LA STATION DE L'HERMITAGE A HUCCORGNE

Un habitat à la frontière septentrionale du monde gravettien

THE OPEN-AIR HERMITAGE SITE AT HUCCORGNE

An Open-air Site at the Northern Frontier of the Gravettian World

Sous la direction de

Lawrence G. Straus, Marcel Otte et Paul Haesaerts

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ETUDES ET RECHERCHES ARCHEOLOGIQUES DE L'UNIVERSITE DE LIEGE

LA STATION DE L'HERMITAGE A HUCCORGNE :

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Lawrence G. Straus, Marcel Otte & Paul Haesaerts

avec l'aide de la Direction de l'Archéologie de la Région Wallonne
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The site plan was drafted by Martinez. Stratigraphic sections drafted by Straus were redrafted by Ronald Stauber and Martinez (both UNM) and by Yvette Paquay-Baele (ULg). Artifact drawings originally done by Straus, Otte, Kaoru Akoshima (UNM & Tohoku University) and several students (notably Jennifer Veser of New College, Florida), were redrafted by Paquay-Baele.

Rebecca Miller (UNM/ULg) successfully undertook the major task of coordinating this publication, assembling the manuscripts and preparing the whole volume for the printer.

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Lawrence Straus & Marcel Otte
Albuquerque & Liège, October 2000.

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Le plan du site a été dessiné par Martinez. Les coupes stratigraphiques relevées par Straus ont été remises au net par Ronald Stauber et Martinez (tous deux de l'U.N.M.) et par Yvette Paquay-Baele. Les dessins d'artefacts, réalisés d'abord par Straus, Otte, Kaoru Akoshima (U.N.M. et Tohoku University) et d'autres étudiants (notamment Jennifer Veser du New College, Floride), ont été remis au net par Y. Paquay-Baele.

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CHAPTER 1

LOCATION AND DESCRIPTION OF THE HERMITAGE SITE AT HUCCORGNE (LIEGE PROVINCE, WALLONIA, BELGIUM)

Lawrence Guy Straus

INTRODUCTION

In Gravettian times, at the end of the Würm Interpleniglacial, bands of hunters were spread out in territories across the North European Plain from Wales to Russia. This zone of occupation above the Ardennes, Alps and Carpathians comprised the northern frontier of human penetration in a broad west-east band roughly between 50-52º north latitude. It is archeologically manifested by a string of sites of which Huccorgne is one of the most northerly. As one would expect at such high latitudes and under climatic conditions that were far from interglacial in character, the sites of the northern Gravettian frontier are not evenly distributed; indeed, quite to the contrary, they occur in definite concentrations, presumably in areas where combinations of geological and geographic features provided shelter, water, lithic raw materials and favorable opportunities for hunting. Such site clusters, with radiocarbon dates generally ranging between about 28-24 kya, include those of the Pavlov Hills in Moravia (Czech Republic), those of the middle Danube basin in Lower Austria, those of the upper Vistula near Krakow (Poland), those of the Ach and Lone Valleys in Baden-Würtemmberg (Germany), and the older Upper Paleolithic components of the Molodova and Kostenki clusters in the upper Dnestr and Don basins of Ukraine and Russia respectively. Less numerous and perhaps less spectacular, but no less important, are the Gravettian sites of southern Belgium. While stiletto-like straight-backed Gravette and Micro-gravette points are generally present as in the south, the northern Gravettian is stylistically divided in terms of large, stemmed projectile points between centrally tanged Font-Robert points in the west (southern Britain, Belgium, Germany) and shouldered Pavlov-Kostenki points in the east (Austria, Poland, Czech Republic, Slovakia, Ukraine and Russia). Leaf-shaped points are also still found in some Gravettian contexts in the northwest, apparently continuing a long-standing technological tradition from Aurignacian and Mousterian times in those regions.

The Belgian Gravettian (a.k.a. "Upper Perigordian") sites are numerous (perhaps as many as about 15 according to Otte [1979]), but, now with two exceptions, badly known. Many are problematical, consisting of finds from very early, small and/or casual excavations or surface or quarry discoveries. Several more-or-less characteristic artifact types (e.g., backed pieces, various kinds of burins, even long, narrow, parallel-sided blades) can also be found in the regional Magdalenian, making highly risky any absolute Gravettian attribution of poorly documented, undated collections (especially small ones from mixed contexts). Unfortunately, the key stratified sequences that had Gravettian components sandwiched between Aurignacian and Magdalenian layers (Spy, Goyet, Trou Magrite) were all caves excavated in the mid-late 19th century and their collections suffered many avatars during the course of history since that time (Figure 1). Other sites have yielded small assemblages that Otte (1979) has characterized as "late Aurignacian", sometimes despite very recent, perhaps problematic (Gravettian-age) radiocarbon dates of 24-25 kya (e.g., Grotte de la Princesse, Trou du Renard, Grotte du Halleux) (Gilot 1984). The recently excavated site of Trou Walou in eastern Liège Province has three conventional radiocarbon dates for a series Gravettian levels that range between 26-23 kya and that overlie a series of Aurignacian levels dating between 30-28 kya (Draily 1998). Uppermost Aurignacian Stratum 2 in recently re-excavated Trou

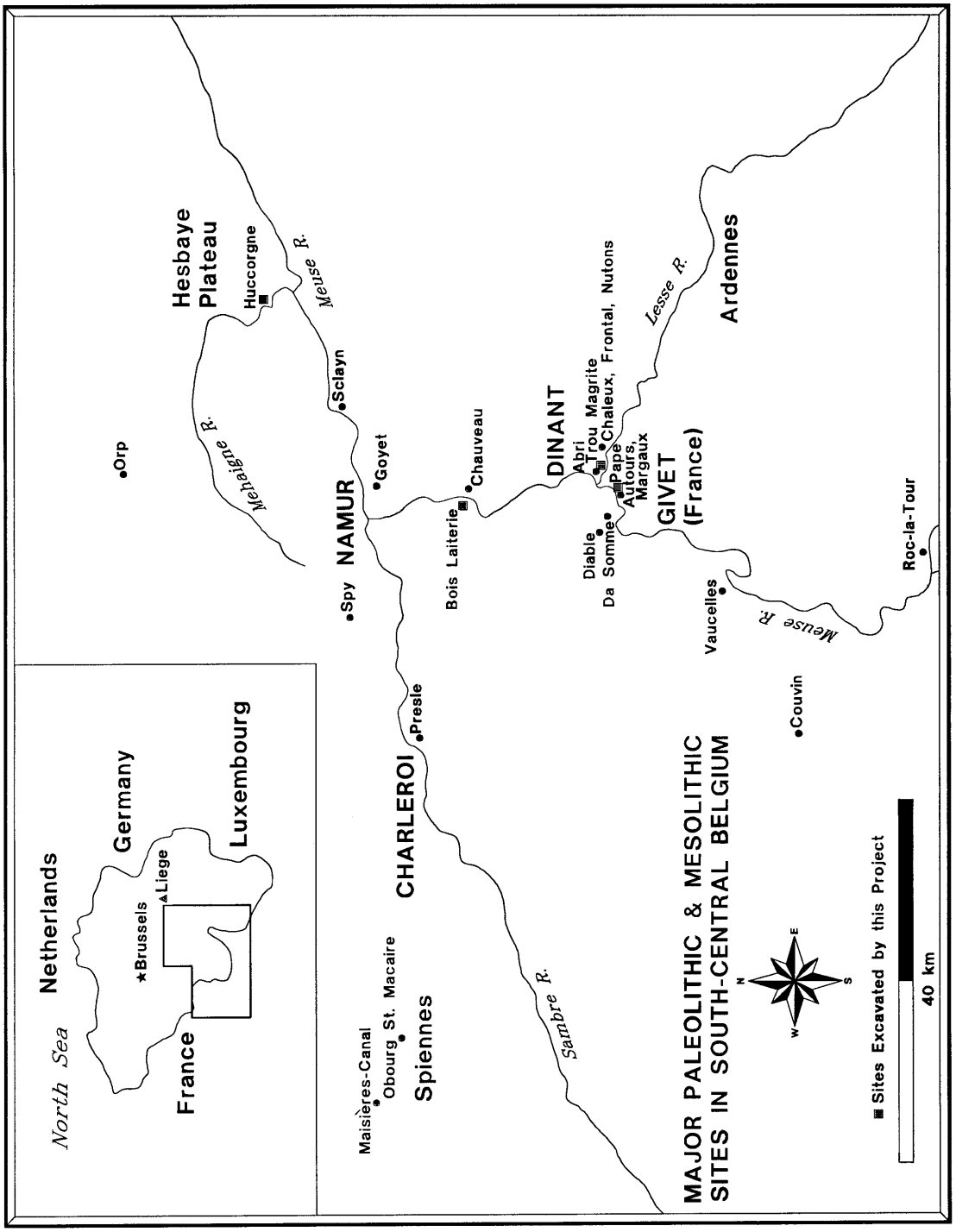

Figure 1. Map of Southern Belgium showing location of Huccorgne, plus other Paleolithic and Mesolithic sites.

Magrite (Namur Province) dates by four conventional radiocarbon determinations between 34-23 kya, with the older dates being more likely (Otte & Straus 1995). These are all caves in or near the Ardennes. There is an apparent overlap (or near-overlap) between late Aurignacian dates and early Gravettian dates in Belgium that remains to be explained satisfactorily. More significantly, the separate realities and individual unity of these traditional archeological constructs is subject to serious question, although we continue to use them as heuristic analytical devices.

