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Two New Finds of Small Handaxes at the Mousterian Site at Peest

Abstract

Since 2007, at least three surface scatters of Middle Palaeolithic artefacts have been discovered at the site called »Peest«, near Assen (prov. Drenthe/NL). The largest scatter, »A«, produced at least 34 handaxes, and numerous other finds. Given the presence of relatively small, more-or-less triangular or »cordiform« handaxes and *couteaux à dos*, the site can be assigned to the *Moustérien de tradition acheuléenne* (MTA) type A with an estimated age of c. 50,000 years. Two recently found handaxes are described and illustrated in this paper. One of the handaxes was made by an experienced flintknapper, the second probably by an advanced learner. Scatter A has produced multiple examples of both well-made and somewhat defective handaxes, the latter probably made by Neanderthal children. The co-occurrence of masterly and clumsily made handaxes indicates that scatter A represents a »base camp«, where a group of Neanderthals including one or two youngsters resided for a while and engaged in a variety of activities.

Keywords

The Netherlands / Peest / Late Neanderthals / *Moustérien de tradition acheuléenne* (MTA) type A / experienced and apprentice flintknappers / children / base camp

The Site at Peest and the »Hondsrug Complex«

A great deal has already been published about the Middle Palaeolithic site, or more accurately: site complex, near Peest (prov. Drenthe/NL) (amongst others: Beuker et al. 2006; Niekus et al. 2008; 2009a; 2010; 2011; 2016; 2017; Johansen/Stapert 2012; 2016; Niekus/van Ginkel 2019). The site, in a large arable field (c. 800 m × 250 m), was discovered in March 2007. Before this, a handaxe had been found on a footpath running along the field (Beuker/Niekus 1994).

Like many Palaeolithic sites, this one is also situated on the brow of a valley flank: on the eastern side of the stream Oostervoortsche Diep, which further north joins the Peizerdiep. Nowadays the Pei-

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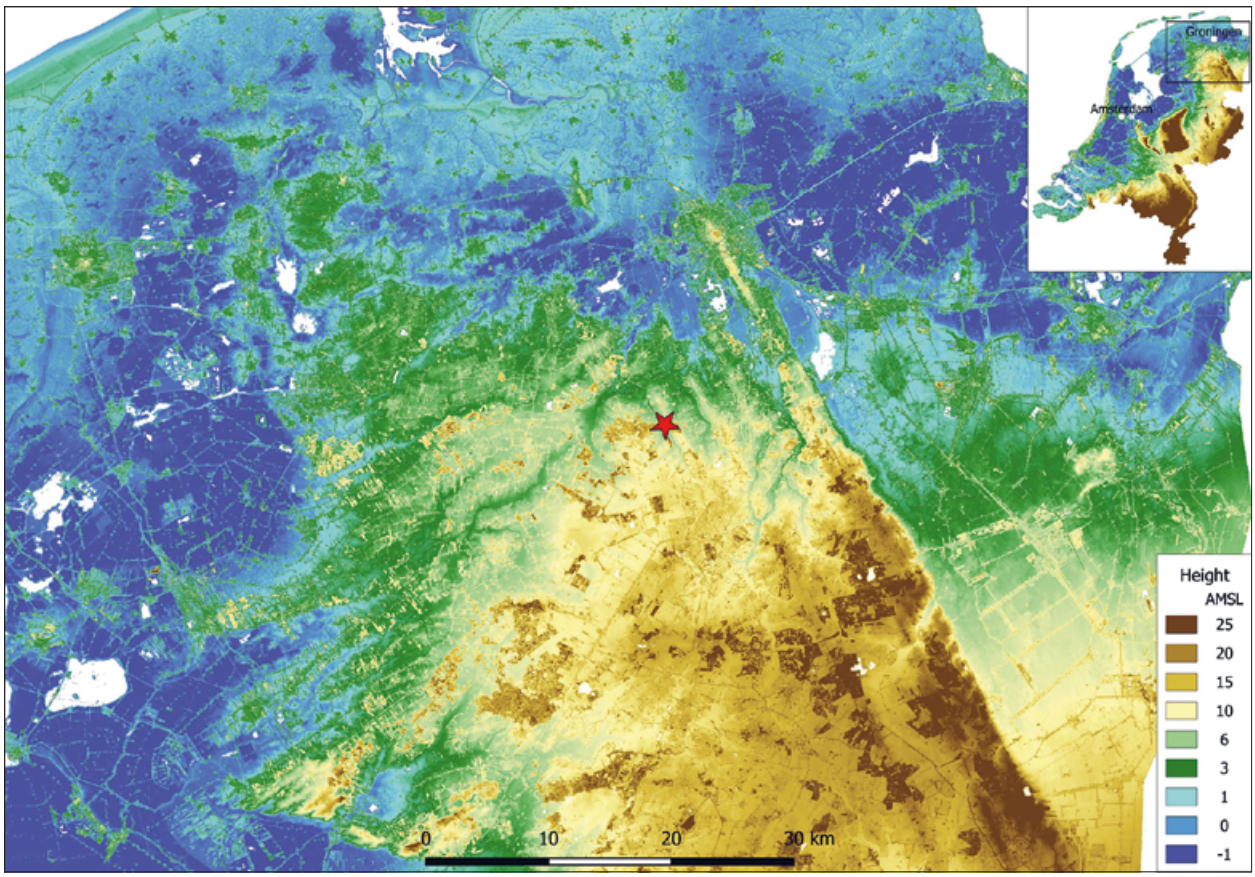

Fig. 1 Relief map of the Hondsrug Complex. The findspot at Peest, located on the Ridge of Zeijen, is indicated by an asterisk. In the north, the isolated Ridge of Zuidhorn-Noordhorn is just visible. – (Map J. Bongers, Wiertsema & Partners, Tolbert).

zerdiep flows into the canalised Aduarderdiep via the Koningsdiep at Hoogkerk. In the past the winding lower course of the Peizerdiep, known as Hunsinge, emptied into the Reitdiep somewhat further west.

The field lies on the western flank of the Ridge of Zeijen, a component of the »Hondsrug Complex«, now a UNESCO Geopark (see **fig. 1**). The Hondsrug Complex comprises five or six parallel, elongated morainic hills running NNW–SSE, which were formed by flowing ice during a late phase of the Saalian (Wolstonian/Riss) glaciation. (On the Hondsrug, see e. g. ter Wee 1979; Rappol 1984; 1992; van den Berg/Beets 1987; Bosch 1990; Niekus et al. 2016; Huisman 2003; 2024.) These near-linear ridges are nowadays interpreted as so-called megaflutes, a rare glaciological phenomenon which has recently been identified in Alaska and Antarctica (see e. g. Bregman/Smit 2012; Bregman et al. n. d.; Nauta/Bregman 2013; Oomen 2014; Huisman 2024). The parallel ridges were, according to this new interpretation, created by a rapid ice flow (possibly with a speed of over 2 m a day!) in the final phase of the Saalian ice cover. The deviating direction of this ice flow with respect to earlier phases is tentatively attributed to a »collision« between the English and Scandinavian ice caps in what is now the North Sea.

The easternmost ridge of this complex, the Hondsrug *sensu stricto* (s. s.), is also the most prominent, running from Groningen to Emmen over a distance of about 70 km. (Actually, in some areas this ridge seems to consist of a close-set pair of ridges.) Lying west of the Hondsrug s. s. we can distinguish (from east to west) the Ridges of Tynaarlo, of Sleen/Rolde, of Zeijen, of Zuidhorn-Noordhorn (actually a cut-off extension of probably the Ridge of Zeijen), and of Norg (the last one is not indicated on the map in Bosch 1990, fig. 2).

The Hunze valley east of the Hondsrug s. s. formed as a glacial valley during the Saalian, and in a later phase of that epoch carried meltwater northwards. Its filling comprises sediments dating from the Eemian, amongst others.

A geological map of the surroundings of Assen was published by Bosch (1990). The site at Peest is mainly located in a zone with coversand (dating from the Late Weichselian) less than 2 m thick, on top of layers of the Peelo Formation (dating from the Elsterian glaciation). In between an erosion remnant of the Saalian till has been preserved: the boulder

sand, and locally also a thin layer of till (boulder clay). Along the east bank of the Oostervoortsche Diep, coversand is locally present with a thickness over 2 m. (See for overviews of lithostratigraphy and chronostratigraphy of the Quaternary in the Netherlands: de Mulder et al. 2003; Busschers et al. 2025.)

Though not visible at the present surface, the Hondsrug s. s. does not end at the town of Groningen. In the north of the province of Groningen there is an isolated part of the Hondsrug covered by c. 2.5 m of marine clay, which is known as the »Hoog van Winsum« (Roeleveld 1970/1971; 1976), separated from the southern part by the river Hunze having breached the ridge between Groningen and Wetsinge. Neolithic finds have turned up in several exposures in the Hoog van Winsum. Here, boulder clay and boulder sand could be observed, occurring below several metres of marine clay, e. g. at the site of the pumping station »Tilburg« (prov. Groningen/NL) beside the stream Wetsingermaar, some 35–40 km to the NNW of Peest (Feiken et al. 2001; Raemaekers et al. 2011/2012). So far no Middle Palaeolithic artefacts are known from the area. In August 2024, G. R. Boekschoten and D. Stapert, visiting the home of H.-J. Streurman at Bedum (the discoverer of the site at Wetsingermaar), examined hundreds of flints from the railway tunnel at Winsum and other sites on the Hoog van Winsum that H.-J. Streurman had collected, but observed no artefacts. The location of the Hoog van Winsum suggests that the original length of the Hondsrug s. s. was at least 80–90 km.

