock type: Sandstone. Description traces of working and/or use: The upper face is smooth to polished (as indicated by a lustrous spot, c. 1.5 cm in length near one of the short ends), displaying apart from traces of grinding hammer marks or ancient damages. Owing to fragmentation the course of the work surface is unknown. Both the lower faces and the sides are splitting surfaces. Position within the stone concentration: Found in the W; NE–SW oriented, the point pointing to the NE. The upper face or work surface was lying downwards. The artefact under consideration was partly on top of cat. no. 23. Particularities: In view of the splitting surfaces the artefact was probably shattered deliberately. The work surface is wavy, which indicates this face was not properly functioning (anymore).

No. 19: A complete hammer-stone; viewed from above rectangular with slightly convex sides; unburnt. Gr. l.: 11.3 cm. Gr. w.: 5.4 cm. Gr. th.: 4 cm. W.: 415 g. Rock type: Hälleflinta. Description traces of working and/or use: The upper face is completely polished (a mat lustre). The lower face worked from three sides (flake negatives), subsequently partially polished (c. 25% of the face). The ends are clearly convex and slightly convex respectively. Both are polished, displaying a (matte) lustre. The lower end is damaged, as indicated by flake negatives, measuring up to 2 mm, over an area of 2 cm in length. They continue on to the lower face, maximally to 0.6 cm. The sides are partially polished. Position within the stone concentration: Found in the E; NE–SW oriented; lying slanting on one of its long sides, the smaller of ends in the SW.

Particularities: The sequence of the various traces of fabrication and use wear can be reconstructed as follows. After the larger work surface had been damaged, a third to a quarter was removed longitudinally. Accordingly, two large flakes were struck off, their negatives reaching about half-way down the object. Subsequently stone was removed perpendicular to the object's length axis. Next, the retouched side was polished near the work surface, probably in order to repair it. Examination with a magnifying glass shows that the edge is friable and porous. Most likely the hammer was given up after that, as in its present state it will leave imprints on metal. To create a usable work surface the end must be shortened with at least 3 mm.

No. 20: A complete whetstone; sub-rectangular, with one convex long side, the other practically straight; rectangular in cross-section; unburnt. Gr. l.: 14.9 cm. Gr. w.: 6.6 cm. Gr. th.: 1.5 cm. W.: 323 g. Rock type: Sandstone rich in mica. Description traces of working and/or use: One of the faces, the upper face, is longitudinally slightly convex (with a difference in thickness of 0.1 cm at most), in the perpendicular direction flat. Visible are scratches that result from grinding. They have three main directions. One of them runs parallel to the object's length axis, the other two diagonally to this axis. The opposite face combines traces of pecking with smooth to polished (lustrous) spots. Of both faces the number

of mica spots is substantially lower on the upper one. This has been brought about by a more intensified use of the upper face leading to a loss of mica particles. Both short ends have been deliberately shaped convex by knapping and subsequently pecking. The long sides have been pecked, although a part of them is unworked. Possibly one of the short ends has been deliberately pointed by retouching. In addition, a small facet on one of the short ends is presumably due to rubbing. Position within the stone concentration: Found in the centre, lying obliquely; NW-SE oriented. Particularities: The upper face has been presumably used actively, the lower face passively.

No. 21: A fragment of a stone; unburnt. Gr. l.: 4.1 cm. Gr. w.: 3.6 cm. Gr. th.: 1.9 cm. W.: 38 g. Rock type: Sandstone. Description traces of working and/or use: No such traces are visible. Position within the stone concentration: Unknown. Particularities: Weathered.

No. 22: A stone with both hammer and grinding traces; a whetstone; in view of the modification of one and the sides unclear whether the object is to be regarded as complete; viewed from above sub-rectangular; on cross-section more or less rectangular; unburnt. Gr. l.: 6.9 cm. Gr. w.: 3.1 cm. Gr. th.: 1.8 cm. W.: 70 g. Rock type: Sandstone. Description traces of working and/or use: The work surface is convex, smooth to locally polished varying from matt glossy to bright and shiny; longitudinal scratches cover this face with the exception of the pecked rim. Traces of pecking, or rather damages, are furthermore locally present on the work surface. The opposite face is a plane originating from artificial flaking or natural splitting. Its rim is partially covered by flake negatives. In view of such negatives, one of the long small sides has been worked over a length of c. 4.5 cm as well. The remainder displays traces of pecking. The whole surface of the opposite long side shows similar traces. The same holds true for both short ends, both rounded. Position within the stone concentration: Found approximately in the centre, NNW–SSE oriented, the point covered with iron or manganese pointing to the NNW. The face with the grinding traces was lying downwards. Particularities: There is a good possibility that the whetstone was made of an originally larger artefact. Attached on one of the ends over an area of c. 1 x 1 cm is a brown substance, probably iron or manganese. The same material can be found near the opposite end (two spots, each several mm across).

No. 23: A fragment of a whetstone; seen from above more or less truncated triangular with due to a fracture an oblique base; rectangular on cross-section; unburnt. Gr. l.: 10.8 cm. Gr. w.: 5 cm. Gr. th.: 2.4 cm. W.: 190 g. Rock type: A sandstone rich in mica. Description traces of working and/or use: The upper face is smoothened to weakly polished, along the edges and on the surface traces of hammering, with particularly at the edges splinterings off (to be regarded as damages). The work surface is not flat, as indicated by two ‘thresholds’. A splitting surface represents the opposite, uneven face. Both the long sides as well as one of the short ends have been polished. The implement may have been shattered deliberately. Position within the stone concentration: Found in the W; W–E oriented, the point directed towards to the E and the work surface facing downwards. On top of the present whetstone another one (cat. no. 18) was lying. Particularities: Given the wavy appearance the work surface has the implement was not usable in its present state.

¹ In this connection we want to draw the reader’s attention to a publication by *Lauermann (2012)* about a grave (no. V3) of the Aunjetitz culture that was excavated at Geitzendorf (Gemeinde Großmugl, Austria) in 2008 or 2009. The title of this paper reads as “Das Grab einer Metallverarbeiterin aus dem Aunjetitzer Gräberfeld von Geitzendorf, Niederösterreich”. Nine stones were recovered from the grave containing the skeleton of a 45-60 years old woman, four of them interpreted by the afore-mentioned scholar (*Ibid.*, 28) as possible implements for metal-working (an anvil and three hammer-stones). Unfortunately we have not had the opportunity yet to study the Geitzendorf stones ourselves, but judging from the photograph depicting these objects (*Ibid.*, Fig. 3) Lauermann’s determinations are far from convincing. The four stones seem not to have so well smoothened and polished like the cushion- and hammer-stones from e.g. Hengelo. Instead, at least three of them display clear traces of hammering. Needless to say that to detect their function we recommend to investigate the Geitzendorf stones with neutron activation analysis, röntgen fluorescence etc.

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