In a pattern very similar to that which was to also typify the Magdalenian after the abandonment of northwest Europe, the Gravettian settlement pattern in Belgium consists of cave sites along the northern and western flanks of the Ardennes and open-air sites on the loess covered plains of the middle zone of the country. These two very different habitats are, however, contiguous; the straight line distances between Trou Magrite (one of the southernmost sites in the Ardennes) and Huccorgne and Maisières on the plains are only 45 and 70 km respectively. (The distances via the main river valleys are not significantly greater---clearly within the realm of hunter-gatherer mobility ranges.) Some cave sites (e.g., Spy, Goyet) are even closer to the plains. Such a bipolar distribution of nevertheless nearby sites lends itself to an hypothesis of (seasonal?) human movements between the uplands in the south and the lower midland plateaux. The former regions are replete with karstic caves in the deeply entrenched valleys of the upper Meuse and its tributaries (notably the Lesse River), thus providing abundant shelter, as well as water, wood for fuel and construction, and excellent terrain for ambushing game animals. The plains of Middle Belgium, in contrast, have rich, accessible sources of excellent-quality Upper Cretaceous chalk flint, which is completely lacking in the Ardennes or their foothills. The flint occurs in two major areas: the Hainaut Basin around Charleroi and Mons in the west and the Hesbaye Plateau which stretches across northern Liège Province and into the Dutch enclave of Maastricht in the east. The latter is generically known (especially in the German literature, since this stone is found in Magdalenian sites of the Middle Rhine) as "Meuse flint". The seasonal aspect of the obvious potentially functional complementarity of the two regions (neither Gravettian nor Magdalenian sites have been found on the sandy lowlands of northern Belgium or the Netherlands, although Epipaleolithic and Mesolithic sites are abundant in this area) is made logical by the high latitude of this area (50-51º) and by the scarcity of caves (and hence shelter) on the plateaux of Middle Belgium. Unfortunately, the open-air sites of all periods are very poor or totally lacking in faunal remains and thus lack seasonality indicators. However, there are limited indications of cold season occupation (and none for summer occupation) in the Aurignacian and Magdalenian cave sites of the upper Meuse/ Lesse valleys (see discussions in Otte & Straus 1995, 1997). It is very likely that the essential reasons for which Gravettian (and Magdalenian) settlement was possible so far north as Belgium was in fact the juxtaposition of the Ardennes and the northern plains, with their mutually exclusive and hence complementary resources of shelter and flint, together with the presence of a variety of game species (notably reindeer, horse and mammoth) that also probably moved between protected upland areas in winter and more exposed, but grass-covered plateaux in summer. It is worth noting that there is little or no evidence of Gravettian occupation in northern France above the cluster of sites at c. 48º N latitude near the confluence of the Loing with the Yonne, about 50 km southeast of Paris (Schmider 1990). The Belgian Gravettian group is even more distantly separated in space from the sites of southwest Germany. The Belgian site cluster (which falls entirely within the borders of Wallonia) seems to represent a distinctive, geographically bounded phenomenon, even if the presence of tanged Font-Robert points does suggest contacts with France and the territory that is now the island of Britain.

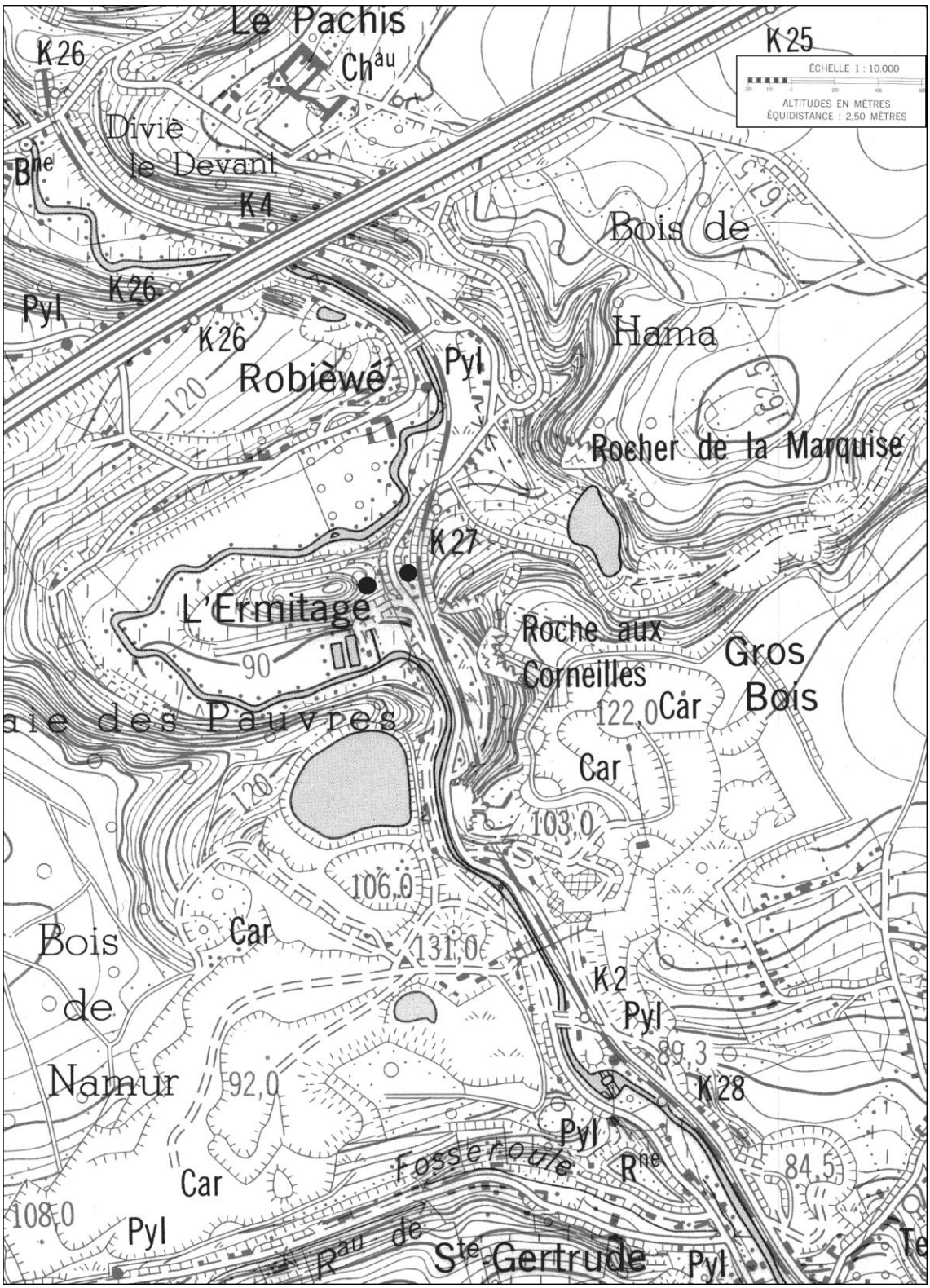

Figure 2. Detailed map showing location of the Huccorgne-Hermitage site on an oxbow meander ridge within the Méhaigne River gorge and transected by road & railroad trenches. (after Institut Géographique National map 41/6, scale 1:10000)

MAISIÈRES-CANAL AND HUCCORGNE-HERMITAGE

As of 1990, our knowledge of the Gravettian in Belgium was limited to the old references and collections (mainly from caves) assembled and analyzed by Otte in his dissertation (1979) and the major, monographically published excavations of Haesaerts and de Heinzelin (1979) at the open-air site of Maisières that had been discovered as a result of canal-digging in 1966. The Hermitage open-air site at Huccorgne (hereafter, "HH") had been known since the late 1880s (observations by M.de Puydt and M. Lohest in the road and railroad trenches that had been cut through the site in the 1870s; excavation by F.Tihon in 1886-90). A century later, in 1969-71, HH was the object of large-scale (c. 150 sq.m) excavations by an amateur archeological society, Les Chercheurs de la Wallonie, led by J. Destexhe. This work remained unpublished until now, although a radiocarbon date from a bulk bone sample obtained by Destexhe was known (Gilot 1984). Finally, in 1976 and 1980, long sections were dug and large areas of Gravettian occupation were exposed along both the eastern and western faces of the road cut and a deep stratigraphic section was cleaned from the top to the base of the western face of the railroad cut under the direction of P.Haesaerts of the Institut Royal des Sciences Naturelles de Belgique (IRSNB). Although the geological sequence and paleoenvironmental reconstruction developed and published by Haesaerts (e.g., 1978, 1984; Haesaerts & Laville 1988) as a result of the sections he excavated along both the road and railroad trenches at HH (in conjunction with his work at Maisières and elsewhere) were very significant, the abundant archeological materials that he and his student, S.Froment (1980), had uncovered during their work were unstudied and unpublished.

In light of the extreme paucity of information on, but great importance of the topic of Gravettian occupation of Belgium immediately prior to the climatic downturn and human abandonment of the Last Glacial Maximum in the wider context of northwest Europe, Otte proposed to Straus the limited re-excavation of HH in 1990. This possibility was opened up due to the willingness of the landowners (first, M.& Mme. B.Dock for the main site and, later, Mme. Smetz for the extension of the site to the west of the road trench) to permit us to dig on their properties. A joint excavation project of the Universities of New Mexico (UNM) and Liège (ULg) was organized under the co-direction of Straus and Otte. The former was on site daily; the latter visited frequently. HH was excavated along with Trou Magrite during the summers of 1991 and 1992; work at HH (Smetz property) was finished along with the excavation of Abri du Pape during the summer of 1993. Research at HH was funded by grants from the US National Science Foundation, the National Geographic Society, the L.S.B.Leakey Foundation and the Regional Government of Wallonia, with material support from the Universities of Liège and New Mexico.

Obviously there are two axes of interest for the comparative study of HH in the context of the Belgian Gravettian: 1.) the relationship between the sites of the plateaux and those of the uplands and 2.) the similarities and differences between HH and the other major plateau site, Maisières. The former axis of interest has scanty bases for detailed analysis, due to the poverty and/or stratigraphic uncertainty of the collections and lack of chronostratigraphic or paleo-environmental data from the caves (but see Miller 2000, for lithic raw material analyses). (The recent re-excavation of a small remnant area of intact deposits on the terrace in front of Magrite Cave revealed that the once-present Gravettian component had been entirely removed, apparently in the 19th and early 20th centuries [Otte & Straus 1995]). Comparisons between HH and Maisières are more readily practical, due to the modernity of the (latest) excavations, the fact that the sedimentology of both sites was studied by the same geologist (Haesaerts), the existence of multiple radiocarbon dates at both, and the broad similarity of their environments.

An additional (albeit secondary) interest of the HH site is the presence of traces of a Mousterian and/or recent Acheulean component(s) found by Haesaerts, by Destexhe, and by Tihon

in lower strata along the railroad cut. These traces are particularly interesting in light of the large number of Mousterian occupations in caves closely contiguous with HH in the Méhaigne gorge between the towns of Huccorgne and Moha (e.g., grottes de l'Hermitage I & II , du Docteur, du Chena, du Curé, abri du Sandron)(Ulrix-Closet 1975).