As at Wetsingermaar, the isolated Hondsrug fragment (probably of the Zeijen Ridge) at Zuidhorn-Noordhorn (prov. Groningen/NL) also houses a large Neolithic site (Niekus et al. 2009). Here, however, a few artefacts dating from the Middle Palaeolithic also turned up, among which is a Levallois-like core (Stapert et al. 2012). This core was probably a workpiece of an apprentice flintknapper, examples of which we also know from the site of Peest. It is not unthinkable that the same group of Neanderthals that lived at Peest A for a while had also visited the area around Zuidhorn-Noordhorn, at a distance of some 35–40 km to the NNW of the Peest site.

Another large Neolithic site is present in the Wijert-Zuid (part of the town of Groningen), situated in the northern part of the Hondsrug s. s. (Fens et al. 2010). One or maybe two possible Middle Palaeolithic artefacts (flakes) were also collected here (Stapert 1980/1981). However, the artificial character of one of these is doubtful, and the determination of the other one as Middle Palaeolithic is uncertain.

The Hondsrug region, with its elongated hills and valleys in between, must have been an attractive habitation area during all Stone Age periods, not least because of the plentiful availability of flint and other types of stone. Given especially the Levallois-like core found at Zuidhorn-Noordhorn, we should not be surprised if H.-J. Streurman or one of his colleagues will pick up Middle Palaeolithic artefacts somewhere on the Hoog van Winsum in the coming years, in view of the fact that these two locations are comparable in several respects.

The Site Complex at Peest

In the field at Peest three Middle Palaeolithic find concentrations have come to light: first, the find-rich »handaxe concentration« (»Peest A«), yielding at least 34 handaxes; followed by the »workshop« with a lot of cores but lacking any notable tools except several side-scrapers and a few *couteaux à dos naturel* (»Peest B«); and finally a concentration containing among other things two or three semimanufactures of bifacial leaf points, and one or two preforms of handaxes (»Peest C«) (an article on this concentration is in preparation). Presumably the three concentrations (see **fig. 2**) represent three different Neanderthal camps. So far, there have been no refits that might indicate contemporaneity, but more work is necessary to be reasonably sure of this. Yet all three probably date from a late phase of the Middle Palaeolithic (probably dating from OIS 3).

It is unique for so many Middle Palaeolithic sites to occur in a single field. Currently we are surmising the possible presence of even a fourth concentration! Between the three clear concentrations quite a lot of stray finds also occur in the field, which (if resulting from ploughing activities and such like) cannot in all cases be confidently ascribed to any one of these. A thorough refitting operation might shed more light on this, but still has to be carried out.

From Peest A, 38 handaxes or handaxe fragments are known at present (22 picked up during field walking, 16 collected during the excavation in 2011). Eight handaxe fragments could be refitted with other fragments, resulting in four more or less complete handaxes; in all cases one of the fragments comes from the excavation. So, a total of 34 certain handaxes is known at the moment. Furthermore, five pieces have been classified as fragments of either handaxes or (Levallois-)cores (see **fig. 3**).

An excavation in the »handaxe concentration« Peest A was undertaken in 2011, with input from

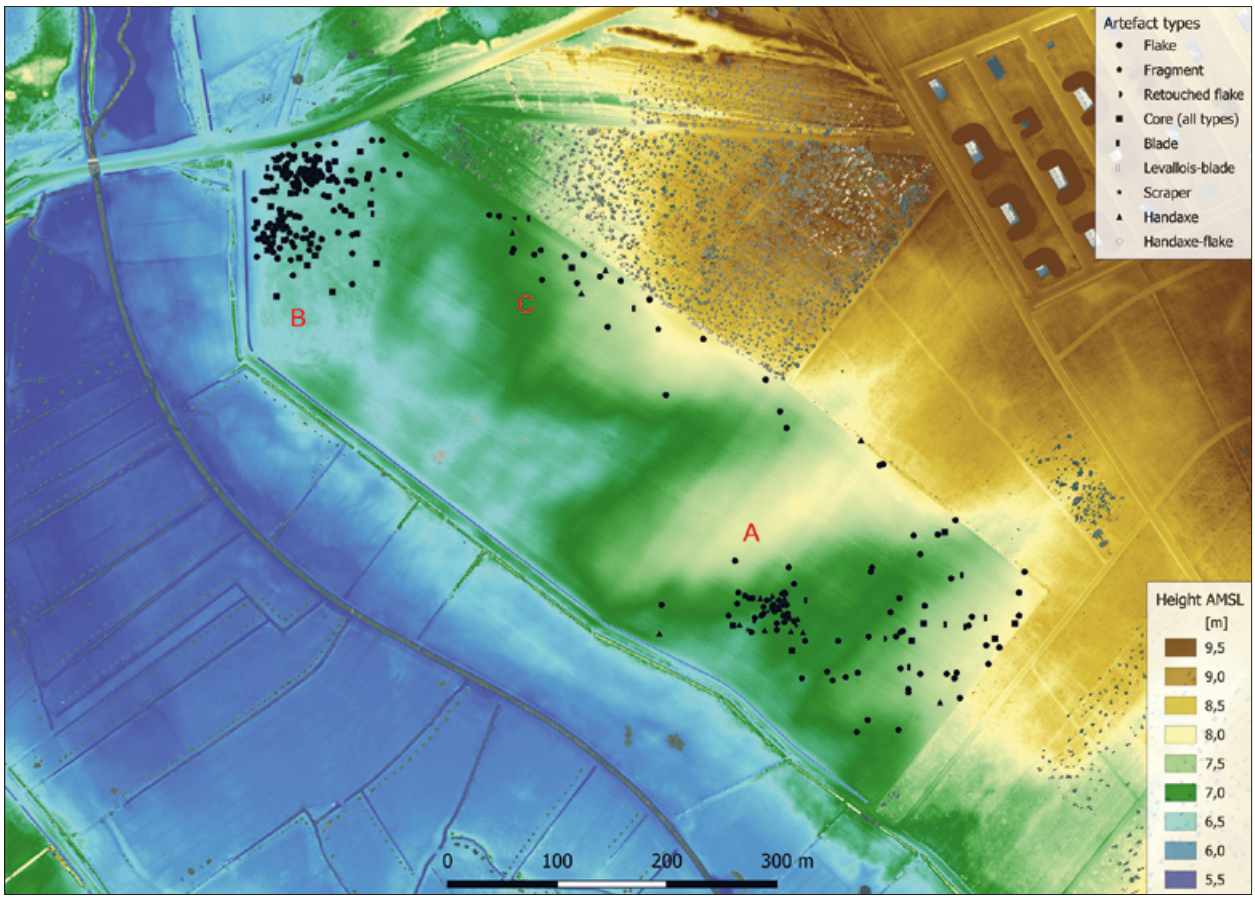

Fig. 2 Map of all measured-in locations of Middle Palaeolithic artefacts collected during field walking at the site of Peest (the finds of the excavation in 2011 are omitted). The three concentrations **A** in the southeast, **B** in the northwest, and **C** in the east, are clearly visible. Peest A is the large »handaxe concentration«. – (Map M. J. L. Th. Niekus/J. Bongers, Wiertsema & Partners, Tolbert).

various geologists. Several artefacts were found *in situ* in the »boulder sand« (see e. g. Niekus et al. 2016; 2017; Niekus/van Ginkel 2019). The boulder sand was formed at the top of Saalian till (boulder clay) by long epochs of washing-out, blowing-out and (in sloping areas) solifluction, from the late phase of the Saalian to at least the end of the Weichselian; as most of the loamy fraction was lost in the process, the density of stones and boulders proportionally increased. That Middle Palaeolithic artefacts from this area displaying windgloss and other (often quite severe) surface modifications must derive from the boulder sand had been postulated at an earlier date (Bohmers/Wouters 1954; Stapert 1976a; 1976b; 1976c; see also Stapert 1986) but had not yet been demonstrated *in situ* by an excavation. Windgloss is a rare phenomenon on flints from boulder clay but is widely present on flints from boulder sand. This somewhat greasy-looking gloss, often variable in intensity (and sometimes present on just a single face), is almost always accompanied by minute pitting. This phenomenon occurred especially during the bleak Late (or Upper) Pleniglacial of the Weichselian, between c. 25,000 and 15,000 years ago.

As a result of large-scale cryoturbation down to a depth of 1–2 m, the find level (boulder sand) has locally survived intact beneath the modern ploughsoil at Peest. Cryoturbation is associated with periods of permafrost, and like windgloss dates mainly from the Late Pleniglacial. However, cryoturbation also occurred during parts of the subsequent Late Glacial (the last c. 3500 years of the Weichselian). Cryoturbation featured particularly in the Younger Dryas Stadial (Dryas 3), the last c. 1000 years of the Weichselian. This stadial also saw the local formation of ice wedges, and quite a lot of flints and other stones occurring near the surface (for example flint artefacts from the Hamburgian) fragmented because of frost-splitting.

