

Hand-axes in Southern Limburg (The Netherlands) - How Old?

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1. Introduction

In studying hand-axe material from Southern Limburg one is being faced with the essential question as to how old these implements are. The problem is that hand-axes are clearly not restricted in time to the Lower or Middle Paleolithic. They also occur in much younger periods - notably in the Neolithic - in typologically the same forms as in the Paleolithic. It is clear that this can lead to problems in Southern Limburg, with its Neolithic flint-mining industry and associated sites rich in flint finds. In addition, as far as I know almost no finds have been collected *in situ* in this region.

The question is therefore whether it is possible to definitively ascribe isolated finds to the Paleolithic or to younger periods, on the basis of criteria other than typological or geological. Here an attempt is made in this direction, on the basis of natural surface modifications present on these flints. This method evidently does not work really satisfactorily for this region: a fairly large group of finds (those with white patina and wind-gloss) cannot be ascribed to any particular period with certainty.

2. Neolithic hand-axes

It has long been known that among the Neolithic flint material from the surroundings of the mines near Rijckholt (and also from comparable sites abroad) forms occur that cannot be distinguished typologically from Lower or Middle Paleolithic implements. Some authors have assumed that such forms must therefore also be Paleolithic. Others have spoken in terms of Neolithic tools *à faciès paléolithique*.

Such implements were already described by MARCEL DE PUYDT (1887, 1910), the discoverer of the Rijckholt site. Also HAMAL-NANDRIN and SERVAIS, in their report on Rijckholt (1923), illustrated several such forms, including Mousterian points, which in their opinion were indeed Lower or Middle Paleolithic. These finds were collected on the plateau, and display white patina and gloss. According to the authors, especially the latter phenomenon distinguishes them from material that is evidently Neolithic.

Yet the same authors also give illustrations of implements, including hand-axes, that are said to be merely *à faciès paléolithique*, but which must belong to the Neolithic in view of the fact that they show the same patination as the tools that are clearly Neolithic, namely no or only white patina (and no gloss). These last-mentioned examples originate from the 'Schone Grub', where as far as I know implements that are shiny (and white-patinated) have never been found (this also applies to the Grand Atelier and its surroundings). Apparently shiny flints only come to light on the plateau.

However it may be, Paleolithic-like types, such as hand-axes, evidently occur here in a Neolithic context. This has been indicated by many other authors too, very explicitly for example by DANTHINE (1939). She illustrated series of Neolithic hand-axes from Rijckholt, Spiennes and Fouron-Saint-Martin. She emphasized that her examples had come to light during excavations of Neolithic ateliers, and that often they could not be distinguished typologically from their Paleolithic counterparts. They show the same kind of patination (white or no patination) as the implements that were clearly Neolithic from the same excavations (the intensity of the patination can however vary a great deal from one flint to another, see for examples OPHOVEN, 1938).

An interesting example of the confusion to which the 'typological method' can lead is the 'polished hand-axe' from Vellereille-le-Sec (fig. 1), published by DE PUYDT, HAMAL-NANDRIN and SERVAIS (n.d., ca. 1910). The hand-axe was found at a distance of 3.5 km from the rich Neolithic site of Estinnes-au-Mont. According to the authors this tool is an Acheulean hand-axe that was re-used by Neolithic man: a polished edge had been given to