THE LOCATION OF HUCCORGNE-HERMITAGE

HH is located at 50º33'45" N latitude, 5º10'50" E longitude (Lambert coordinates: x=207, y=139.3 on the Wasseiges-Braives [No.41/5-6] 1:25,000 map of the Institut Géographique National de Belgique) in the town of Huccorgne, northwestern Liège Province (Wallonia, Belgium)(Figure 2). It is at an approximate elevation of 100 m a.s.l. HH is situated on an osterbeek oxbow cutoff ridge between the Méhaigne River to the west and south and the Roua stream (which had been captured by the Méhaigne, thereby creating the osterbeek type of oxbow meander) to the north. The Roua originally had flowed southward, hugging the eastern cliff base and joining the Méhaigne downstream of which is now the site. Acccording to Haesaerts (personal communication) the Roua channel had run down the area now occupied by the main HH site in the pre-Würm period. After capture by the Méhaigne further upstream, the Roua's former alluvial channel filled up with colluvia and loess during the Würm glacial. The Huy to Burdinne road and railroad trenches were cut through these sediments without having to blast through limestone bedrock, although this is exposed at the base of the two cuts (P.Haesaerts, personal communication; also see Froment 1980).

The site is bounded to the east by the c. 30 m-high Roche-aux-Corneilles limestone cliff. Just upstream of HH, north of the Roua stream, there is another vertical limestone cliff: Rocher de la Marquise, also bounding the left bank of the Méhaigne. HH is 500 m downstream (south) of the viaduct of the E42 highway between Namur and Liège. The place-name, "Hermitage", refers to a manor house immediately downstream of the site. The HH open-air site is not to be confused with the nearby Hermitage cave site, which is one of several small caves along the Méhaigne valley in this vicinity to have yielded small Mousterian and Upper Paleolithic assemblages, including possible Aurignacian materials in the Trou du Docteur recently radiocarbon dated to 36,650±1000 BP (Miller et al. 1999).

As mentioned above, the HH site lies on an oxbow bend of the Méhaigne within the deep, cliff-lined valley of this river at the point where it cuts down from the Hesbaye Plateau between Liège and Namur toward its confluence with the middle course of the Belgian Meuse, some 7 km downstream along the Méhaigne (5 km in a straight line to closest point on the Meuse). The Meuse in this sector is currently at around 90 m a.s.l. and the highest points on the Plateau above HH are at between 170-180 m a.s.l., so relief is quite gentle. Being near the valley floor of the Méhaigne gorge, HH would be somewhat sheltered from west or east winds, but one can imagine cold, north, winter winds sweeping down the valley and ripping across the site's low, east-west-oriented ridge. It would also have suffered from cold air drainage especially in winter. While the site is below, in or atop loess, colluvia and alluvia filling an old channel (that of the paleo-Roua stream), the western end of the oxbow is a relict limestone hill (c. 110 m a.s.l.), around which the Méhaigne bends. This hill and the oxbow ridge itself would have provided commanding views both up- and downstream and good vantage points for spotting and then killing game animals moving along the strategic passage that the Méhaigne provides between the Plateau and the Meuse Valley, itself the major corridor for communication in eastern and central Belgium. The ridge, as a natural obstacle across the gorge, is an ideal setting for ambush hunting.

In straight line distances, HH is about 17 km from the Gravettian site of Engis also above the

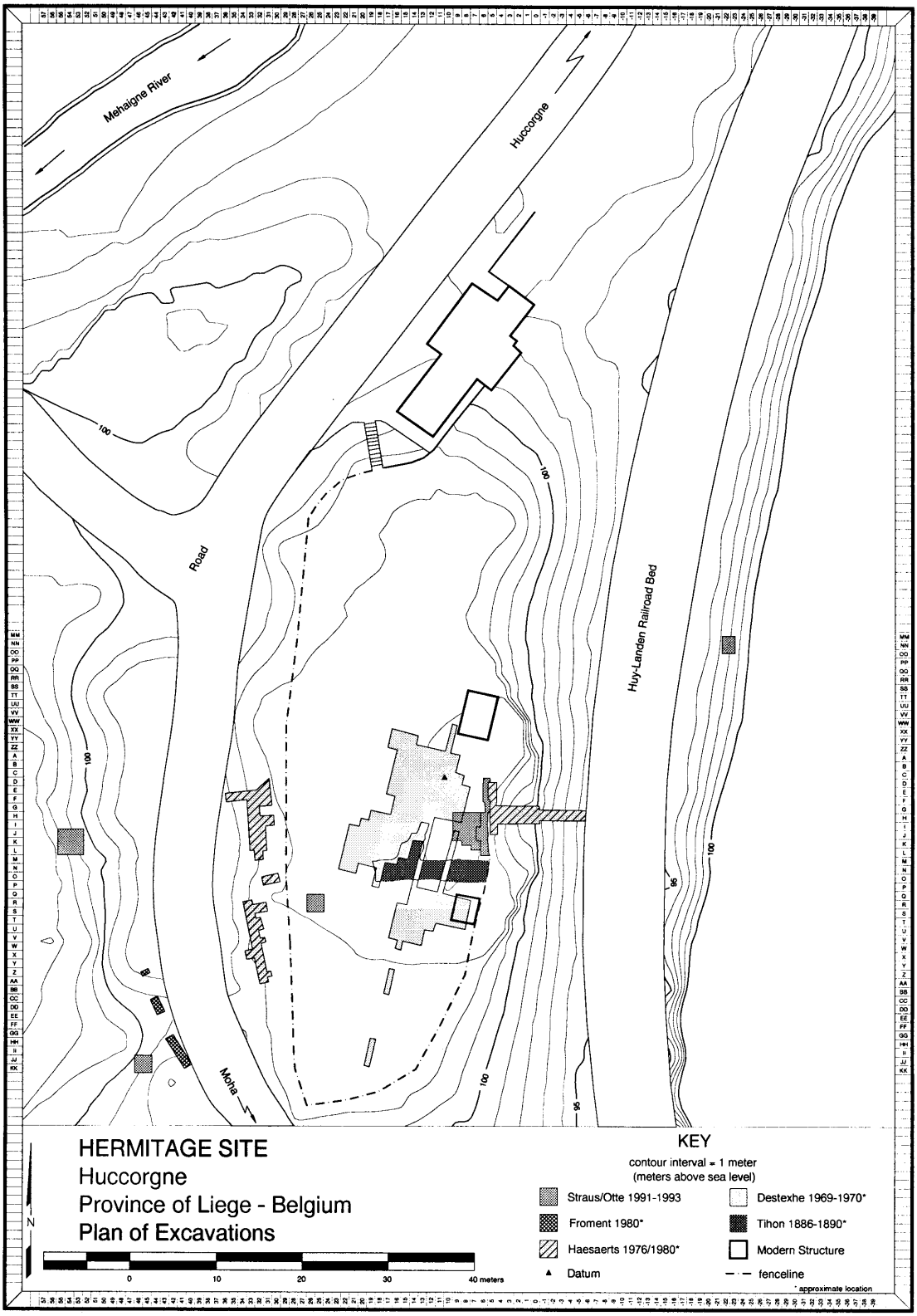

Figure 3. Plan of the Huccorgne-Hermitage site, showing locations of the various excavations in the main (eastern, "Dock") and western ("Smetz") areas, as separated by the road trench.

left bank of the Meuse near Liège, about 19 km from Goyet above the right bank of the Meuse between Andenne and Namur, about 35 km from Spy above the left bank of the Meuse's main western tributary the Sambre between Namur and Charleroi. It is about 18 km from the various poorly known Upper Paleolithic sites of Marche-les Dames on the left bank of the Meuse just downstream (east) of Namur. In addition, HH is about 13 km from the major Mousterian cave site of Scandina at Sclayn (near Andenne on the right bank of the Meuse), which also had remnants of (disturbed or redeposited?) Upper Paleolithic components in its uppermost deposits (Otte 1998). Finally, HH is about 16 km north-northwest of Trou Al'Wesse, a site in the low Condroz hills (Liège Province) across the Meuse, that has Mousterian and Aurignacian components, the latter of which date between c. 36.5-31 kya (Otte et al. 1998). In short, HH is not only immediately adjacent to several small cave/rockshelter sites, but it is also within a day's walk of numerous other sites along the course of the middle Meuse, just north of the edge of the Ardennes foothills in southern Liège and Namur provinces.

From the plateau above HH one can easily see the stretch of the Meuse Valley between Huy and Andenne and the Condroz foothills of the Ardennes to the south. Beyond them lies the upland cluster of Mousterian and Upper Paleolithic sites in the lower Lesse Valley, 40-45 km south-southwest as the crow flies.

Besides its strategic, albeit rather exposed position on a natural route of passage between the Meuse Valley and the Hesbaye Plateau (attested by the existence of the very railroad and road whose construction led to the site's discovery), HH is immediately surrounded by a significant source of good nodular flint. Derived from the Upper Cretaceous limestone through which the Méhaigne and Roua cut the top their valleys (the base of the Méhaigne valley cuts through much older Devonian and Carboniferous deposits) , this flint is readily available in abundance. At present it can be found in gardens and ditches in the valley-side and valley-bottom village of Huccorgne, as well as in plowed fields atop the plateau along the rims of the Méhaigne gorge. (For example, excellent, large nodules were found by Mr.Smetz at their home, about 250 m upstream of the site, during excavation for a new septic tank at the time of our 1992 work.) Presumably during the less densely vegetated conditions of the end of oxygen isotope stage 3/ early stage 2, with unstable slopes, flint nodules would have been easy to obtain in the valley during Gravettian times. So, as at Maisières, while hunting, as facilitated by its physical situation, was done at HH, the most significant "magnet" which (repeatedly) drew humans to the Méhaigne gorge was probably the abundance and availability of good-quality, large nodules of chalk flint.

THE LAYOUT OF THE HERMITAGE SITE

It is a bit difficult to visualize the natural configuration of the HH site, as it has been so heavily altered by major human activities over the past century and a half, notably the digging of two major trenches across the ridge of the oxbow bend. The deep, straight railroad (RR) trench (with overgrown tracks of the now-abandoned Huy-Burdinne line) hugs the western edge of the ridge at the base of the cliff and may have destroyed relatively little of the site, based on the relative scarcity of finds at the western end of our main excavation and the absence or minimal presence of a Gravettian component in a small test section we dug on the eastern side of the RR trench. The curving Moha-Huccorgne road trench (broad, but far less deep than the railroad cut) to the west may have destroyed much more of the site, judging from the wealth of materials found by Haesaerts in his 1976/1980 excavations along the eastern edge of this cut and by Froment in 1980 along its western edge. However, there are various indications that the road cut may approximately correspond in location to a Gravettian-age channel which had led to some reworking of the cultural materials and

destruction of faunal remains in this sector of the site. The site today is a residential property: a large lawn with trees, sheds and a house with its out-buildings at the northern end of the site area. The whole is dramatically bounded by the two trenches which converge at the south, where the road and railroad run next to one another along a narrow bench between the base of the Roche-aux-Corneilles cliff and the recurving Méhaigne opposite the Hermitage manor house (Figure 3).