Peest is the first findspot in the northern Netherlands where Middle Palaeolithic artefacts could be excavated *in situ*. Earlier attempts at Wijnjeterp (prov. Friesland/NL; Bohmers/Wouters 1954) and Drouwen (prov. Drenthe/NL; Stapert 1979) proved futile; the handaxes from these sites apparently oc-

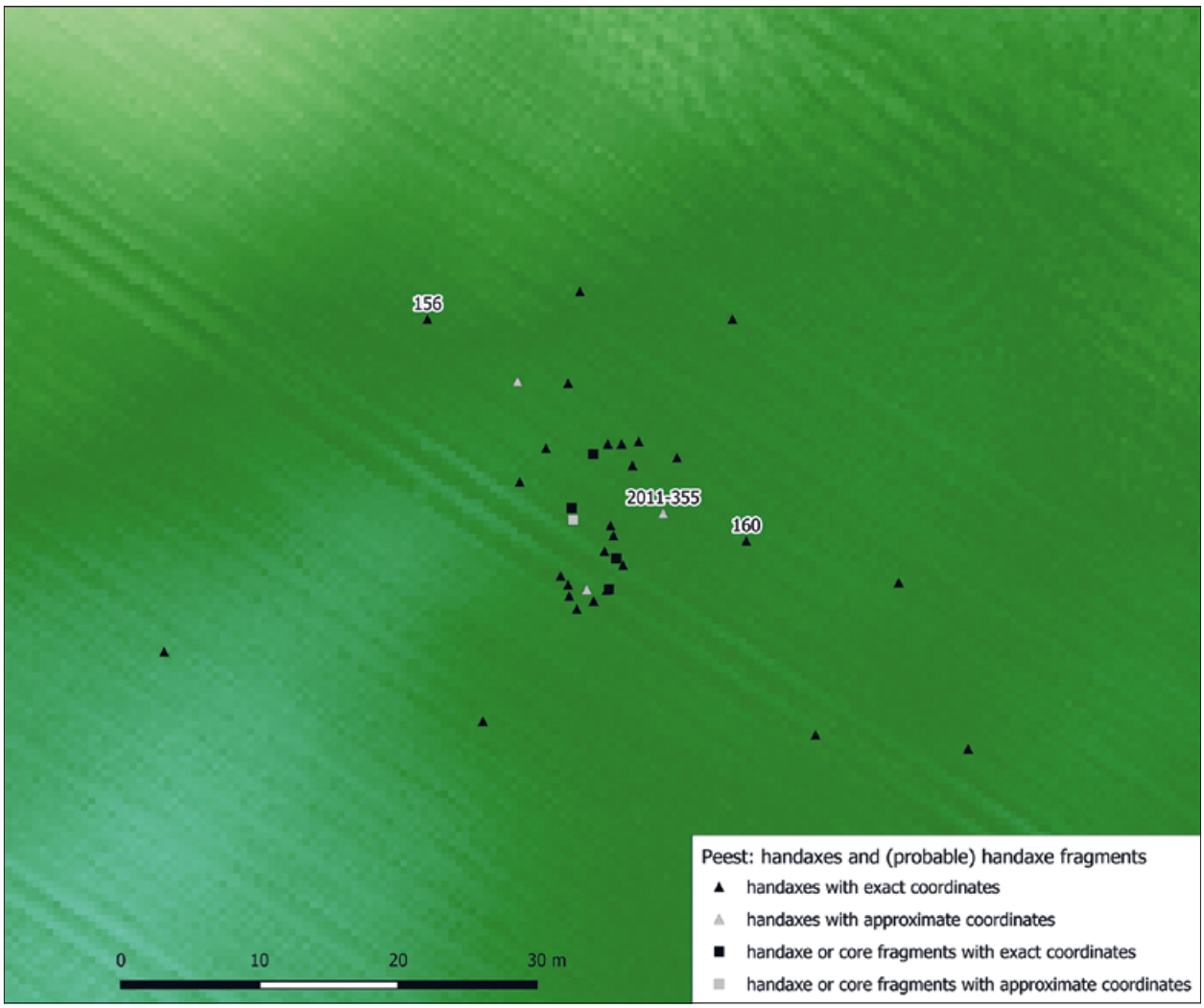

Fig. 3 Map of concentration A at Peest with all known locations of handaxes and fragments of handaxes/cores. The two handaxes described in this paper are indicated by their find numbers: 156 (Boekschoten), and 160 (Kabout) + 2011-355 lying some 6 m apart. The original find concentration A probably had a diameter of less than 20 m. – (Map M. J. L. Th. Niekus/J. Bongers, Wiertsema & Partners, Tolbert).

curred isolated. (In the case of Wijnjeterp, however, where little field searching has been done, we would like to state that absence of evidence is not the same as evidence of absence. Moreover, the exact location of the findspot is not known with certainty.) Isolated finds of handaxes actually are quite common during the Middle Palaeolithic. Also at the findspot of the beautiful triangular handaxe from Anderen (prov. Groningen/NL; Stapert 1976a; 1976c) nothing was subsequently found, despite repeated searches. The same goes for the findspot of the handaxe from Oldeholtwolde (prov. Friesland/NL), in a field along the southern border of the Pleistocene valley of the river Tjonger. The finder, J. R. Bakker (Oldeholtpade), collected a great number of other flints from the field, which we inspected without finding any artefacts (Stapert 1995; photos of this interesting handaxe can be found in Stapert 1996, fig. 1, and – better quality – in van Koeveringe 2006, 41).

Elsewhere, isolated handaxes are also not an unusual phenomenon (see e. g. Soressi 2002; 2004; Soressi/Hays 2003). In this context, it is of interest that many handaxes left on larger sites were not produced there, but were »imported«. Claud (2008, 20) even states that almost all handaxes left on sites of the *Moustérien de tradition acheuléenne* (MTA) in southern France were made elsewhere. It therefore seems clear that Neanderthals were in the habit of carrying – among other things – several handaxes on their hunting expeditions and other wanderings. These would, for example, be used as butchering tools at kill sites (Keeley 1980), and were occasionally left there after use, if they became damaged. Other functions of handaxes have also been demonstrated, however, especially at camp sites. For example, at several MTA sites in France quite a lot of triangular handaxes of the MTA, dating from about the same period as Peest, were used for wood-working, although we do

not know exactly what was done with them (e. g. Anderson-Gerfaud 1981; Beyries 1984; Claud 2008).

Besides, it is known that also (larger) Levallois flakes or blades were »mobile« artefacts, carried by Neanderthals during their travels. They are sometimes found isolated, just as handaxes. This has been established in France (e. g. Claud 2008, 20–21), and also in the Netherlands: the large Levallois flake of the Eeserveld (prov. Overijssel/NL) remained isolated despite repeated searching of the field (Stapert 2002). At Peest, several large Levallois blades have been found that were produced elsewhere, indicating that such tools were indeed part of Neanderthal's travel luggage.

Several handaxes with missing tips were discovered at Peest A, probably broken off as a result of some type of heavy use, for example butchering and dismembering large animals. However, Claud (2008, 352–353) believes that broken-off tips mainly originated because of accidents during manufacture; one of her arguments is that the examples from Chez-Pinaud (dép. Charente-Maritime/FR) she studied did not reveal any traces of use. In our opinion, however, her hypothesis is difficult to understand in combination with one of her other (and well-founded) conclusions: that the handaxes were made elsewhere and had been transported to the sites where they were excavated. Not every use episode produces clear and recognisable use-wear traces.

A clear example of a handaxe with a broken-off tip at Peest A is the largest handaxe found at the site (no. 2011-280), with an estimated original length of c. 13 cm (Niekus et al. 2016, fig. 13 top); this tool was certainly not made at the site. Also, one broken-off tip fragment of a handaxe was discovered (by L. Kiers; see e. g. Niekus et al. 2011, fig. 28); so far, we did not find the handaxe from which it derived. According to experiments carried out by L. Johansen, the break was probably caused by heavy use. Handaxes with broken-off tips are also known from other Middle Palaeolithic sites. Examples in the northern Netherlands are the handaxes from Drouwen (Stapert 1979) and Oldeholtwolde (Stapert 1995). A specimen of a broken-off handaxe tip is known from Maastricht-Belvédère Site E (prov. Limburg/NL) in the southern Netherlands; it does not show clear use traces (Roebroeks 1988, fig. 123).

Not only at kill sites and other specialised sites, but at encampments (»base camps«) too, handaxes have been left behind, sometimes quite a lot, as we know from Peest and many sites abroad. Apart from Peest, such sites are scarce in the Netherlands. However, a splendid example in the southern Netherlands is Esbeek-Diessen (prov. Noord-Brabant/NL) where more than 5000 artefacts were collected by the amateur archaeologist P. van Gisbergen from several surface sites (at least three). The more than 1000 tools comprise quite a lot of handaxes, side-scrapers and *Keilmesser* (see e. g. Rensink/van Gisbergen 2017; Rensink/de Kort 2020; 2024; Toebosch 2025). E. Rensink (Rijksdienst voor het Cultureel Erfgoed [RCE], Amersfoort), who directs the research at Esbeek-Diessen, believes that the site was occupied only in spring or summer. The sediment in which the artefacts are embedded has been dated by OSL. The results fall roughly in the 50–60 ka range (Wallinga et al. 2024): probably dating the finds in the Moershoofd Interstadial Complex. Most handaxes of Esbeek are quite small, often smaller than 5 cm, which probably reflects the low quality of locally available flint. The largest handaxe made of flint has a length of just over 10 cm; a beautiful specimen made of quartzite has a length of almost 13 cm.