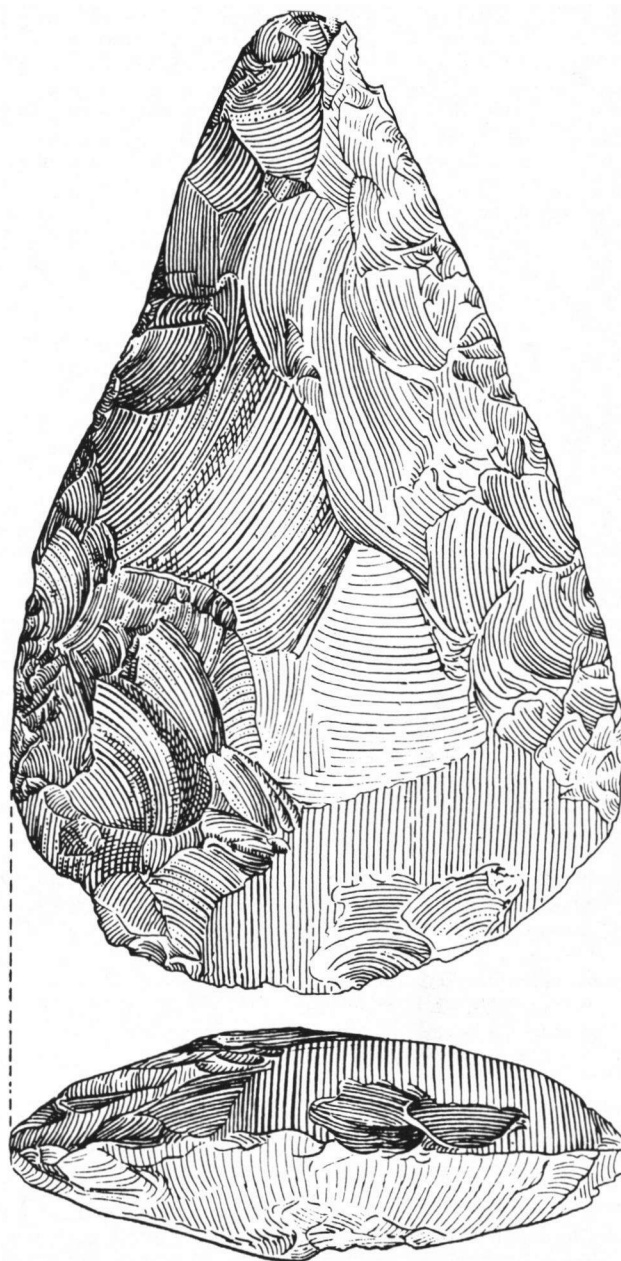


Fig. 1 The 'polished Acheulean hand-axe' from Vellereille-le-Sec. From: De Puydt, Hamal-Nandrin and Servais, n.d. Scale 1:1.

it. According to the description the tool displays only white patina (no gloss), so it is far more probable in my opinion that it was made as a whole during the Neolithic.

As mentioned previously, in addition to hand-axes many other Paleolithic-like forms are known from a Neolithic context, such as 'Mousterian points', 'Levalloisian flakes', 'Clactonian flakes', etc. Especially the hand-axes are sometimes finely formed: flat *cordiformes* and *triangulaires* occur that are reminiscent of the *Moustérien de tradition acheuléenne* (M.T.A.) Similar forms occur elsewhere too, even in the Northern Netherlands (e.g. the hand-axe from Rolde: STAPERT, 1976a).

The conclusion to be drawn from all this is that the 'guide fossil method' can be very misleading in this case. In principle it is not possible to date isolated finds in this region on the basis of their typology.

3. Natural surface modifications on flint

At the moment the only method of ascertaining more closely the age of isolated finds in this region appears to be the study of their

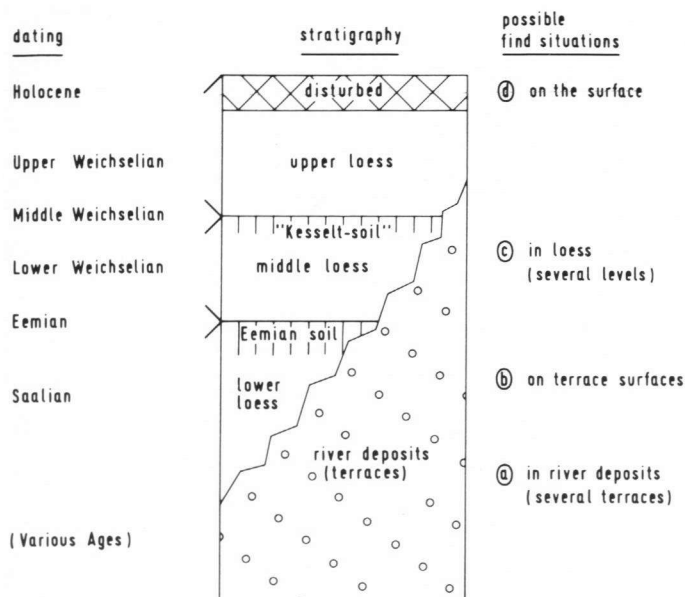


Fig. 2 Scheme of the geologically possible find-situations in Southern Limburg. Drawing by J.M. Smit, B.A.I., Groningen.

natural surface modifications (for the description of a number of these phenomena: STAPERT, 1976b). This is a method with many problems however. It is important above all that these phenomena are studied strictly within the local geological context. In fig. 2 the geologically possible find-situations in Southern Limburg are shown schematically, they are discussed here briefly.

- During the Quaternary in Southern Limburg river-terraces were formed (for names and probable dating see ZAGWIJN and VAN STAALDUINEN, 1975). An especially characteristic feature of flints from the terraces is rounding as a result of fluvial rolling. Features also occurring frequently include brown patina, slight glossiness (not wind-gloss), and traces of cryoturbation. White patina occurs less generally. (It is known that as a rule brown patina requires a far longer time to be formed than white patina.) However, in the river terraces flints also occur occasionally that are patinated and/or rolled hardly or not at all.
- From terrace surfaces one can expect flints with wind-gloss as their most conspicuous characteristic feature. In addition brown patina and traces of cryoturbation, and (less generally) also white patina.
- Flints in loess can remain virtually unpatinated, as we know from sites abroad (e.g. in the vicinity: Rheindalen - THIEME, 1978). They can also be quite intensely patinated, however, and may display (usually slightly developed) wind-gloss too.
- Surface-finds, such as Neolithic material, may also remain unpatinated, but usually display white patina (developed to a variable extent). If there were movements of wind-blown sand or loess during the Holocene, which is probable as a result of deforestation etc., then one would expect wind-gloss now and then on Neolithic flints. This applies of course especially to the plateau.