Conservatively estimated by the east-west distance between the two trenches and the north-south distance between the most distant archeological pits to yield Gravettian remains, the main HH site totals about 1000 sq. m. What is unknown is the extent to which the cultural deposits might continue northward toward the Dock's house, as the 35 m-long area between it and Destexhe's main trench at the highest point in the center of the lawn ("*la butte*") has not been archeologically tested. Thus the site could conceivably be at least twice as large. In addition, it is clear that at least a light scatter of probably Gravettian (and definitely Mousterian) artifacts extents at least 20 m further west into the Smetz property. As we did not dig pits any further west than along the western rim of the road cut, it is possible that the site (as defined by lithic scatters) might (have) extend(ed) to the limestone hill at the western end of the oxbow ridge. Excavations have obviously been limited not only by the usual constraints of money and time, but also by the unusual situation of the site mainly being on the lawn of a private residence.

Plate 1. The Hermitage ridge open-air site looking southward across the Mehaigne River meander from hamlet of Robiewe. Roche-aux-Corneilles cliff is at left.

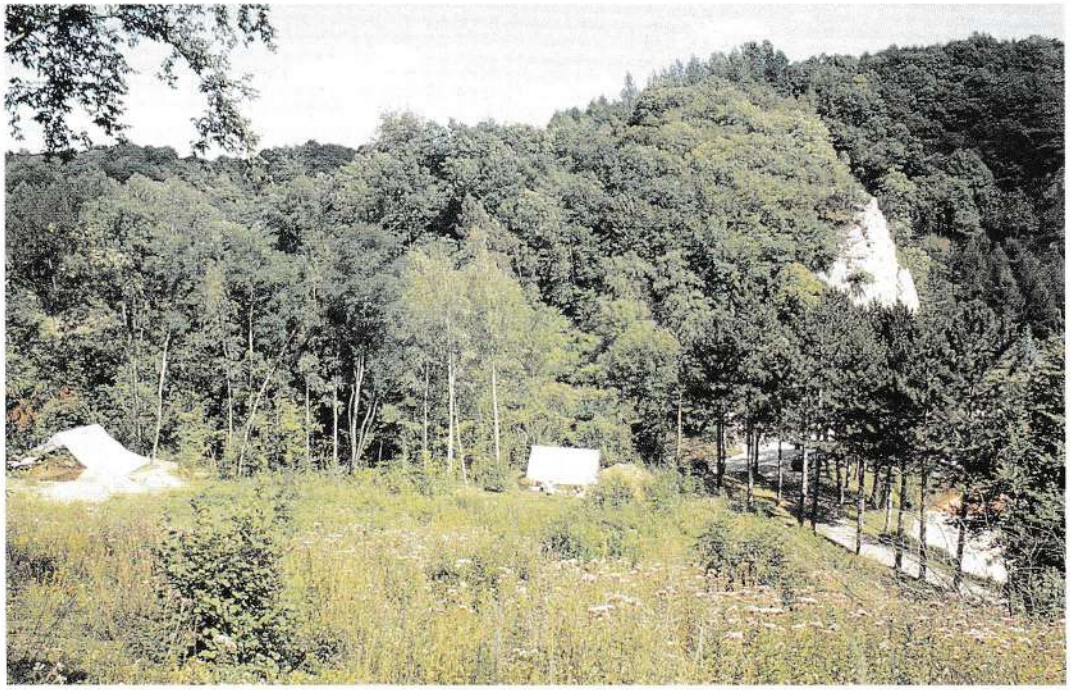

Plate 2. The Hermitage ridge open-air site looking eastward: western ("Smetz) area in foreground with tarps over both *sondages* and main ("Dock") area behind the trees; Roche-aux-Corneilles cliff is at background.

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CHAPITRE 2

HISTORIQUE DES FOUILLES

Marcel OTTE

Le site de la Station de l'Hermitage fut découvert lors du creusement des deux profondes tranchées entaillant la butte sur chaque côté. Elles recoupaient ainsi le méandre de la Mehaigne pour faciliter l'accès dans la vallée, autant par la route que par le chemin de fer. Ces travaux se sont déroulés vers 1870. Les dépôts pléistocènes ainsi mis au jour firent l'objet d'une description géologique générale établi par G. Dewalque (1875, p. CXL) : la butte était formée de dépôts sableux avec lambeaux d'argile, surmontés de limons au sommet desquels se situait un niveau caillouteux.

La couche archéologique supérieure fut reconnue par M. De Puydt et M. Lohest dans les années 1880. Ce niveau à silex taillés fut reconnu sur environ 15 mètres de longueur sur les deux côtés, mais ne fit pas alors l'objet de fouilles (De Puydt et Lohest, 1884-1885, p. 129).

Entre 1886 et 1890, F. Tihon y effectua des fouilles systématiques (Fig. 1), en particulier dans une tranchée de 20 mètres de longueur et tracée perpendiculairement à la voie de chemin de fer. Un sondage profond fut en outre mené le long de la route (Dormal et Tihon, 1890-1891, p. 52 et 59). À cette occasion, la description sédimentaire fut réalisée d'une façon plus complète et plus précise :

g	terre végétale : 20 cm.
f	limon "vert-jaunâtre", 1,65 m, avec fragments calcaires vers la base et des restes archéologiques dans la partie supérieure (poteries et silex).
e	sable argileux jaune clair (20 cm) dans lequel se trouvait le principal niveau archéologique.
d	argile jaune, 50 cm.
c	limon noir, 30 cm.
b	argile jaune sableuse (30 cm) avec fragments calcaires.
a	sable jaune, argileux au sommet.

Sur le côté de la route, à 5 mètres de profondeur, une autre couche de sable jaune contenait des restes de mammouths et des silex taillés, attribués par la suite au Paléolithique moyen (Ulrix-Closset, 1975).

On peut estimer que les "sables jaunes" décrits correspondent en fait aux lœss observés récemment, très purs, poudreux et stériles. Le "limon" avec blocs calcaires correspond probablement aux argiles de base, également reconnues dans nos travaux et sur lesquelles notre couche archéologique fut déposée. Les attributions récentes, liant les occupations archéologiques aux formations naturelles, seront évoquées dans un chapitre particulier, ci-dessous.

Par la suite, des fouilles furent reprises au site de l'Hermitage par Joseph Destexhe-Jamotte qui y observa des traces préhistoriques lors du creusement d'un puits (voir étude, ci-dessous). Ces campagnes s'étendirent sur trois années (1969-1971).

D'autres campagnes furent menées sur cette butte au cours des périodes récentes. D'abord, les profils alignés sur la route et la tranchée du chemin de fer furent nettoyés et redressés par une équipe de l'Institut des Sciences Naturelles de Belgique sous la direction de Paul Haesaerts en 1976 (Haesaerts, 1978) et en 1980 (Froment 1980). Une dernière série de campagnes fut menée par une équipe conjointe organisée entre les Université de Liège et du Nouveau Mexique (à Albuquerque), entre 1991 et 1993 (Otte *et al.*, 1992, 1993; Noiret *et al.*, 1994, Straus *et al.* 1997).

Une description intéressante provient des notes publiées par De Puydt et Lohest (1884-1885, p. 130). À deux ou trois mètres de profondeur, sur un lit de graviers et de cailloux calcaires, se trouvaient des fragments osseux, des charbons de bois qui définissaient une occupation, repérée sur plus de 15 mètres de longueur. Cette couche "paraît s'être étendue sur plusieurs centaines de mètres carrés". Plus loin, les auteurs écrivent : "Les silex, recueillis en grand nombre, souvent les uns sur les autres, paraissent occuper la place même où ils furent jetés, ou perdus". Encore plus loin, les mêmes auteurs décrivent (p. 131) des "silex de nature variée mais qui proviennent du pays, au moins pour la presque totalité". Ils établissent enfin une relation avec les habitants des grottes tout proches, situées dans le vallon : "Il est probable que des fouilles régulières permettraient d'établir certaines relations entre les habitants des cavernes et ceux qui sont venus fixer leur foyer dans la vallée" (De Puydt et Lohest, 1884-1885, p. 131).

Dans leur publication de 1890-1891, Dormal et Tihon donnent une autre description stratigraphique, de bas en haut (p. 50-62) :

a	sable pur, jaune, devenant argileux au sommet.
b	argile jaune, sableuse, avec de nombreux débris calcaires vers le haut (30 cm).
c	limon noir (30 cm).
d	argile jaune (50 cm).
e	sable argileux, jaune clair; niveau principal, 20 cm, ligne de contact sinueuse.
f	limon vert jaunâtre (1,65 m) avec de nombreux débris calcaires vers la base et une trace archéologique vers le sommet (poteries, silex, plaquettes; 20 cm).
g	terre végétale (20 cm).

L'attribution de la couche supérieure au Néolithique a provoqué des erreurs d'interprétation quant à la formation de la butte que l'on a cru plus récente (Tihon, 1895-1896, p. 289). Par contre, le niveau inférieur (5 mètres de profondeur) fut attribué à l'Acheuléen. À cette époque également, le site fut reconstitué comme un îlot fossile, constitué entre deux bras de la Mehaigne (p. 290).

Une dernière présentation de ces fouilles anciennes est fournie ultérieurement (Fraipont et Tihon, 1896, p. 16-17) :

1	la terre végétale fait 50 cm d'épaisseur.
2	un limon "vert-jaunâtre" y fait suite, de 1,65 m d'épaisseur; il contient des poteries des silex et une ébauche de hache.
3	une couche de sables argileux jaune clair, de 20 cm d'épaisseur, probablement éolienne; s'y trouvent intégrés de nombreux silex taillés et des déchets d'atelier que les auteurs attribuent au néolithique; selon nous, il s'agit effectivement de la couche périgordienne.
4	argile jaune, 50 cm d'épaisseur.
5	limon noir, 50 cm d'épaisseur.
6	argile jaune sableuse, avec blocaux calcaires à son sommet et des rognons de silex bruts (30 cm).
7	sable pur devenant argileux, qui contient une molaire de mammouth (p. 18).