As noted above, apart from their use as butchering knives at kill sites, various other functions of handaxes are known or have been suggested which were (at least partly) also important on camp sites. For example, handaxes could have served as a core (source of flakes); an example is the Oldeholtwolde handaxe mentioned above (Stapert 1995). At Peest A we found a piece that seems to be a combination of a handaxe and a Levallois core (Niekus et al. 2016, fig. 14 bottom). In some cases, discarded handaxes subsequently served as cores, and in other cases exhausted cores were used as preforms of handaxes. Other functions of handaxes, besides as butchering knives and cores, include the following.

- As a hammerstone or anvil stone. An example of use as an anvil is known at Peest A (no. 100; e. g. Niekus et al. 2017, fig. 10; see also Niekus/van Ginkel 2019).
- As a firemaker in combination with pyrite (see e. g. Sorensen et al. 2018). We have no clear examples of this yet at Peest (but patination is possibly hindering the identification of this use, just as with several other suspected functions of handaxes).
- For working wooden artefacts, a function demonstrated at several late Mousterian sites in France (e. g. Anderson-Gerfaud 1981; Beyries 1984; Claud 2008).
- As a digging tool (e. g. Leakey 1950). There are several possible examples of this at Peest: handaxes with a rounded top part (see below).
- As a weapon (difficult to prove archaeologically, but not unthinkable).
- As a blank for other tool types, especially side-scrapers, as known from late MTA sites in southwestern France (e. g. Soressi 2002). At Peest there are several examples of such »handaxe/scrapers«, including no. 100 mentioned above.

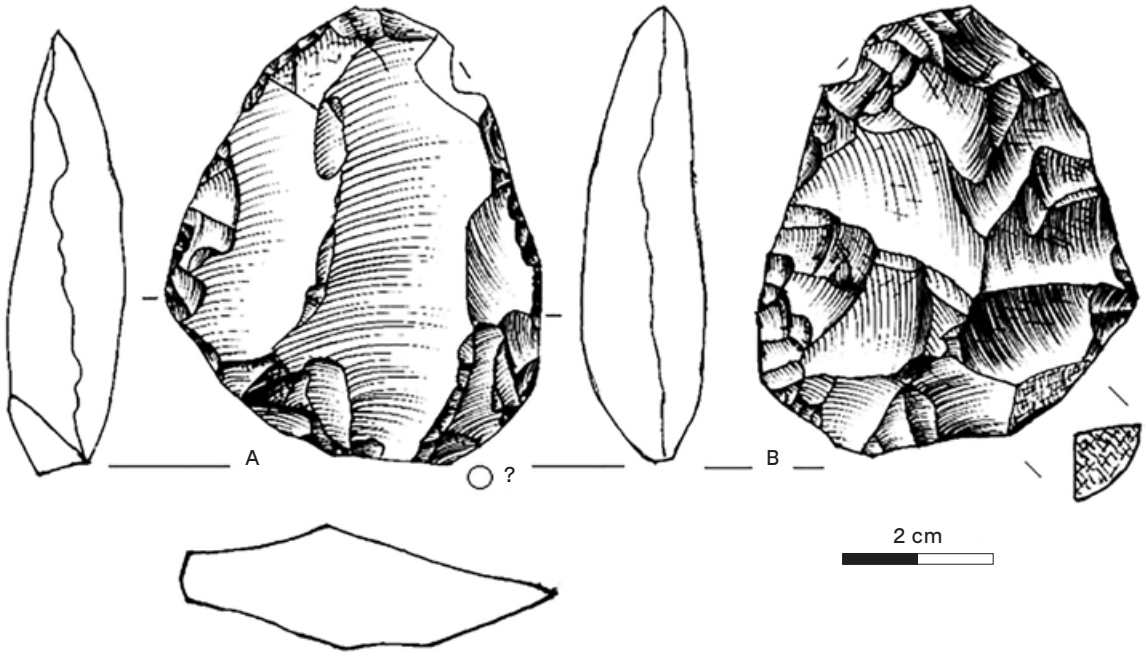

Fig. 4 Drawing of handaxe no. A-156, found by G. R. Boekschoten at Peest A in 2023. Key to drawings: left white – (sub)recent damage; irregular cross-hatching – old frost-split faces; stippling – cortex; closed circle – position of the point of percussion; open circle – probable location of the point of percussion. – (Drawing L. Johansen). – Scale 1:1.

- As a »showpiece« (status object), or »fitness indicator« in sexual selection (see e. g. Kohn 1999; Kohn/Mithen 1999; Miller 2000). This »function« is to be expected especially in the case of »giant handaxes«, of which we have no examples at Peest.

Other suggested functions for handaxes, such as using them as »frisbees« or »hunting discs« (Jeffreys 1965; O'Brien 1981; Calvin 1994), seem improbable (Stapert 1996). However, we would not be surprised if other functions of handaxes than the ones mentioned above should turn up in the literature; handaxes were indeed »Swiss army knives« in many respects; some specimens (like no. 100 at Peest A) show signs of wear of at least three different uses.

Below, two recently recovered small handaxes from Peest A are described, picked up by G. R. Boekschoten (in 2023) and J. Kabout (in 2024). At **figure 3** the new finds discussed below are indicated by their find numbers (Boekschoten: 156; Kabout: 160, refitted with 2011-355).

A Well-Made Small Handaxe (G. R. Boekschoten, 2023)

On 16 April 2023, G. R. Boekschoten found this small but expertly made handaxe in the »handaxe concentration« (Peest A). It was his third handaxe find at this site! (For a report of the search on 16 April 2023, see Boekschoten 2023.) This fine specimen was labelled »Peest A-156« (see **figs 4-5**). The tool was made from semi-transparent, fine-grained flint with many small fossil fragments (including bryozoans). This is a common type of flint at all three concentrations at Peest. The handaxe is virtually complete. Along the right-hand side of face A there is a small spot of recent damage (left blank in **fig. 4**); this shows that the original colour of the flint is grey. The tool was probably made from a substantial flake; in **figure 4**, the probable location of the point of percussion is indicated by an open circle.

Weight: 42.2 g; length: 6.0 cm; max. width: 5.0 cm; max. thickness: 1.4 cm. Measurements and indices according to Bordes (1961): L 6.0; m: 5.0; a 2.0; n 4.6; e 1.4; L/a 3.0; n/mx100 92; L/m 1.2; m/e 3.57. These put the handaxe in the category of *bifaces cordiformes*. The tool is technically well made; viewed from aside it has virtually straight cutting edges (see **fig. 4**) with working angles of 40–50°: highly functional.

The length of this handaxe is relatively modest in comparison with several other well-made handaxes from Peest. Small size is a feature of many bifacial

Fig. 5 Photo of handaxe no. A-156. – (Photo J. Kabout). – Scale 1:1.

workpieces by learner flintknappers (e. g. Johansen/Stapert 2012), but this tool must have been made by an experienced flintknapper. Some other well-made handaxes from Peest are also small, such as no. 43 (a find of J. R. Beuker): a sub-triangular handaxe with a length of c. 7 cm (see **fig. 7**), also made from a flake (Niekus et al. 2011, figs 3–4).

Of this tool several parts are missing (from both faces) owing to subsequent frost-splitting, which even created a hole. Breaks resulting from secondary frost-splitting are a regular phenomenon among the material from Peest. We also know this very well from other sites; a very clear example is the handaxe of Drouwen, from which several parts split off at both sides (Stapert 1979, fig. 7). Also from the handaxe of Anderen a part broke off due to secondary frost-splitting (Stapert 1976a; 1976c). These secondary frost-split breaks most probably originated during the Late Pleniglacial.

In outline, Boekschoten's handaxe is asymmetrical. This is caused by an old natural surface at the base of the piece (bottom right on face B in **fig. 4**); this area measures 1.5 cm × 0.6 cm. It is probably part of an old frost-split surface and predates the creation of the handaxe because it displays heavier windgloss (i. e. more pitting) than the worked surfaces of the handaxe. It possibly originated during the Early Pleniglacial of the Weichselian, or maybe already during the Saalian. It probably is a remnant of the striking platform on the core from which the initial flake was struck that was to become the handaxe. The angle of this old surface to face B of the flake is fairly obtuse: c. 125°, which suggests that the flake was struck off by hard percussion (with a hammerstone). Hence face B would have been the flake's ventral surface; as a result of its subsequent overall working, nothing remains of its original surface. The fact that the handaxe most probably was made from a flake is fairly typical of the MTA.

We also have a small handaxe made from a flake from the probably roughly contemporaneous site of Mander (prov. Overijssel/NL) (for a description of this sub-triangular handaxe with a length of 7.7 cm, see Stapert 1982); this tool must also have been made by an experienced maker.