The problem with a site like the plateau near Rijckholt is that on top of the plateau several metres of loess are present, but along the peripheral zones terrace gravel is also ploughed up. Therefore the question arises whether any flints present from the various situations can be distinguished from one another.

4. Several Finds

The finds from Southern Limburg that have been studied can be divided into four groups on the basis of their natural surface modifications:

- those characterized by rounding as a result of fluvial rolling (other surface modifications occur also);
- those characterized by wind-gloss and brown patina (other surface modifications occur also);
- those characterized by white patina and wind-gloss (other surface modifications occur also);



Fig. 4 The rolled hand-axe from Susteren. Measurements L_{max} 18.1 cm; B_{max} 9.3 cm; T_{max} 4.0 cm; weight 628.9 g. Photo by F.W.E. Colly, B.A.I., Groningen. Scale 1:1

- those characterized by white patina only or the absence of patina.
- Among the material studied there are 2 rolled flints, that must derive from river deposits. The first of these two rolled flints was found in a field (where terrace gravel was present) near Moerslag by A.J. GROENENDIJK in 1978 (STAPERT, in press). It is a fairly small bifacial tool with an unworked base (cortex). The flint is moderately though distinctly rolled, and displays moreover brown patina and a slight gloss (not wind-gloss); scratches are also present, but some of these may be the result of ploughing. Also resulting from ploughing activities are the signs of recent damage, from which it is evident that the raw material consists of grey flint with light-coloured patches. Around Moerslag high-terrace deposits are present, belonging to the level of Valkenburg. According to a recent publication of the Rijks Geologische Dienst (State Geological Service) these deposits constitute part of the Formation of Sterksel, and are probably older than the middle of the (rather poorly defined) 'Cromerian complex' (ZAGWIJN and VAN STAALDUINEN, 1975). There are no indications that this flint could be a pseudo-artefact. A number of well-formed flake-negatives are present, that probably arose as a result of hard percussion. As such this is presumably the oldest known artefact from the Netherlands. From a field near Libeek comes a slightly rolled