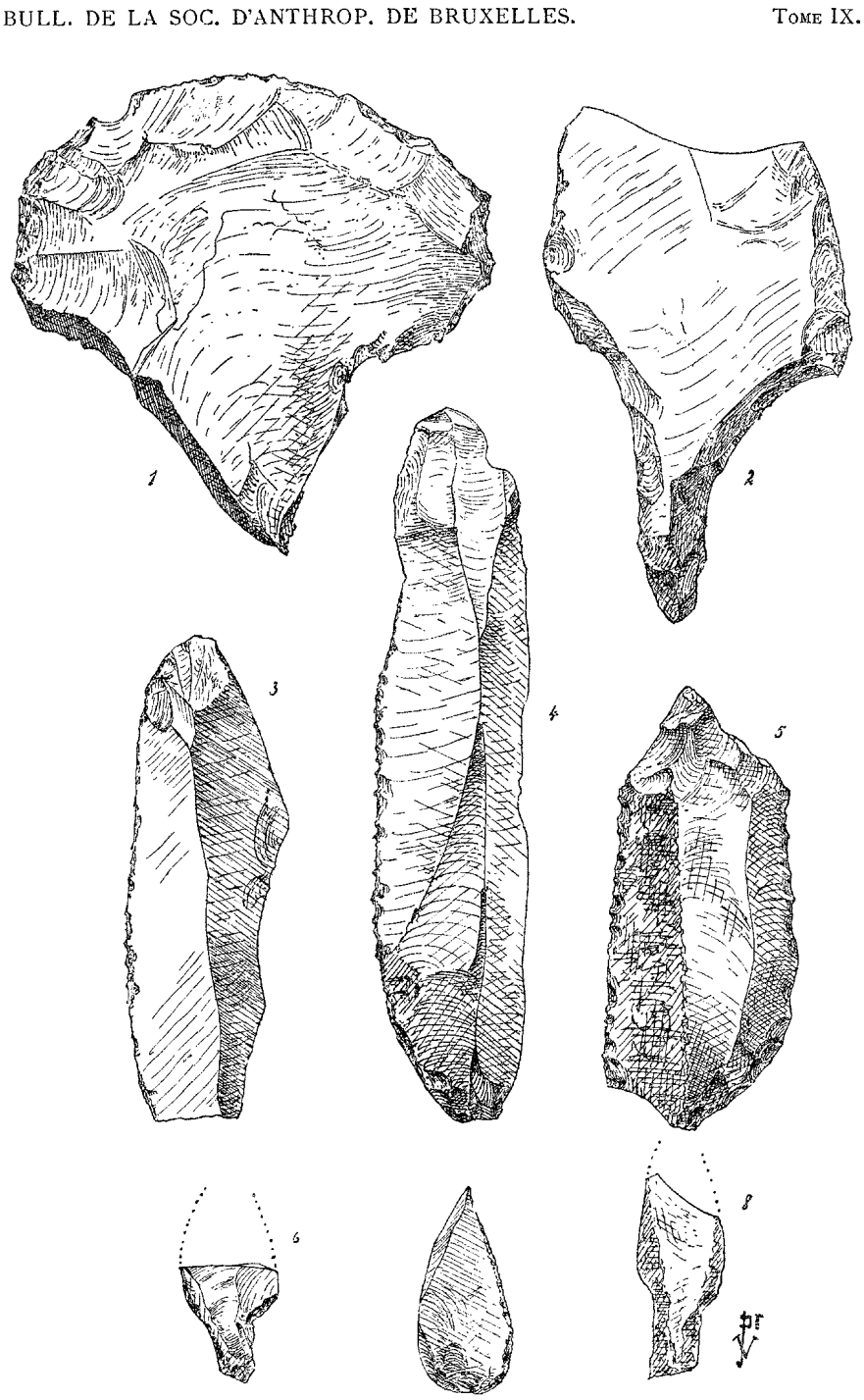

Figure 1. 1: grattoir; 2: fragment de pointe de lance; 3: lame dont la pointe est taillée des deux côtés; 4: couteau; 5: grattoir; 6-8: pointes de flèches. (d'après Dormal et Tihon 1890-91).

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CHAPTER 3

STRATIGRAPHIE DE LA STATION PREHISTORIQUE DE L'HERMITAGE A HUCCORGNE

Paul Haesaerts

1. SITUATION

La station préhistorique de l'Hermitage à Huccorgne constitue avec Maisières-Canal dans la région de Mons, l'un des principaux gisements de plein air du Paléolithique supérieur associé à un enregistrement loessique bien documenté, susceptible d'être intégré à la séquence stratigraphique régionale de Moyenne Belgique.

Le site de l'Hermitage est localisé sur la rive est de la Méhaigne, à quelques 200 mètres en aval de son confluent avec le ruisseau du Fond des Rouâ (Fig. 1). En cet endroit, la Méhaigne décrit une large boucle qui enserre un promontoire boisé; celui-ci se raccorde au plateau calcaire de la rive gauche de la Méhaigne par une ensellure comblée de dépôts limoneux, située à l'emplacement d'une paléo-vallée du ruisseau du Fond des Rouâ active au Pléistocène moyen qui rejoignait la Méhaigne en aval du promontoire (Froment 1980).

La station préhistorique occupe le centre de l'ensellure dont le sommet se situe à la cote + 11 mètres par rapport à la plaine alluviale de la Méhaigne. Le gisement est préservé dans la partie supérieure d'une butte limoneuse délimitée par deux tranchées de cinq à huit mètres de profondeur creusées au XIXème siècle pour permettre le passage de la route de Huy à Burdine et du chemin de fer de Landen à Statte (Fig. 2).

2. HISTORIQUE

G. Dewalque est le premier à mentionner l'existence d'une grande poche de dépôts argileux et limoneux à hauteur de l'Hermitage en septembre 1875, mais la découverte de la station préhistorique est due à M. De Puydt et M. Lohest en 1885. Ceux-ci signalent la présence d'une concentration de silex et d'ossements sur 15 mètres de distance et vers 3 mètres de profondeur, de part et d'autre de la route dans la partie méridionale de la tranchée, associée ou directement au-dessus d'une couche de blocs calcaires.

De 1886 à 1890 H. Tihon fouille le site et fait creuser une tranchée perpendiculaire au chemin de fer dans la partie supérieure de la butte, ainsi que plusieurs sondages de part et d'autre de la route (Fig. 2). Dans sa publication avec M. Dormal (1890-91), il décrit trois niveaux archéologiques distincts, précise la stratigraphie du gisement et attribue l'essentiel des dépôts au ruissellement remaniant boues fines et fragments caillouteux en provenance du versant.

Un premier niveau attribué au Néolithique récent était présent sous la couche arable.

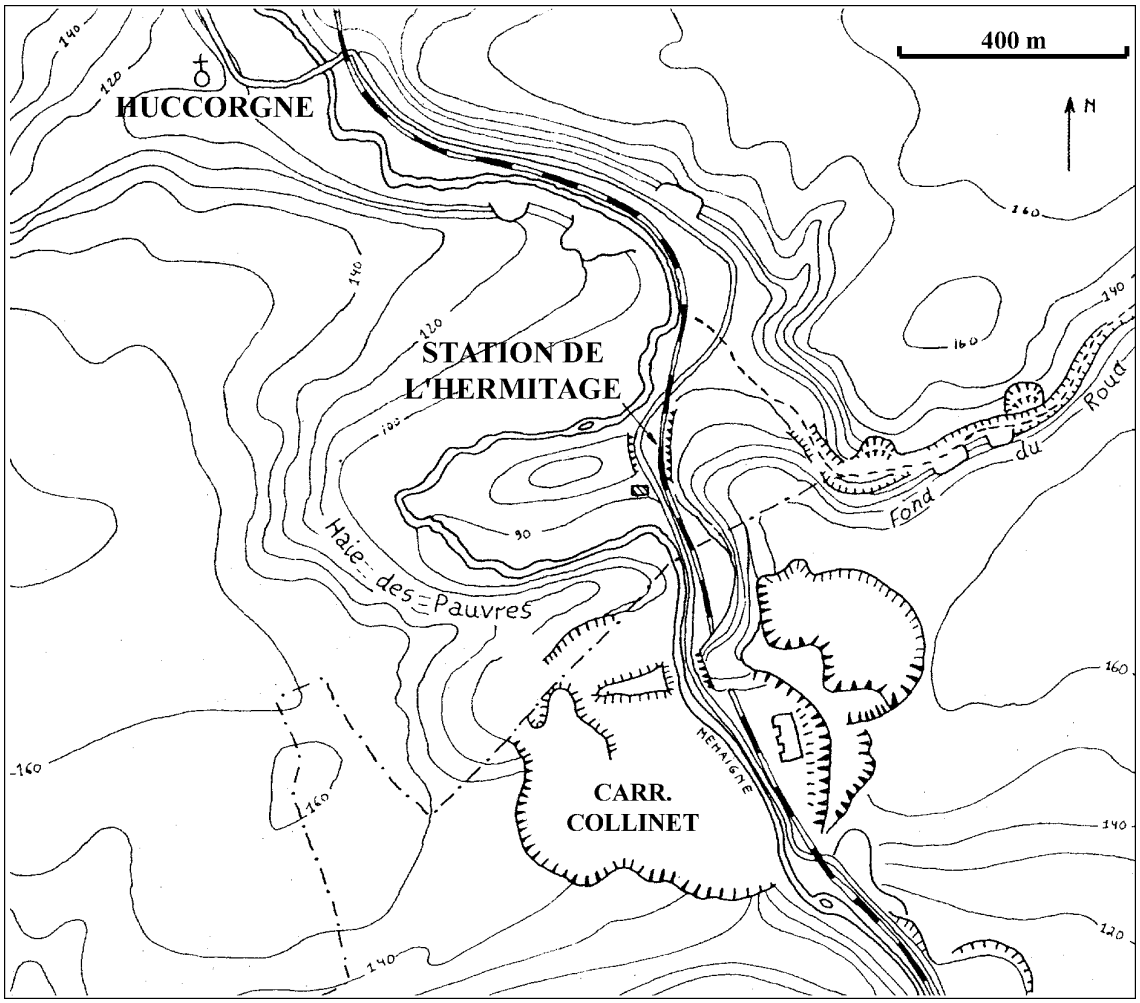

Figure 1. Station de l'Hermitage: carte de situation.