Face A on Boekschoten's handaxe must be the original dorsal surface of the flake. Interestingly, there are two large, somewhat blade-like scars on this face, coming from the base of the piece. This seems to suggest that the flake from which the handaxe was made derived from a Levallois core for blades. The fact that the presumed remnant of the striking platform displays no traces of preparation is unusual, but by no means an argument against this presumption; Bordes (1961) points out that preparation might be unnecessary if a good angle was already present at the spot. Maybe the flake was struck off after the core had been more or less exhausted for blade production. It is worth mentioning that a somewhat larger handaxe from Peest A (no. 33; see Niekus et al. 2017, fig. 7) also may have been made from an exhausted blade core. In this context it should be noted that Peest A is quite rich in Levallois blades, including some very large specimens (see e. g. Niekus et al. 2011; 2016).

The shaping of this handaxe was especially elaborate on face B. Many shallow scars extending from the sides to at least the central axis of the piece, bear witness to a well-controlled striking technique. Moreover, parts of the edges seem to have been retouched in scraper-like fashion, but less distinctly so than in the case of the splendid »handaxe/scraper« recovered by D. C. Brinkhuizen (no. 100; see e. g. Niekus et al. 2017, fig. 10). This feature (handaxes retouched into side-scrapers) suggests a date in a late phase of

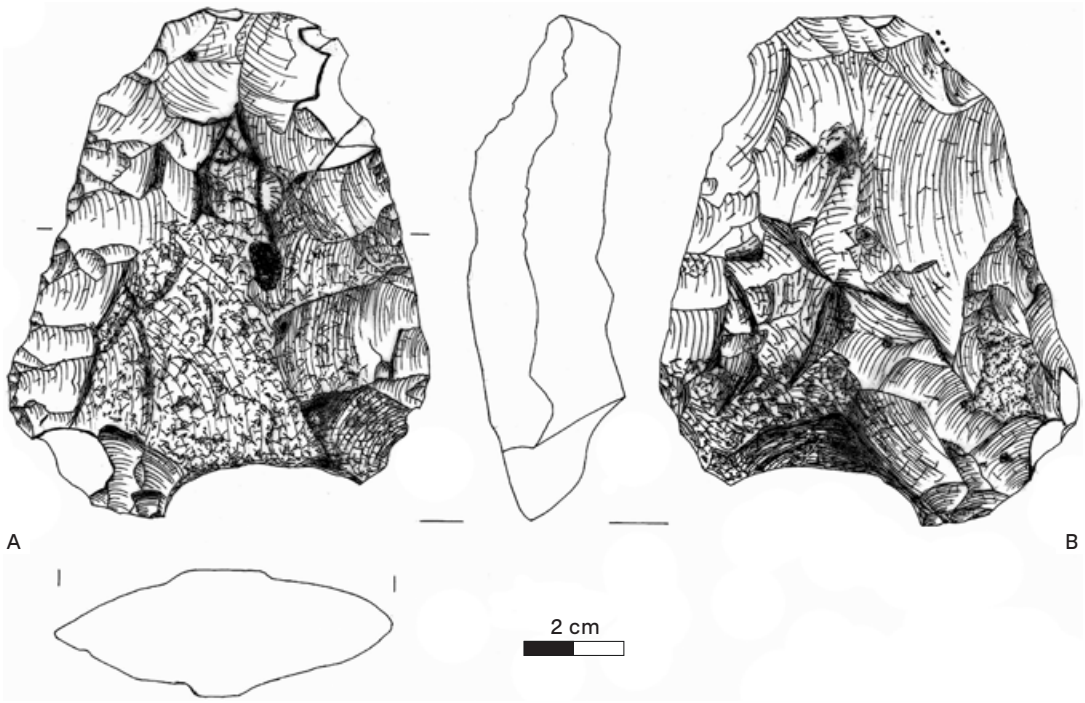

Fig. 6 Drawing of handaxe no. A-42, found by G. R. Boekschoten at Peest A in 2010. The top part is rounded (indicated by stippling), probably by use. – (Drawing L. Johansen). – Scale 2:3.

the MTA, in an interstadial of the Middle Pleniglacial (OIS 3), probably about 50,000 years ago, given the dates of sites with comparable tools in southern France (e. g. Soressi 2002; 2004).

Both faces display a brown patina and windgloss with fine pitting, a combination of surface modifications that is frequently observed at Peest (as well as elsewhere in the northern Netherlands) on finds from the boulder sand (Stapert 1976a; 1976b; 1976c; Niekus et al. 2016; 2017). The windgloss is roughly equally developed on both faces. With a magnifying glass, some fine scratches can be seen, probably resulting from cryoturbation. Edges and ridges are somewhat rounded (but non-fluvially).

The tip area seems a little more rounded than the body of the handaxe, possibly because this was the thinnest and most exposed part – solution processes in the soil and abrasion through cryoturbation had a greater impact. (This is one of the possible explanations given by Kiers [2010/2011] in her essay about this phenomenon.) That cryoturbation strongly affected the find layer (the boulder sand) at Peest is quite obvious from the sections exposed in the excavation of 2011. This folding through cryoturbation is the reason why parts of the boulder sand layer – with finds *in situ* – still lie undisturbed beneath the ploughsoil. Yet it is interesting to note that more strongly rounded tip parts occur quite often among the handaxes from Peest. One of these is Boekschoten's second handaxe find (no. 42) recovered in 2010 from a heap of stones on the southern edge of the field (**fig. 6**). According to Kiers (2010/2011) the rounding on this tool is most probably caused by use. (This handaxe is also illustrated in Niekus et al. 2011, figs 7–8.) Handaxe no. 43, found by J. R. Beuker (**fig. 7**) also seems somewhat more rounded towards the tip. The same goes for handaxe no. 75, found by M. J. L. Th. Niekus (**fig. 8**).

A particularly fine example of a handaxe with a rounded top part is the isolated find of a subtriangular specimen from Anderen (Stapert 1976a; 1976c), probably dating from roughly the same period as Peest A. Its rounded part shows many fine scratches which seem to suggest that the rounding is use-wear. Because of this, the impression of D. Stapert at the time was that this tool had been used for digging into the soil. As mentioned above, several authors have assumed that handaxes were quite usable as spades. L. Leakey dug an adequate game-pit with such tools in two days, and handaxes could also have been used for digging up edible roots (e. g. Leakey 1950). However, such a purpose seems quite unlikely in the case of the small handaxe from Peest under discussion here. Unfortunately, the handaxes from Peest and other sites of this period in the northern Netherlands are almost always too strongly weathered to allow any reliable use-wear analysis. It is of interest, however, that I. Vonk (Koudum) once re-

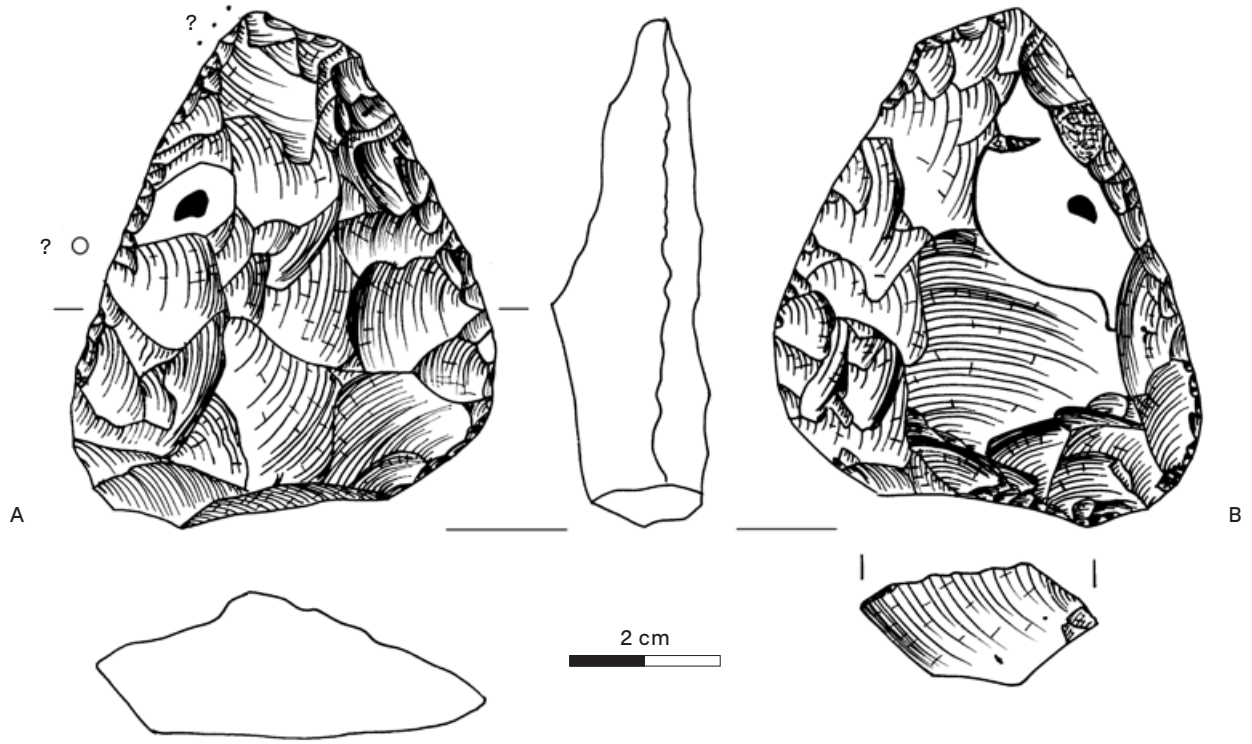

Fig. 7 Drawing of handaxe no. A-43, found by J. R. Beuker at Peest A in 2010. The top part is rounded. – (Drawing L. Johansen). – Scale 1:1.

vealed that in his large collection of handaxes from Le Grand-Pressigny (dép. Indre-et-Loire/FR) and environs (n >1000!) rounded tips are a regular feature, occurring in about one in ten items (pers. comm. to Stapert, c. 2017). At most of these sites, there is no evidence of severe surface modification, such as that seen in the northern Netherlands, which means that we should certainly consider this feature as possible evidence of use-wear; digging is one of the possible functions of handaxes. Claud (2008) experimented with handaxes for digging, and reported that (slight) rounding, gloss and scratches appeared on the implements. She also refers to a paper by Rots/van Peer (2006), who identified use-wear caused by digging on 14 »core-axes« (handaxe-like bifacial tools) of a Late Middle Pleistocene site in Sudan.