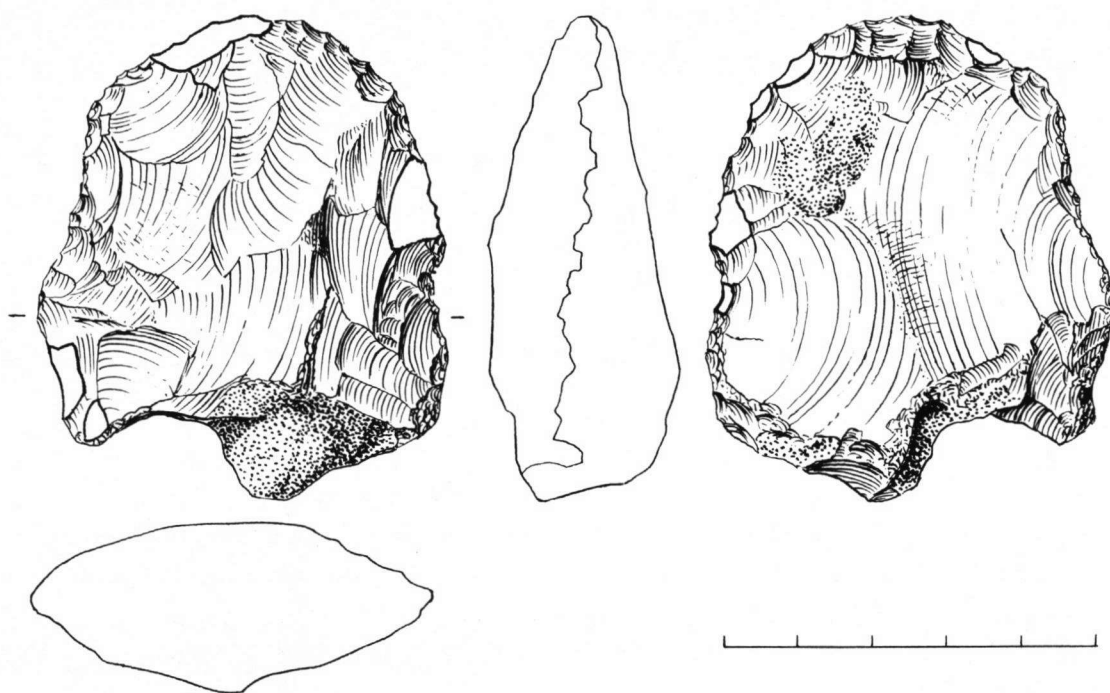
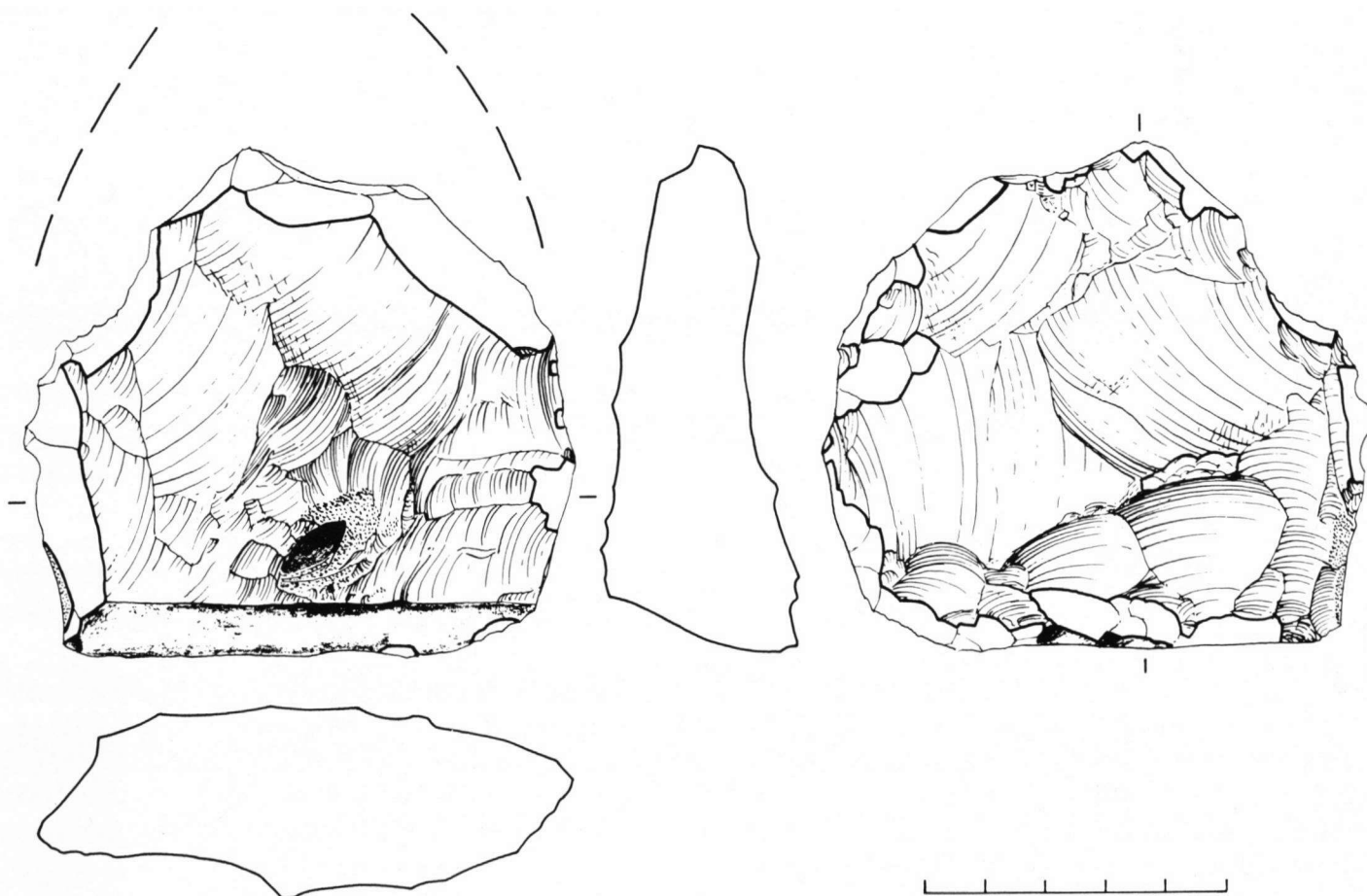


Fig. 3 Rolled bifacial implement from Moerslag. Measurements: L_{max} 6.5 cm; B_{max} 5.5 cm; T_{max} 2.4 cm; weight 83.1 g. Drawing by H.R. Roelink, B.A.I., Groningen. Scale in cm.

Legend of drawings:

- | | |
|-----------------------------|--------------------------------|
| left white | - (sub)recently damaged faces; |
| dense stippling | - cortex; |
| grey | - (old) frost-split faces; |
| grey with regular stippling | - secondary frost-split faces. |

Fig. 5 The hand-axe from the Gulpenerberg. Drawing by H.R. Roelink, B.A.I., Groningen. Scale in cm.



flake, that is possibly equally old. DE HEINZELIN (1977) recently published an object that was probably found in the same terrace geologically, near Halembye (ca. 5 km south of Eijsden).

Unfortunately DE HEINZELIN does not discuss the possibility that this find could be a pseudo-artefact. In recent years finds have also been made in Germany and Northern France that possibly date from about the same time (Kartstein - LÖHR, 1978; Rheindalen - THIEME, 1977; Wimereux - TUFFREAU, 1978).