Le second niveau, rapporté erronément par F. Tihon à un Néolithique ancien, fut rencontré sous un limon pouvant atteindre 1,65 m d'épaisseur et renfermant de nombreux débris calcaires dans sa partie inférieure. Selon Tihon, ce niveau riche en silex taillés était présent au sein d'une couche de sable argileux de 10 à 20 cm d'épaisseur dépourvue de débris calcaires et vraisemblablement d'origine éolienne.

Le troisième niveau a fourni deux pointes de Saint-Acheul associées à des débris d'*Elephas primigenius*; il fut observé vers 5 mètres de profondeur dans la tranchée du chemin de fer, sous un double dépôt d'argile jaune renfermant à chaque fois de nombreux débris calcaires dans sa partie supérieure et séparé par une couche de limon noir.

Par la suite il faut attendre 1969 pour que de nouvelles fouilles soient réalisées à la station de l'Hermitage. De 1969 à 1971, plus de 150 mètres carrés furent ouverts dans la partie centrale de la butte attenante au chemin de fer par les Chercheurs de la Wallonie sous la direction de J. Destexhe. Les fouilles concernèrent principalement le second niveau archéologique rencontré par F. Tihon, dont le matériel conservé dans les collections du Musée Curtius avait été attribué au Périgordien par M. Ulrix-Closset (1969-70). Les données réunies

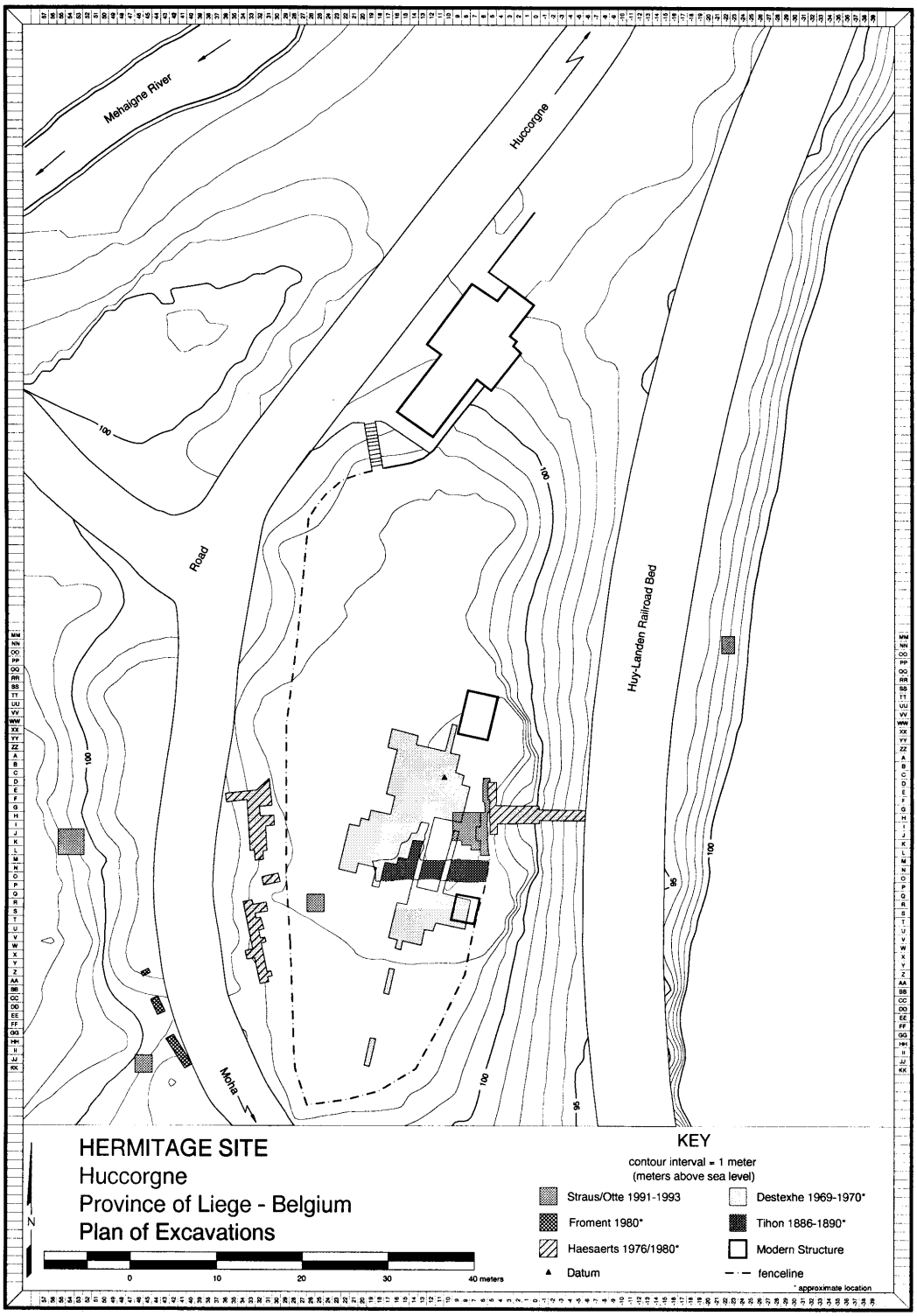

Fig. 2 - Station de l'Hermitage: position des coupes et des aires fouillées.

par l'équipe des Chercheurs de la Wallonie démontrèrent l'importance et l'extension considérable de l'occupation paléolithique du site, dont les témoins furent rencontrés dans une position stratigraphique similaire à celle décrite par F. Tihon.

C'est dans ce contexte que nous avons entrepris en avril 1976 l'étude stratigraphique des dépôts pléistocènes de la station de l'Hermitage avec l'aide des techniciens de la Section Anthropologie et Préhistoire de l'Institut royal des Sciences naturelles de Belgique. Le propriétaire du terrain s'étant opposé à de nouveaux travaux à partir de la surface de la butte, plusieurs profils furent donc ouverts dans le talus méridional de la tranchée du chemin de fer et dans le secteur central de la tranchée de la route. Il en résulta une première évaluation de la séquence stratigraphique locale, situant l'occupation principale du site au cours de la phase initiale du pléniglaciaire supérieur, soit vers 25.500 BP (Haesaerts, 1978). Une deuxième campagne de terrain eut lieu en 1980 pour contrôler la position stratigraphique et l'extension latérale d'une seconde concentration lithique mise au jour en 1976 dans le talus de la route, dans le prolongement de la couche caillouteuse observée par M. De Puydt et M. Lohest. Parallèlement, l'étude géomorphologique du site fut réalisée par S. Froment, étudiant en géologie à l'Université Libre de Bruxelles dans le cadre de son travail de fin d'études. Enfin, une dernière série d'observations stratigraphiques fut effectuée en 1992 au cours des travaux de l'équipe de L. Straus, principalement dans le secteur compris entre le champ de fouilles de 1969-71 et la tranchée du chemin de fer.

3. LA SEQUENCE STRATIGRAPHIQUE DE L'HERMITAGE

3.1. LE CHAMP DE FOUILLES

Une première série de données stratigraphiques fut réunie par les Chercheurs de la Wallonie lors de la fouille du secteur central de la butte. Les nombreux profils levés à cette occasion par J. Destexhe sont bien documentés et fournissent une image précise de la succession des couches lithologiques et de la géométrie du système (Fig. 3). On y reconnaît une stratigraphie similaire à celle décrite par M. Dormal et F. Tihon (1890-91).

D'après J. Destexhe (communication personnelle), l'essentiel des pièces lithiques (soit près de 16.000 silex) fut récolté dans une couche décimétrique de limon poudreux jaune pâle (unité G1) rencontrée vers 50 cm sous la surface près de la tranchée du chemin de fer et vers 2,50 m de profondeur en direction de la route. Partout présente au sommet d'un limon caillouteux (unité F), cette couche loessique souligne la pente d'un versant orienté vers l'ouest, nettement oblique par rapport à la surface actuelle de la butte. Dans la partie septentrionale du secteur fouillé la couche loessique s'épaissit au niveau de petits ravinements (coupes K-L et M-N) et incorpore localement des restes de foyer.

Par ailleurs, comme mentionné par F. Tihon, au contact entre la couche loessique et la couverture limoneuse supérieure (unité H) existe une couche de limon brun ocre à nombreux éléments calcaires le plus souvent émoussés (unité G3); présente sous la forme d'une nappe discontinue à l'allure irrégulière, celle-ci contenait également des silex taillés et des fragments d'ossements, probablement en position secondaire.