A prominent feature of Boekschoten's small handaxe is the fact that the tip area is slightly reddish-brown. This might point to contact with fire, but no clear traces of burning, such as fine cracks, are visible with a magnifying glass. Maybe it is a fortuitous patination phenomenon. But intriguingly, this reddish colouration coincides with the more rounded part of the handaxe; is there a connection? It is imaginable that the tip of the handaxe had been used for making fire with the aid of pyrite, as is familiar from the Upper Palaeolithic – from as early as the Aurignacian (see e. g. Stapert/Johansen 1999). However, no evidence of such use can be demonstrated on this handaxe with a magnifying glass. Moreover, this supposition also seems unlikely, given the work by Sorensen (see especially Sorensen et al. 2018). He established that, in southern France, handaxes from this period were indeed used for making fire. However, this was not done in the same way as in the Upper Palaeolithic, when the tip of an elongated flint was rubbed or struck on a pyrite nodule. Instead, it was done by striking or rubbing a pyrite nodule on one of the larger faces of a handaxe, more or less in the middle part. Characteristic traces of firemaking (gloss and sets of parallel scratches) were already noticed by Claud, but she initially did not interpret them as such, though she performed experiments with this use in mind (Claud 2008, 172 ff.). Such traces, of »contact with some mineral matter«, make up a significant portion of the use-wear traces Claud found on handaxes of the late MTA, maybe up to more than one-third of all identified use-wear zones (Claud 2008, 365 ff.)! D. Stapert (with a magnifying glass 10×) could not observe any traces of such use on Boekschoten's handaxe. It is reasonable, however, to suppose that the Neanderthals at Peest tended a hearth, given the fact that they were able to make fire (as we know from contemporaneous sites in France) and lived here for a while with a small group (possibly one or several families), including children. Moreover, several burnt flint artefacts were collected at Peest, but so far we have been unable to

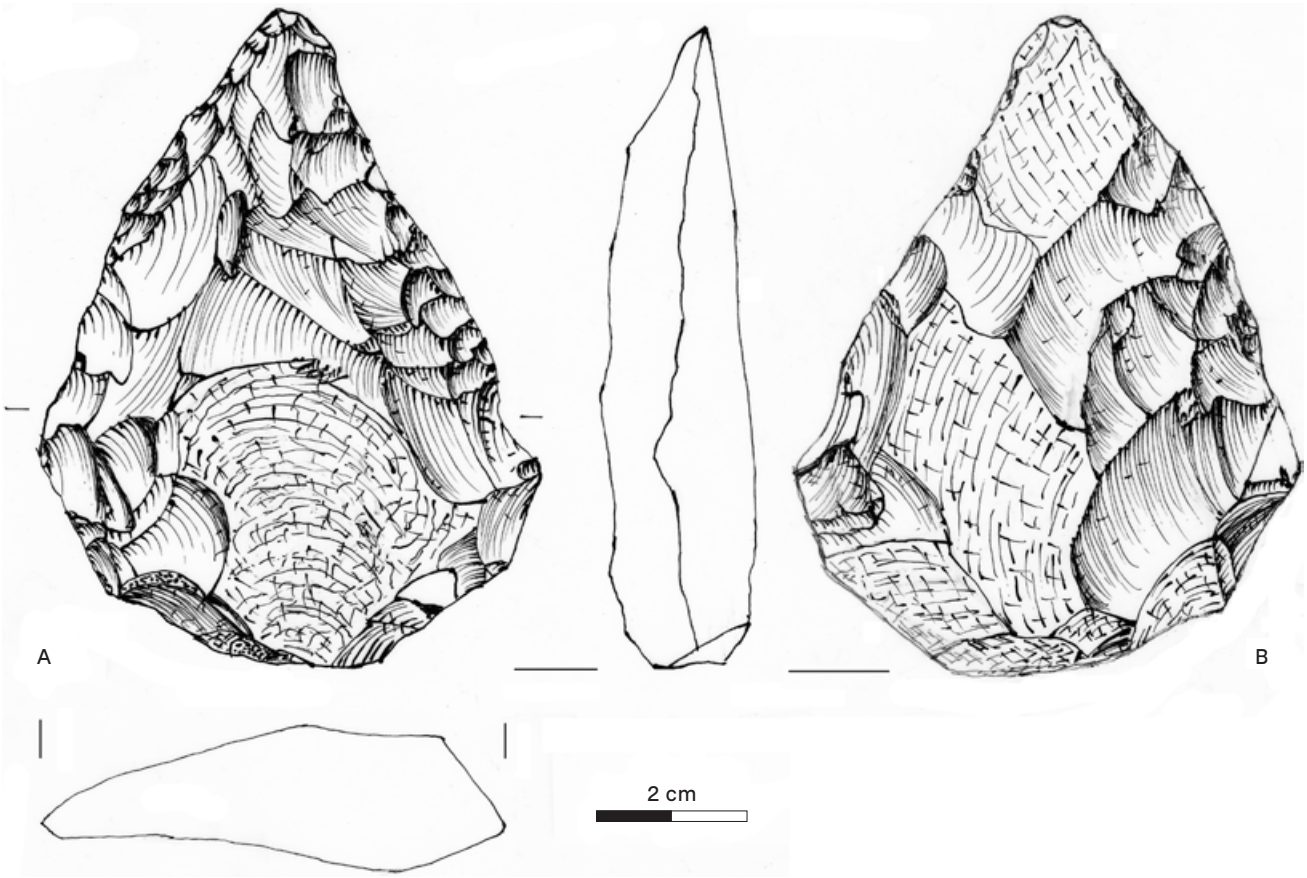

Fig. 8 Drawing of handaxe no. A-75, found by M. J. L. Th. Niekus at Peest A in 2011. The top part is rounded. – (Drawing L. Johansen). – Scale 1:1.

establish when the burning occurred. We can only hope that further use-wear analyses of the material will give more clues in this respect. In this connection, it is noteworthy that the handaxes of Peest are in many respects quite similar to the examples in southwestern France studied by Claud and Sorensen which produced evidence of fire-making.

Small cordiform or roughly triangular handaxes of the MTA from southern France had in part been used in a hafted condition; in the two levels of the major handaxe-rich site of Pech-de-l'Azé (dép. Dordogne/FR), this goes for up to c. 30 % of the specimens (Anderson-Gerfaud 1981; Anderson-Gerfaud/Helmer 1987; Soressi 2004, 361). Anderson-Gerfaud and Helmer (1987, fig. 3) illustrate a reconstruction of a cordiform handaxe with scraper retouch along one side, from Corbiac (dép. Lot-et-Garonne/FR); the scraper edge had been used for working wood. The side opposite to the scraper edge and a large part of the base had been held inside a haft (probably of wood). Hence, it is not the case that just the base was hafted, as with Mousterian points (and also the later leaf points). One might assume that smaller handaxes like the one found by G. R. Boekschoten, as well as for instance no. 43 from Peest, were used in a hafted form. Unfortunately, the handaxes from Peest are probably too heavily weathered (with windgloss and cryoturbation), as mentioned earlier, to allow any study of hafting traces. (For what it is worth, D. Stapert spotted no clear traces of hafting on no. 156 with the aid of a magnifying glass 10×.)

It is interesting to compare this tool with Boekschoten's first handaxe find at Peest: also a small handaxe (**fig. 9**; for a description see e. g. Johansen/Stapert 2012, 58–60; Niekus et al. 2011; 2016; 2017). This item (no. 22) was picked up in the early phase of field walking at the site, in February 2009. This handaxe is comparable in length to the present find: 5.7 cm; its weight is just 31.8 g. Handaxe no. 22 was also made from a flake, and the preserved remnant of the striking platform here is also a natural surface without traces of preparation. In outline as well, the two pieces are comparable: small *bifaces cordiformes* (although no. 22 can be classified as a handaxe only with some reservation). But in terms of technical quality the two pieces are very different! Handaxe no. 22 was clearly produced by a learner knapper, whereas the specimen under study (no. 156) was evidently made by a skilled flintknapper (see below).