The second rolled flint was found in 1972 by P.L. KEUREN alongside a road near Susteren (fig. 4). It is a large hand-axe that can be ascribed to the Acheulian. The hand-axe is markedly rolled, and displays in addition brown patina and a slight gloss (not wind-gloss). There are rather many subrecently damaged faces on which white patina and gloss are displayed. There are many scratches also present, but these may partly be the result of ploughing. Some of the subrecent damage also appears to be the result of contact with agricultural implements made of iron, as indicated by the presence of distinct traces of rust. It is unlikely however that the handaxe had been present for a long time in a ploughed field, in view of its secondary situation - the gravel alongside the road where it was found was supposedly suction-dredged out of the River Meuse. The place or origin of the hand-axe must therefore be regarded as unknown for the meantime.

- B. A number of hand-axes are known that can be ascribed to this group: here three finds are mentioned, the last one of which is a new find.

The first hand-axe found in the Netherlands is also the only one for which stratigraphical observations are mentioned in the literature. This is the hand-axe from Kerkrade, that was found in 1924 by W.J. LENNERTS, according to his report during canal-digging operations in the area of the Domaniale Mijl (BOHMERS and WOUTERS, 1954; VAN HAAREN, 1968). The hand-axe is said to have been found on the terrace surface under the loess (that here is probably lower loess, dating from the Saalian). The hand-axe is almost 19 cm long and displays, among other things, brown patina and wind-gloss that are both clearly more intensely developed on one of the two faces. Additional characteristics include cryoturbation-scratches and slight rounding (not as a result of fluvial rolling). Unfortunately some doubts are expressed in the literature as to whether the find-spot was in fact correctly reported. The presence of distinct traces on the hand-axe that are most probably the result of contact with agricultural implements made of iron does not allay these doubts. On the other hand the surface modifications are well in accordance with the stratigraphical position given for the find.

We must also mention here the hand-axe from Rimbarg (OPPENHEIM, 1947; BOHMERS and WOUTERS, 1954; VAN HAAREN, 1968) found in 1932 by C. BECKERS. This hand-axe too displays wind-gloss (again more intensely developed on one of the two faces) and brown patina. At the time when the find was made ca. 1.8 m of loess had been dug away at the site.

A third find is the badly damaged hand-axe found in 1974 by H.J. JANSSENS on the Gulperberg (fig. 5). Terrace-gravel was present on the field where the find was made. The hand-axe has an unworked base (an old frost-split surface), and could fit well into the Jungacheuléen as defined by BOSINSKI (1967). The hand-axe is not rolled, and displays brown patina, slight variable wind-gloss (especially on one of the two faces), and also 'friction gloss'. The presence of any traces of cryoturbation is difficult to ascertain on account of the considerable damage caused by ploughing. Where the hand-axe has been subject to subrecent rough damage (resulting from ploughing) white patina and a slight uneven gloss are present.

- C. Flints with white patina and wind-gloss have been found in large numbers (several hundreds) in Southern Limburg. (Many finds of group C and especially of group D were recently on view at an exhibition in Drouwenerzand (MUSCH and WOUTERS, 1978; see also ROEBROEKS, 1978). These finds are usually ascribed to the Paleolithic (see under 2), and it is assumed that they often originate from the loess, which is certainly possible. Unfortunately we do not know of any cer-

tain (*in situ*) finds out of the loess in this region. Such finds are to be expected, however, in view, for example, of the occurrence in Rheindahlen of several find layers in the loess (THIEME, 1978). It therefore seems very important that exposures of loess in Southern Limburg too should be examined systematically for archaeological material. Of course such finds offer far better possibilities for research than collections of isolated finds from the surface. Here I shall give only two (unpublished) examples of flint with white patina and wind-gloss.

An older find is a hand-axe, found in 1936 in the 'Kiezelkuil' (literally 'gravel-pit') near the church of Mesch by RUSSEL and E. NIJST (fig. 6); it is now kept in the Bonnefanten Museum in Maastricht. This hand-axe, recently damaged somewhat, fits well typologically into the M.T.A. (*subcordiforme*). The raw material is opaque flint, grey with small light-coloured patches (presumably 'Rijckholt type'). White patina and wind-gloss are present, both being more intensely developed on one of the two faces. An interesting feature is the presence of a smaller secondary frost-split face.

The second find (fig. 7) gives a strong impression of being Paleolithic. This hand-axe was found by J.H. VAN DER LINDEN on the eastern slope of the St. Pietersberg. It is a slender *cordiforme* with a cutting base, with white patina and wind-gloss present. A fairly large piece has disappeared from one of the faces as a result of secondary frost-splitting.

In addition to these two, as already mentioned, many other flints have been found that can be ascribed to this group. Published examples include the hand-axes from Sweikhuizen (VAN HAAREN, 1968), Steiner Bosch (VAN HAAREN, 1968), Heer (VAN IJZENDOORN, 1970; FELDER, 1971/1972; BLOEMERS, 1971/1972), Kerensheide (VAN HAAREN, 1968).