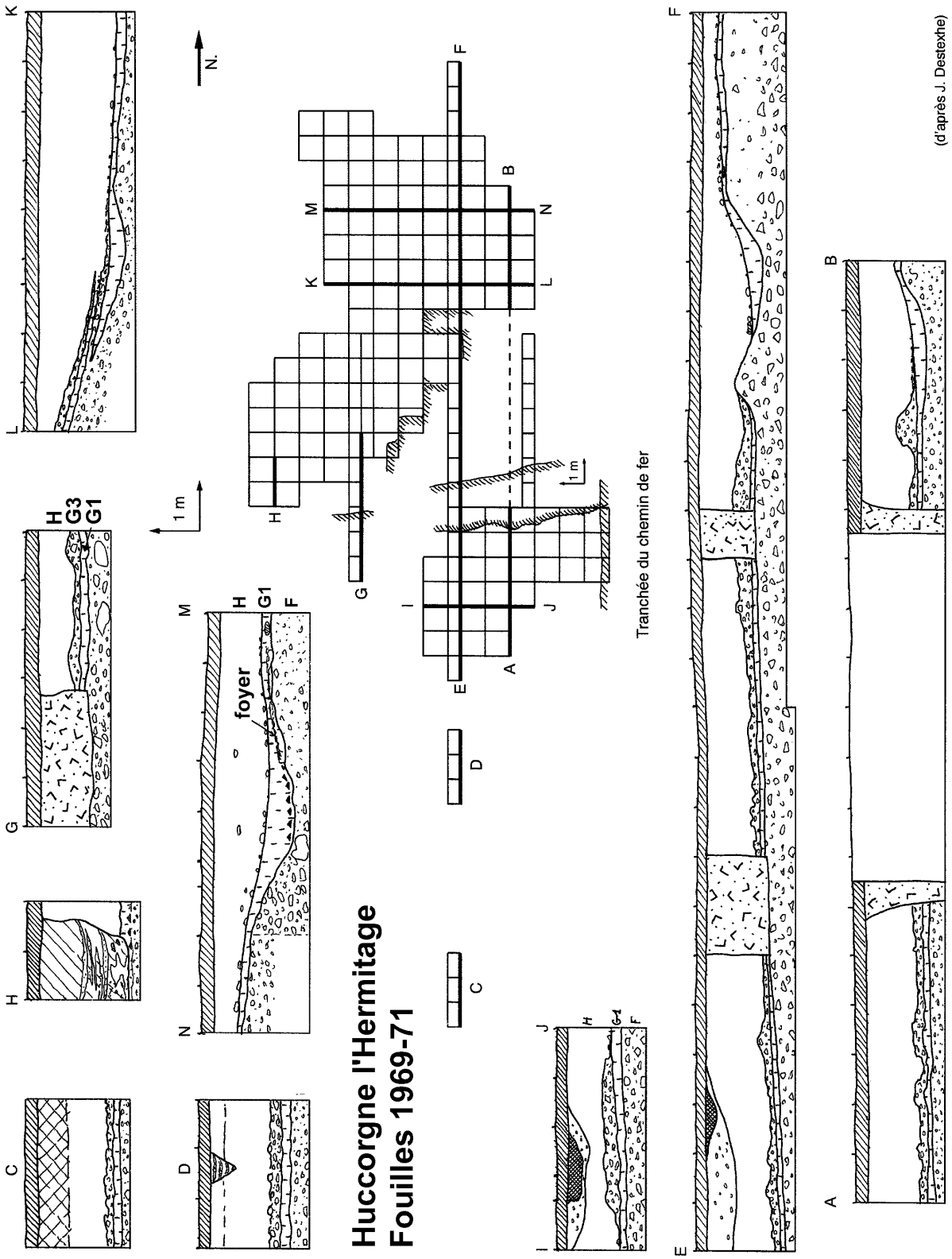

Figure 3. Station de l'Hermitage. Fouilles des Chercheurs de la Wallonie (relevés J. Destexhe)

3.2. LA TRANCHEE DU CHEMIN DE FER

En avril 1976, une coupe de 1 à 3 mètres de largeur fut ouverte dans le talus occidental de la tranchée à hauteur du champ de fouilles (Fig.4); située a proximité du versant oriental de la vallée, cette coupe enregistre pour l'essentiel la séquence limoneuse sous-jacente à la couche décimétrique de loess jaune pâle (unité G1) présente à cet endroit vers 50 cm sous la surface. Du bas vers le haut, la succession des unités s'établit comme suit:

B
Agglomérat de blocs anguleux de calcaire, avec matrice limoneuse; le calcaire viséen affleure à 11 m au sud du profil, de part et d'autre de la tranchée du chemin de fer.

C
Sédiment stratifié formé de lits centimétriques de limon jaune et de limon brun ocre; quelques cailloux subanguleux de calcaire.

D1 et D2
Agglomérat de blocs anguleux de calcaire (10 cm de diamètre en moyenne) mélangés à du limon jaune ocre (D1), puis limon homogène avec débris calcaires dispersés (D2).

D3
Agglomérat de fragments anguleux de calcaire mélangés à du limon.

D4
Limon doux à fine stratification, dépourvu de débris calcaires; coquilles de petits gastéropodes présentes dans la partie inférieure.

D5
Limon doux jaune pâle avec abondants débris de calcaire dispersés.

E1
Limon jaune ocre, discordant sur D5.

E2
Limon gris brun humifère, homogène dans la partie inférieure, stratifié et mélangé à quelques débris calcaires dans la partie supérieure. Présence de 4 éclats de silex dont 2 dépourvus de patine dans les 20 cm supérieurs.

E3
Limon doux à rares fragments de calcaire. Sédiment légèrement réduit avec taches d'oxydation le long de traces de racines. Du sommet de E3 part un réseau de fines fentes obliques colmatées de limon doux jaune pâle.

E4
Limon doux, homogène, jaune pâle, avec nombreux pseudomycélium en plages.

F1
Limon jaune brun incorporant de nombreux fragments de calcaire, dont certains subarrondis et altérés.

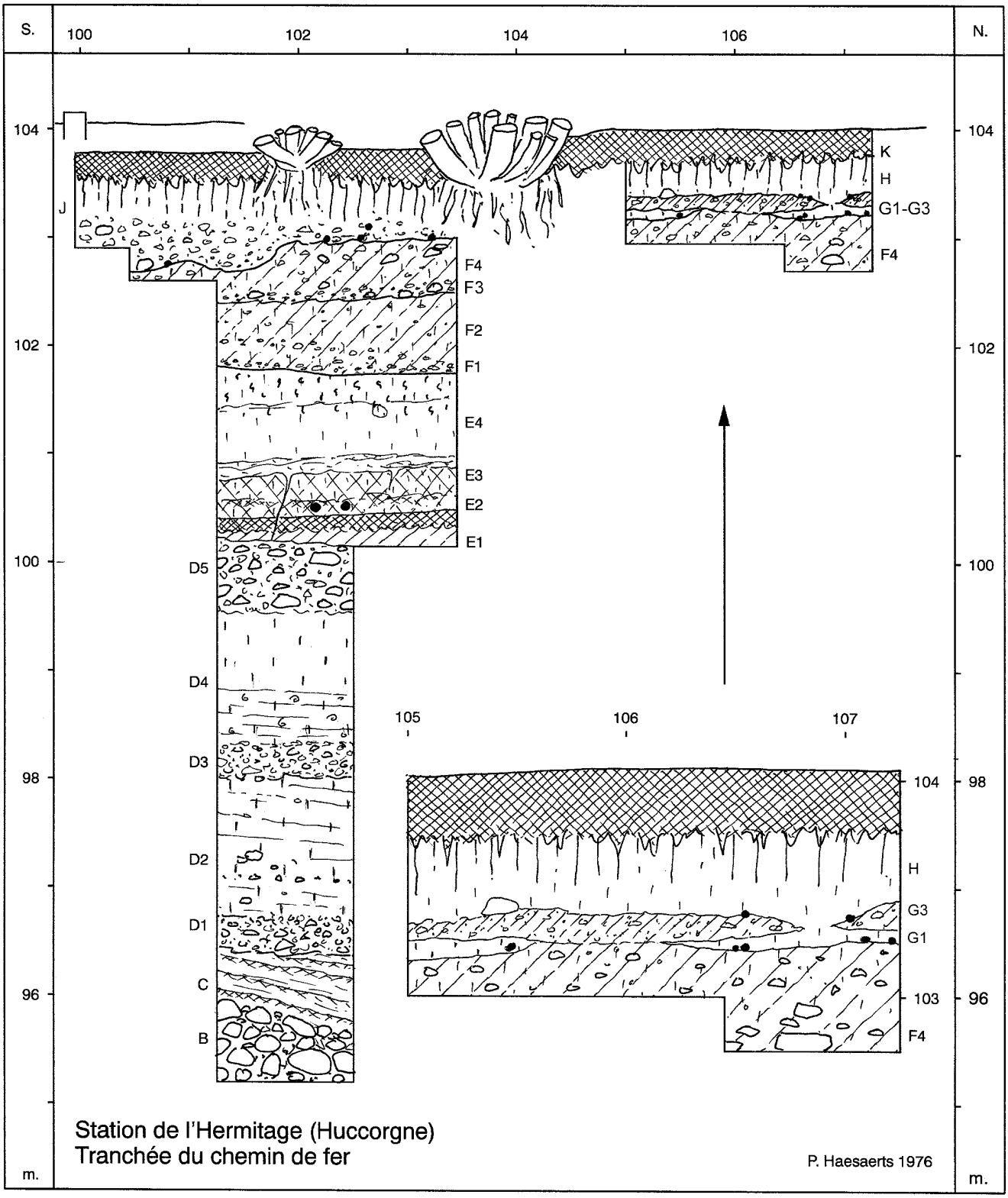

Figure 4 - Station de l'Hermitage. Tranchée du chemin de fer, talus ouest. Les points noirs correspondent au matériel archéologique. (symboles graphiques: voir Figure 9)

F2
Limon jaune brun à nombreuses taches de manganèse; structure lamellaire moyenne assez bien développée. Quelques fragments de calcaire dispersés dans la masse.

F3
Cailloutis calcaire mélangé de limon, comprenant une majorité de petits fragments subanguleux.

F4
Limon brun jaune à nombreuses taches de manganèse; structure lamellaire moyenne très bien développée. Nombreux fragments de calcaire dont un grand nombre sont émoussés et concentrés en lentilles.

G1
Limon jaune pâle, homogène; trois éclats et un nucléus en silex à patine bleue pâle ont été trouvés dans cette unité entre P105 et P107.

G3
Limon brun jaune avec nombreux débris subarrondis de calcaire altéré.

H
Limon jaune pâle, homogène. Plusieurs petits éclats en silex ont été récoltés à la base du limon de cette unité.

J
Cailloutis calcaire passant vers le haut à un limon brun. Présence de plusieurs éclats en silex à la base du cailloutis entre P102 et P103,5.

K
Limon humifère: couche arable.

3.3. LA TRANCHEE DE LA ROUTE

Considérant la pente générale des couches mise en évidence au champ de fouilles, plusieurs profils furent ouverts en 1976 et en 1980 sur plus de vingt mètres de distance dans le talus oriental de la route, dans le prolongement de la concentration d'artefacts signalée en 1885 par M. De Puydt et M. Lohest. La couche de loess jaune pâle contenant l'industrie (G1) et le limon caillouteux sus-jacent (G3) furent rencontrés à la mi-pente du talus vers 3 mètres de profondeur, cet enregistrement complétant la partie supérieure de la séquence stratigraphique. Du bas vers le haut, les unités lithostratigraphiques suivantes ont été reconnues (Fig. 5)

D
Limon doux, finement stratifié; nombreuses petites coquilles de gastéropodes dans la partie inférieure.

F1
Base érosive du complexe limoneux F1-F4 soulignée en P114 et P119 par un cailloutis hétérogène incorporant des fragments subarrondis de calcaire, des galets de schistes, des

rognons de silex et quelques galets de quartz. De nombreux éclats en silex à patines diverses, des fragments d'ossements, trois dents de cheval et une petite molaire de mammouth ont été récoltées en P114.

F2
Limon brun jaune à nombreuses petites taches de manganèse; sédiment légèrement stratifié.

F3
Limon brun jaune alternant avec de fins lits de limon sableux brun gris; en P114 présence d'une molaire de mammouth associée à des blocs calcaires subarrondis.