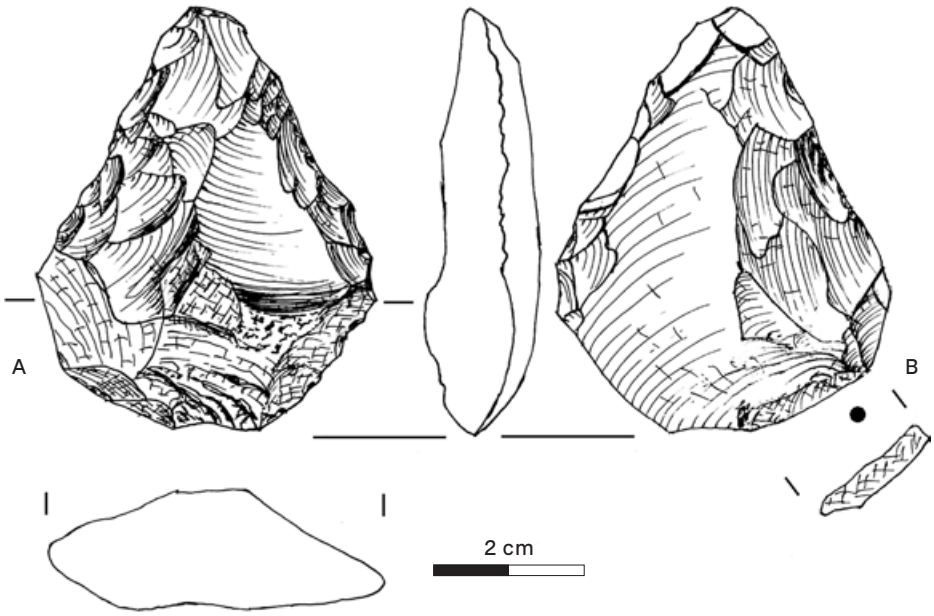

Fig. 9 Drawing of handaxe no. A-22, the first handaxe found by G. R. Boekschoten at Peest A in 2009. This is a clear example of an apprentice workpiece. – (Drawing L. Johansen). – Scale 1:1.

We already were acquainted with several other small handaxes from Peest A which probably had been left behind by one or more learners. (Several small cores were probably also worked by apprentice knappers.) A clear example is a previously published handaxe find by D. C. Brinkhuizen (no. 37; e. g. Niekus et al. 2017, fig. 8), with an estimated original length of only 5.5 cm, but there are several more examples. Yet another similar handaxe was found at Peest A in February 2024, which is described below.

A Somewhat Imperfect Handaxe (J. Kabout, 2024)

J. Kabout found this interesting tool (**figs 10-11**) in the handaxe concentration (Peest A) on 9 February 2024. (For a report on the field search that day, see Boekschoten 2024.) The tool was labelled A-160. The small handaxe has secondarily lost a considerable part through frost-splitting, as is the case with several other artefacts at Peest (for example the small handaxe no. 43 mentioned above: **fig. 7**). The missing fragment of Kabout's handaxe was found to have been recovered 13 years previously, in the 2011 excavation. This fragment, bearing no. 2011-355, was discovered on 16 December 2011 when the spoil from square 161 was sieved. The two fragments were probably lying quite close together. Square 161, an area of 5 m × 5 m, is located in the eastern part of Peest A. The best estimate for the distance between the find locations of the two fitting fragments is c. 6 m, which is negligible given the find circumstances. (It may be noted that GPS measurements usually have a precision of between 3 and 6 m.)

Secondary frost-splitting is a regularly occurring phenomenon at Peest and elsewhere in the northern Netherlands, as noted above. Indeed, we have various small, frost-split fragments which still await refitting to the tools from which they originated. An example is no. A-86: the fourth handaxe find by D. C. Brinkhuizen (e. g. Niekus et al. 2017, fig. 9). Three other handaxes from Peest have been successfully completed by the refitting of fragments originating from frost-splitting. In all cases, these are handaxes of which one of the fragments derives from the 2011 excavation, just as with Kabout's handaxe. This applies to: 1. A-145 + 2011-238; 2. A-33 + 2011-508; 3. A-69 + 2011-349. Just as in the case of A-160 + 2011-355, the estimated distances between the locations of the fitting fragments are quite small: resp. 12, 19 and 6 m. This means that all the fitting fragments could originally have been very close together. It therefore seems very improbable that solifluction played a significant role at Peest (as it did probably at the site of Mander, located on the slope of an ice-pushed hill: Stapert 1982). Apart from ploughing and other agricultural activities, no significant mechanisms of spreading seem to have occurred at this site. (As an aside, we would like to mention that we also have to reckon with children's play during the occupation, because this may have resulted in relatively long distances between fitting artefacts.)

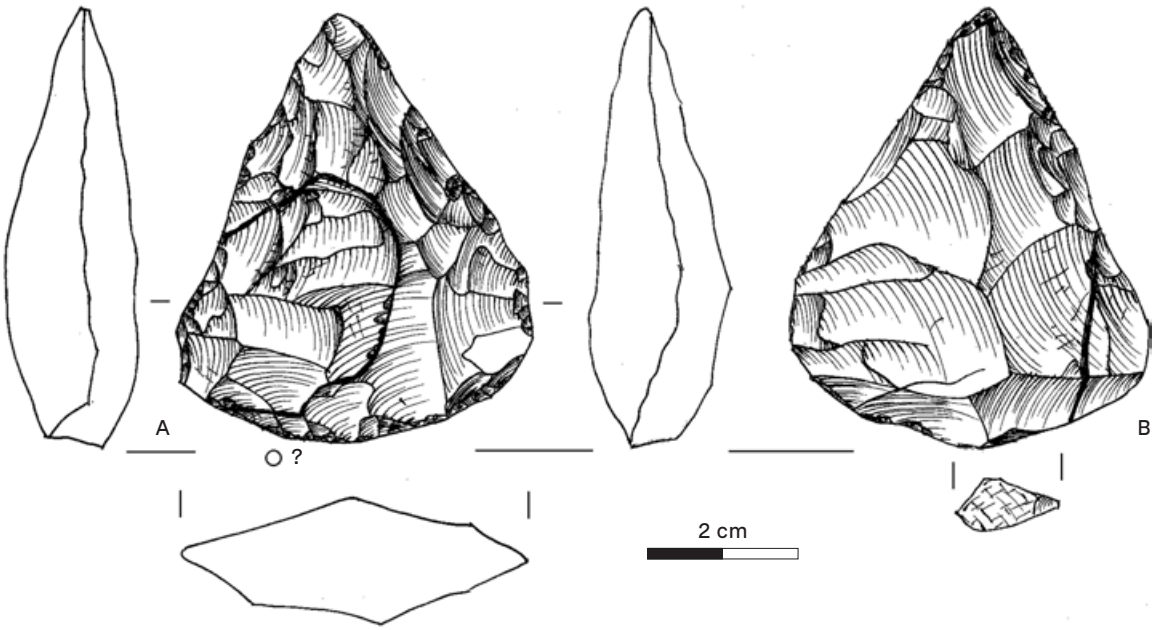

Fig. 10 Drawing of handaxe no. A-160, found by J. Kabout at Peest A in 2024, refitted with handaxe fragment no. 2011-355, found during the excavation in 2011. – (Drawing L. Johansen). – Scale 1:1.

At the time we were unable to determine with certainty whether the fragment no. 2011-355 fitting to Kabout's handaxe was a fragment of a Levallois core or of a handaxe. At first we thought of a core fragment, because one of the edges has an asymmetrical section and such is more usual on a core than on a handaxe. Now we can be sure: after refitting, we are holding a small but complete handaxe with a length of 5.9 cm. The fragment displays a somewhat darker brown patina, with a red hue, than the remainder of the handaxe. The fragment was at the time drawn by L. Johansen (unpublished); she has since produced a drawing of the handaxe in its complete state (**fig. 10**; the refit is indicated by a somewhat heavier line; see also **fig. 11**). In this case, the asymmetrical cross-section is found to be the result of an inexpert knapping technique along this edge (see below).

The fracture surface of the fragment lacks brown patina, and slight windgloss is present only along its edges. This means that frost-splitting of this handaxe did not occur before the last part of the Upper Pleniglacial; it may even have occurred during a later period (for example, the Late Dryas Stadial). In most other cases of handaxes at Peest that were fragmented because of secondary frost-splitting, however, the fragmentation occurred most probably during the Upper Pleniglacial. This also seems probable in this case; maybe the break was only an interior frost fracture for quite some time, along which splitting had not yet taken place.

The reddish colour of the fragment suggests fire contact, and the second author claims to have seen tiny cracks that might support this. The first and third author cannot convincingly support this idea (using only a magnifying glass). It is possibly merely a variation in patination. In any case, traces of fire contact on this fragment, if existing, would date from after the frost-splitting occurred, i. e. long after the Middle Palaeolithic ended.

There is just a small area of recent damage (left blank in **fig. 10**). Length: 5.9 cm; maximum width: 4.8 cm; maximum thickness: 1.8 cm; weight: 40 g (Kabout's handaxe: 32.5 g; split-off fragment: 7.5 g). Measurements and indices according to Bordes (1961): L 5.9; m 4.8; a 1.6; n 3.8; e 1.8; L/a 3.69; n/m ×100 79; L/m 1.2; m/e 2.67. This makes the present handaxe a *biface subtriangulaire* in Bordes' typology.