- D. Flints with no or only white patina (without wind-gloss) also occur in large numbers. Like most of the flints of group C, they are found mainly in places where much Neolithic material is present too. Here only a few examples will be given.

One of the most striking finds is the hand-axe (fig. 8) found in 1967 by F.C. KRAAYENHAGEN just within the confines of the Grand Atelier (FELDER, 1971/1972; BLOEMERS, 1973). This is a flat, triangular, finely worked hand-axe (typologically indistinguishable from similar examples in an M.T.A. context). The hand-axe is made out of 'Rijckholt flint', and displays only white patina, and therefore cannot be distinguished in any way from the locally abundant Neolithic flint material.

An older find from the same area (ca. 50 m south of the Grand Atelier) is a hand-axe, found in 1930 by ROMPELBERG, now kept in the Bonnefanten Museum. This is a finely made *subtriangulaire*, made out of a flake (fig. 9). White patina is present (more intensely developed on one of the two faces).

A third example was found in 1971 by W.M. FELDER on the western slope of the St. Pietersberg (fig. 10) (FELDER, 1971/72; BLOEMERS, 1973). This is a flat *cordiforme*, with part of the cortex preserved near the base. One face has been made by merely striking off a couple of large flakes, while the other face has been finished off more finely. The flint is covered with white patina (that again is more intensely developed on one of the two faces) and a very slight gloss (not wind-gloss), furthermore there is a secondary frost-split face. A remarkable unpatinated find is the well-formed hand-axe found by H.J. JANSSENS in 1974 near Wittern (BLOEMERS, 1975). There are many secondary cracks due to frost-splitting present in this hand-axe.

In this group too many (hundreds) more examples could be mentioned. For example, A.J. GROENENDIJK collected five unpatinated or only white-patinated hand-axes in the 'Schone Grub', where many similar flints were also found by others (see under Neolithic hand-axes).

5. Provisional conclusions

In the above (4), finds from Southern Limburg have been divided into 4 groups on the basis of their surface-modifications. The question now is to what extent these 4 groups can be correlated with the 4 possible geological find-situations mentioned (in 3). For the first group the correlation is certain: rolled flints come from fluvial deposits.

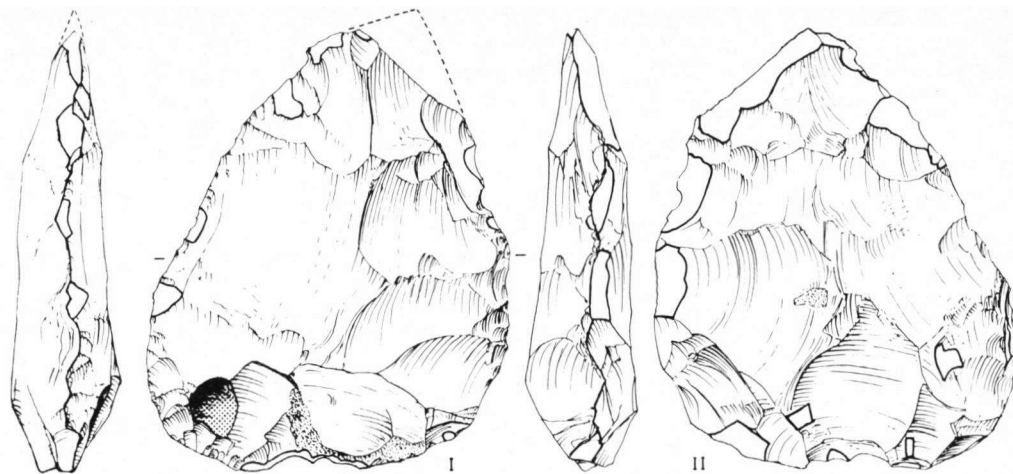


Fig. 6 The hand-axe from Mesch. Measurements: L_{max} 10.3 cm; B_{max} 8.3 cm; T_{max} 2.4 cm; weight 203.5 g. Drawing by H.R. Roelink, B.A.I., Groningen.

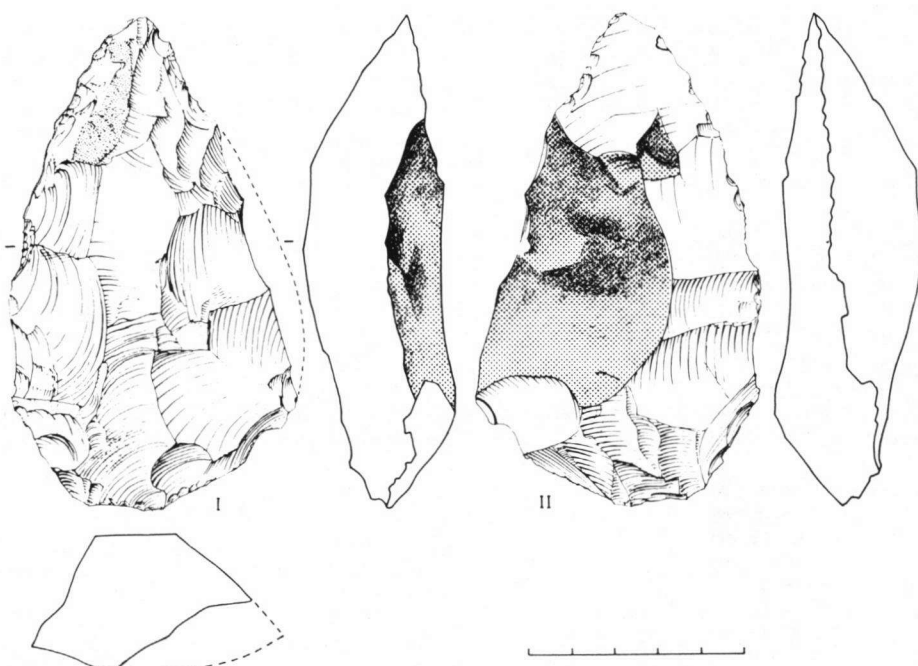


Fig. 7 The hand-axe from the eastern slope of the St. Pietersberg. Measurements: L_{max} 11.4 cm. Drawing by H.R. Roelink, B.A.I., Groningen. Scale in cm.

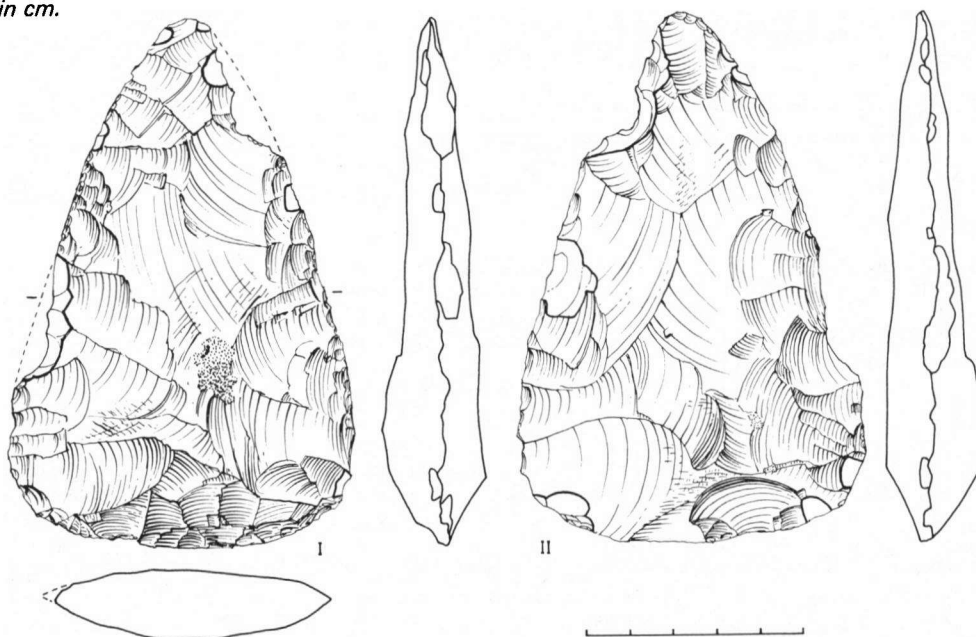


Fig. 8 The hand-axe from the grand Atelier near Rijckholt (Kraayenhagen) Measurements: L_{max} 12.2 cm; B_{max} 8.0 cm; T_{max} 2.3 cm; weight 175 g. Drawing by H.R. Roelink, B.A.I., Groningen. Scale in cm.

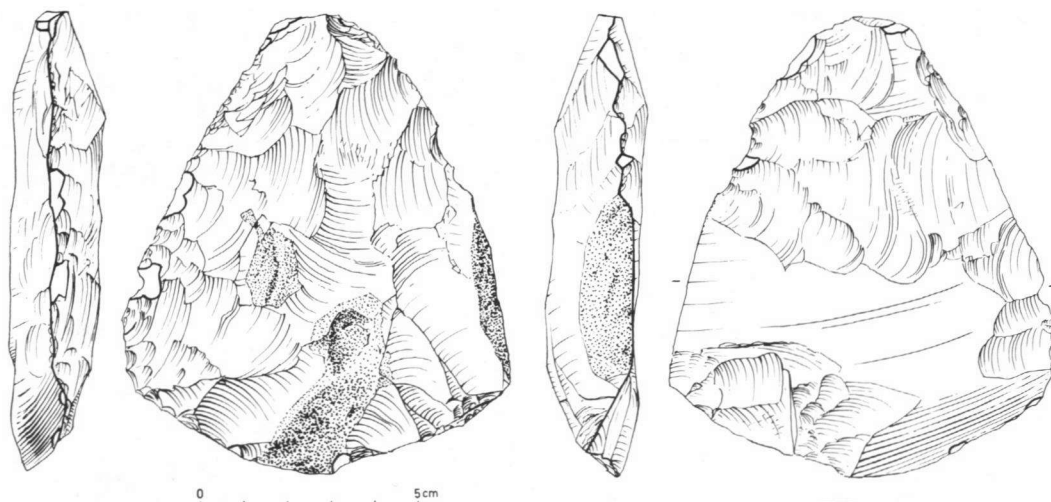


Fig. 9 The hand-axe from the surroundings of the Grand Atelier near Rijckholt (Rompelberg). Measurements: L_{max} 10.4 cm; B_{max} 8.9 cm; T_{max} 2.2 cm; weight 200.5 g. Drawing by H.R. Roelink, B.A.I., Groningen.