The handaxe was made from fine-grained grey flint of good quality; only few fossil fragments are visible. Here and there, very pale shades are present (especially bottom right, on face A). This small handaxe was probably made from a flake, just as Boekschoten's find discussed above. At the base on face B, a small remnant of the presumed striking platform is visible: an old frost-split surface (see **fig. 10**). This surface sits at an angle of 110–120° to face B, which therefore would have been the ventral surface. Although the small area measures just 1.1 cm × 0.6 cm, the striking platform was originally larger. An indication that this area is indeed part of the striking platform is the presence of a circular crack on this surface: evidence of a previous unsuccessful blow with a hammerstone (the diameter of this crack is 2 mm). Therefore, the flake from which the handaxe

Fig. 11 Photo of the refitted handaxe no. A-160 + 2011-355. – (Photo J. Kabout). – Scale 1:1.

was most probably made had been obtained by hard percussion.

Nothing remains of the original ventral face of the flake, because of its subsequent total working-over. However, one of the scars on this face (B, bottom right) suggests to D. Stapert that it might have been an older frost-split surface (on account of its sharply profiled ripples; see Stapert 1976b). If this is correct, the piece was not originally a flake but a frost-split sherd – hence the question mark beside the circle in **figure 10** that marks the assumed point of percussion. Our conclusion is that the piece was probably made from a flake, that split off (partly) along an interior frost crack in the core. In this context, it is of interest to note that we have several handaxes at Peest which were made of »frost-flakes« (i. e. the first handaxe of Brinkhuizen, no. 3; see e. g. Niekus et al. 2017, fig. 6).

Face A is elaborately worked along both edges. Here and there, some slip-ups occurred, especially along the left edge, where multiple steps are present. Even worse, a whole series of ugly, blunt steps arose along the lower face (B) of this edge, rendering it useless. The working of the right-hand edge on face A went much better: we may even speak of a scraper-like retouch. Some steps occurred here too, but they are shallow and not problematical. This item can thus be described as a handaxe/scraper, as can several other handaxes from Peest A. The most notable example of this is the splendid triangular handaxe no. 100, which also served as an anvil- or hammerstone (e. g. Niekus et al. 2017, fig. 10). Also, the small handaxe found by G. R. Boekschoten described above seems to display some scraper retouch, as mentioned before.

The working angle on the right-hand side of face A (the »scraper edge«) is about 55°: wholly workable. There does not appear to be anything wrong with the underside of this edge, and in a side-view, this cutting edge runs nice and straight. In other words: one edge of the handaxe was not functional owing to poor knapping, but the other edge was perfectly serviceable.

Our conclusion is that this handaxe was made by an advanced but not yet fully competent flintknapper. Although quite a lot of things went awry, it resulted in a handaxe of a typologically appropriate form: more-or-less triangular, which moreover was functional along one of its edges. We do not believe that this tool was made by an experienced flintknapper: too many things went wrong that were preventable, especially in the working of the left-hand edge of face A. On the other hand, this piece does reflect a better flintknapping technique than the first small handaxe found by G. R. Boekschoten, no. 22 (**fig. 9**). We envisage the maker of Kabout's handaxe as an older child, probably a boy (Johansen/Stapert 2012), and we imagine he must have been proud of this workpiece. Several other tools and/or cores at Peest are probably by the same maker. Given all the data we have, at least one, but more probably two inexperienced knappers were active at Peest, one more advanced than the other, in addition to at least one experienced knapper.

Kabout's little handaxe displays the usual secondary surface modifications seen in the material from Peest: windgloss (with fine pitting) and brown patina, both in roughly similar degree on both sides. The fragment, found earlier, has a slightly heavier, brown and somewhat reddish patina. The slight rounding of the ridges and edges of this tool is not due to fluvial processes, but to slow processes of solution and erosion in the soil. Some blunt »retouches« along the edges were probably created by cryoturbation. No traces of use as a firemaker were observed with a magnifying glass (but the tool was not yet examined with a stereo-microscope). Some faint scratches were observed; these are presumably due to cryoturbation.

Some Conclusions

It is an attractive – and by no means unrealistic – idea that Boekschoten's first find (no. 22) was knapped by a son of the maker of Boekschoten's third handaxe (no. 156). The two pieces were found almost 100 m apart in the field near Peest. This seems quite far-fetched, but one has to consider the frequent ploughing of the field, among other things. Also one should take into account the possible effects of children's play in explaining the strange spatial distribution of their practice pieces. In any case, it is of interest to note that no. 22 was found quite isolated, in an area with hardly any other finds.

We believe that Kabout's small handaxe (no. 160), although better made than Boekschoten's first find (no. 22), was also a learner's product, given the occurrence of quite a few steps. Maybe these two small items were made by the same person, but it seems probable that there were several learners active at Peest. In all, we have more than five small handaxes at Peest A that are likely to have been made by learner knappers (older children). Also several cores can be attributed to inexperienced knappers (Johansen/Stapert 2012).

The fact that workpieces of both experienced and learner flintknappers were found at Peest A suggests that this was a »base camp«: a place where a larger group of people, comprising both adults and children (maybe one or several families), sojourned for some time and engaged in a range of different activities (Johansen/Stapert 2012; 2016). The same goes for some other larger Middle Palaeolithic sites in the Netherlands, for instance those at Mander (Stapert 1982; Stapert et al. 2013) and Corversbos near Hilversum (prov. North Holland/NL) (Stapert 1981; Stapert/Offerman-Heykens 1983; Offerman-Heykens et al. 2010).

Therefore, find assemblages may, among other things, provide valuable evidence about the composition of human groups that camped at Middle Palaeolithic sites, based on technological analyses. This kind of research should focus especially on more complex artefacts such as handaxes and cores, as these will generally possess enough features to allow a proper assessment of the flintknapper's level of skill.

It is gratifying that recent years have seen increased attention for the legacy of children in the archaeological heritage (see, for instance, Nowell 2021, with many literature references).

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Zusammenfassung
Résumé

Zwei neue Funde von kleinen Faustkeilen in der Moustérien-Fundstätte von Peest

Seit 2007 wurden an der Fundstelle »Peest« in der Nähe von Assen (prov. Drenthe/NL) mindestens drei Oberflächenfunde von mittelpaläolithischen Artefakten entdeckt. Die größte Streuung, »A«, brachte mindestens 34 Faustkeile und zahlreiche andere Funde hervor. Aufgrund des Vorhandenseins von relativ kleinen, mehr oder weniger dreieckigen oder »schnurförmigen« Faustkeilen und *couteaux à dos* kann die Fundstelle dem *Moustérien de tradition acheuléenne* (MTA) Typ A mit einem geschätzten Alter von ca. 50 000 Jahren zugeordnet werden. In diesem Artikel werden zwei kürzlich gefundene Faustkeile beschrieben und illustriert. Einer der Faustkeile wurde von einem erfahrenen Feuersteinbearbeiter hergestellt, der zweite wahrscheinlich von einem fortgeschrittenen Schüler. Streuung A hat sowohl gut gefertigte als auch etwas mangelhafte Faustkeile hervorgebracht, wobei letztere vermutlich von Neandertaler-Kindern hergestellt wurden. Das gleichzeitige Vorkommen von meisterhaft und ungeschickt gefertigten Faustkeilen deutet darauf hin, dass Streuung A ein »Basislager« darstellt, in dem sich eine Gruppe von Neandertalern, darunter auch ein oder zwei Kinder, eine Zeit lang aufhielt und einer Vielzahl von Aktivitäten nachging.

Deux nouvelles découvertes de petites haches à main sur le site moustérien de Peest

Depuis 2007, au moins trois dispersions de surface d'artefacts du Paléolithique moyen ont été découvertes sur le site appelé »Peest«, près d'Assen (prov. Drenthe/NL). La plus grande dispersion, »A«, a produit au moins 34 haches à main et de nombreux autres objets. Compte tenu de la présence de haches à main et de couteaux à dos relativement petits, plus ou moins triangulaires ou »cordiformes«, le site peut être attribué au Moustérien de tradition acheuléenne (MTA) de type A, dont l'âge est estimé à environ 50 000 ans. Deux haches à main récemment découvertes sont décrites et illustrées dans cet article. L'une d'entre elles a été fabriquée par un tailleur de silex expérimenté, la seconde probablement par un apprenant avancé. La dispersion A a produit de nombreux exemples de haches à main bien faites et quelque peu défectueuses, ces dernières ayant probablement été fabriquées par des enfants néandertaliens. La cooccurrence de haches à main magistrales et maladroites indique que l'échantillon A représente un »camp de base«, où un groupe de Néandertaliens, comprenant un ou deux jeunes, a résidé pendant un certain temps et s'est livré à diverses activités.

Schlüsselwörter
Mots-clés

Niederlande / Peest / späte Neandertaler / *Moustérien de tradition acheuléenne* (MTA) Typ A / erfahrene und angehende Feuersteinbearbeiter / Kinder / Basislager
Les Pays-Bas / Peest / Néandertaliens tardifs / Moustérien de tradition acheuléenne (MTA) type A / tailleurs de silex expérimentés et apprentis / enfants / camp de base