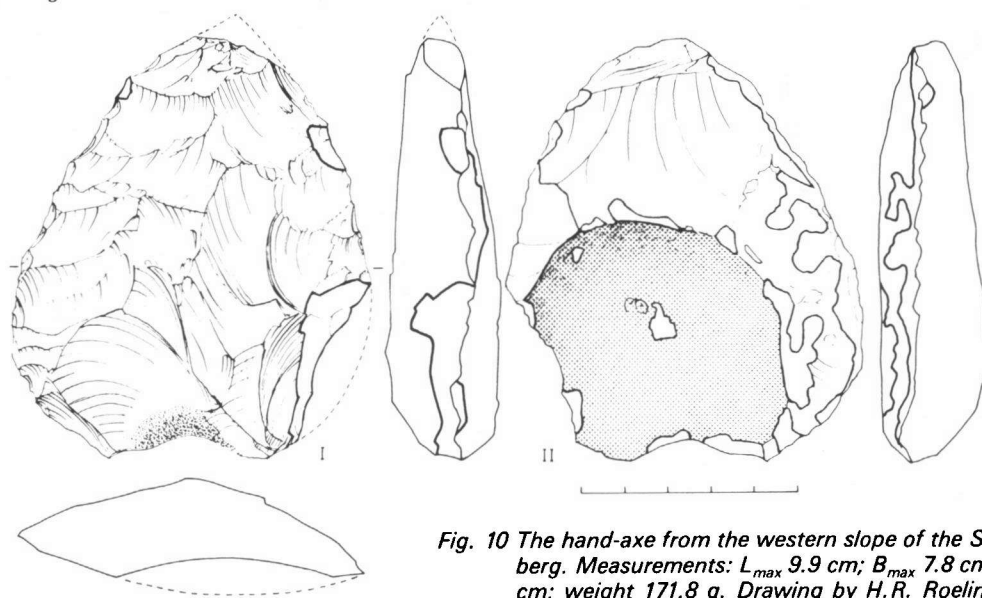


Fig. 10 The hand-axe from the western slope of the St. Pietersberg. Measurements: L_{max} 9.9 cm; B_{max} 7.8 cm; T_{max} 2.2 cm; weight 171.8 g. Drawing by H.R. Roelink, B.A.I., Groningen. Scale in cm.

For the second group the correlation is less certain, but nevertheless fairly probably: brown-patinated flints with distinct wind-gloss will as a rule have come from a terrace surface.

The third group gives the greatest problems. Although it is very well possible that flints with white patina and (slight) wind-gloss come from the loess, this cannot be definitely established. The reason for this is that during the Holocene also flints could have acquired wind-gloss, and could have been subject to secondary frost-splitting too. Worhty of mentioning here are the subrecently damaged faces on the hand-axes from Susteren and the Gulpenerberg (the result of ploughing), that have become white-patinated and glossy. The question arises in this connection whether flints found on the plateau of Rijckholt that are clearly Neolithic have any wind-gloss present too. This is indeed the case, but not particularly often. It is therefore very probable that in any case a number of the finds in group 3 is of Middle Paleolithic age (especially when both wind-gloss and secondary frost-split faces are present, as for example on the hand-axe from the eastern slope of the St. Pietersberg). In that case it is mainly the M.T.A. and the Upper Acheulian that appear to be represented. For flints of the fourth group (with no or only white patina present) it can be said that as a rule these are most probably Neolithic implements, certainly when they come from rich Neolithic situations.

To go further towards answering these problems there seem to be two good methods available:

a. carrying out small test-excavations at sites where white

glossy flints have been found, to see whether they indeed occur also *in situ* in the loess. This will be attempted soon on a limited scale on the plateau near Rijckholt. A problem here however is that until now such artefacts have not been found in distinct concentrations (personal comm. W.M. FELDER); b. locating Paleolithic sites in loess exposures.

I am grateful to a number of people for the realization of this article. In the first place of course to the owners, who gave me the opportunity to study their material; in addition to H.R. Roelink, who made the drawings of the hand-axes; to F.W.E. Colly, who prepared the photographs; to J.M. Smit, who drew fig. 2; to Sheila M. van Gelder-Ottway, who translated the text into English; and to Engelen Rondaan-Veger, who typed the manuscript.

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