F4
Limon brun jaune homogène, à nombreuses petites taches de manganèse; structure lamellaire moyenne fortement développée.

G1
Limon jaune pâle, homogène et très poudreux contenant des coquilles de petits gastéropodes; présent en une couche continue de 10 cm d'épaisseur, pouvant atteindre 25 cm par endroits, G1 contient des éclats de silex à légère patine porcelanée répartis sur toute l'épaisseur de la couche entre P100 et P109.

G2
Limon brun jaune à nombreuses petites taches de manganèse (entre P.100 et P.109) et rares fragments de calcaire altéré. Structure polyédrique fine moyennement développée. Au-delà de P114, G2 passe à un limon jaune gris brun stratifié incorporant une concentration d'éclats en silex dans les 5 cm supérieurs.

G3
Limon brun jaune incorporant des blocs et des fragments subarrondis de calcaire altéré, concentrés le plus souvent en lentilles. Au-delà de P114 la concentration d'artefacts du sommet de G2 se poursuit vers le haut en G3.

G4
Limon doux homogène très faiblement stratifié, contenant de nombreux artefacts dans la partie inférieure; colmate un chenal s'ouvrant en P116,5 au sommet de G3.

H1
Limon doux gris jaune pâle, à légère stratification soulignée par de petits lits de limon plus sableux. En P113 la base de H1 tronque les unités sous-jacentes et incorpore quelques éclats de silex probablement remaniés de G3.

H2
Limon doux gris clair souligné par de petites taches d'oxydation dispersées le long de traces de racines. En P111, douze éclats en silex gisaient à plat dans cette unité.

H3
Limon homogène jaune pâle non stratifié.

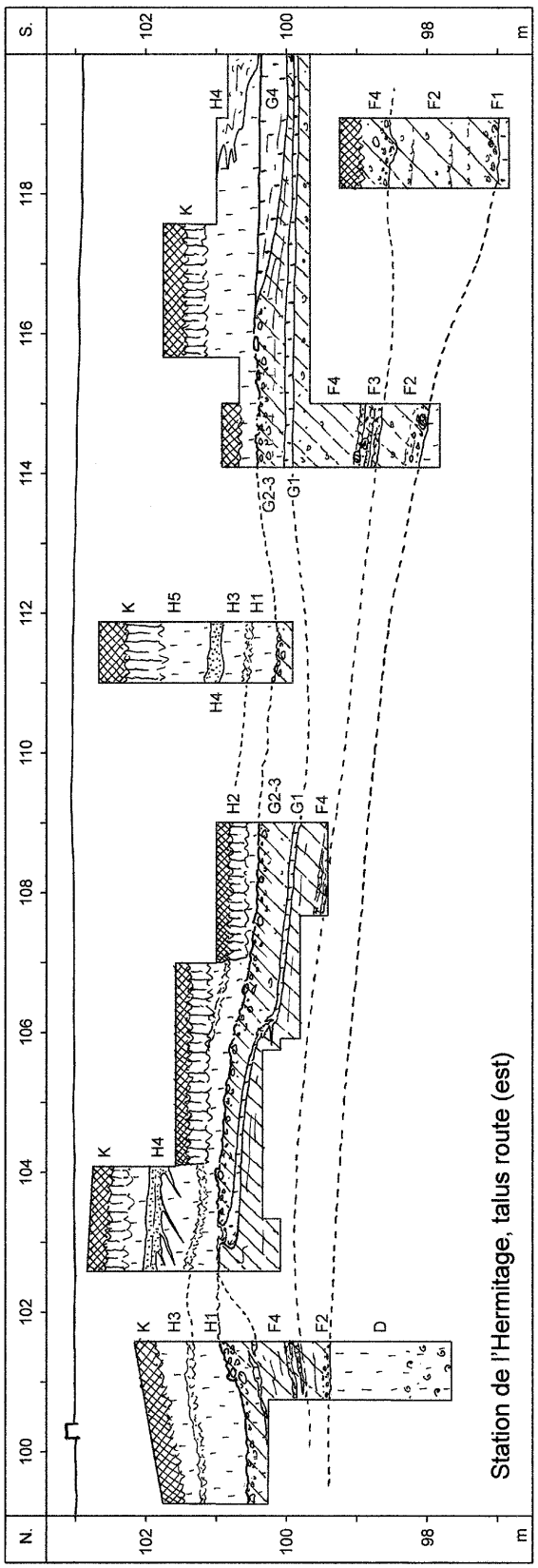

Figure 5. Station de l'Hermitage. Tranchée de la route, talus est.

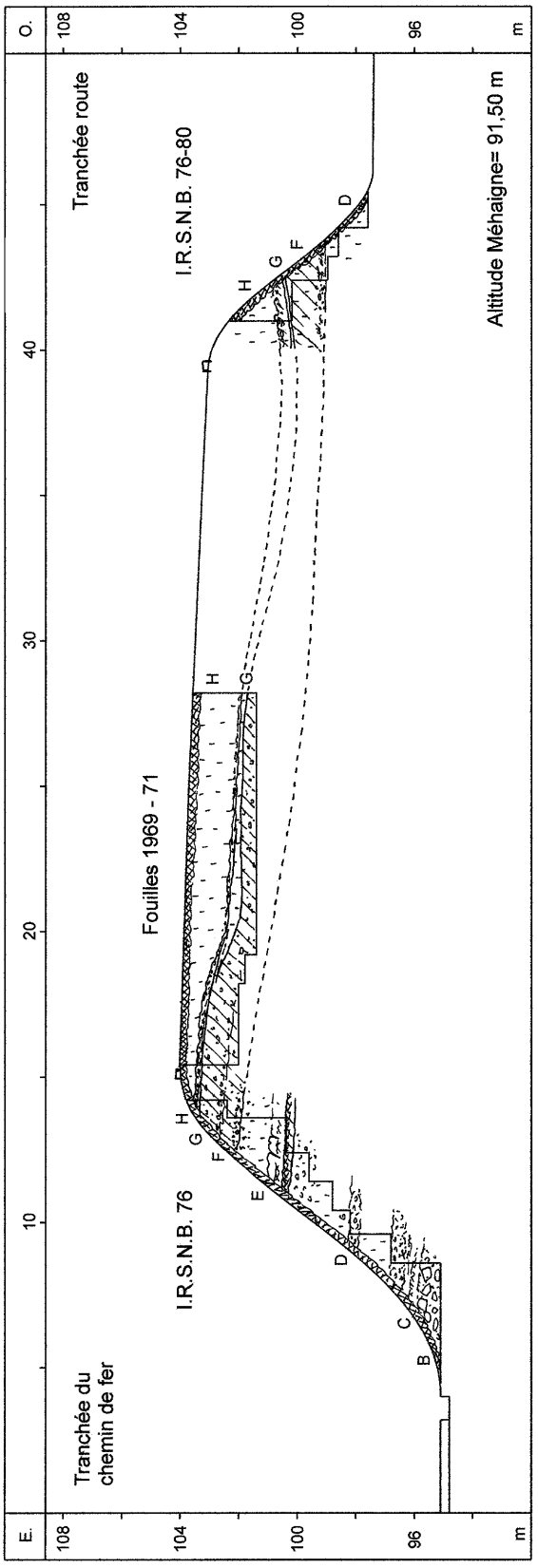

Figure 6. Station de l'Hermitage. Transect est-ouest. (symboles graphiques : voie Figure 9)

H4
Sable et limon interstratifiés. De la base du sable partent de fines fentes obliques qui pénètrent les couches sous-jacentes sur 20 à 30 cm.

H5
Alternance de fins lits de limon gris brun et de lits de limon jaune clair. La partie supérieure de limon H5 est pénétrée par le sol moderne.

K
Limon humifère correspondant à la couche arable du sol actuel.

3.4. VUE D'ENSEMBLE

L'enregistrement lithostratigraphique de la station de l'Hermitage fut établi à partir de trois séries de profils répartis selon un axe est-ouest, joignant en quelque sorte la falaise calcaire du versant gauche de la vallée à la plaine alluviale de la Méhaigne en aval du promontoire (Fig. 6).

Dans ce système, qui recoupe transversalement la butte limoneuse comprise entre les tranchées de chemin de fer et de la route, la couche décimétrique de loess pâle (unité G1) et le limon caillouteux sus-jacent (unité G3) constituent les principaux horizons repères. Ceux-ci s'inscrivent selon une pente vers l'ouest et recoupent en oblique la topographie de la butte limoneuse. Selon cette géométrie, les enregistrements des tranchées du chemin de fer et de la route sont donc complémentaires; ils intègrent une séquence globale de plus de 13 m de puissance (Fig. 9) composée d'une succession de 4 ensembles lithostratigraphiques distincts; soit deux complexes loessiques (unités D à E et unités H1 à H5) encadrant un double complexe, le premier à dominante de limons ruissélés (unités F1 à F4) et le second mixte (unités G1 à G4).

Dans l'ensemble, la pente des couches du complexe loessique inférieur est assez faible mais s'appuie néanmoins vers l'est au versant calcaire. L'inclinaison du système vers l'ouest s'accentue à partir du complexe limoneux F1-F4 dont la base est nettement érosive.

Au sein de la séquence, la répartition des éléments caillouteux est inégale, ceux-ci étant surtout abondants dans la partie amont du site à proximité du versant calcaire dont ils sont issus. En G3, par contre, ces éléments sont omniprésents jusque dans les profils de la route. Dans certaines couches, ils sont quasi-absents sans doute en raison de l'origine éolienne du dépôt. C'est le cas des unités loessiques du complexe inférieur, mais surtout des unités G1 et G4 et de la plupart des unités du complexe loessique supérieur.

4. MODE DE DEPOT ET PALEOENVIRONNEMENT

De par leurs caractères morpho-sédimentaires, les unités de la séquence de la station de l'Hermitage évoquent dans leur majorité une sédimentation éolienne, (complexes loessiques inférieurs et supérieurs), mais aussi à composante colluviale dans

le cas du complexe limoneux F1-F4 et de l'unité G2. L'ensemble traduit un environnement steppique en climat froid, les paléosols étant quasi-absents ou évanescents, à l'exception du sol humifère de E1 associé à un horizon décalcifié. Des indices d'un réchauffement se marquent également dans la partie basale de la séquence soulignée par de fines lentilles humifères (unité C), ainsi qu'au sommet du complexe loessique inférieur sous la forme d'un horizon enrichi en carbonates préservé dans l'unité E3. De fait, cet horizon pourrait appartenir à un sol décalcifié fortement tronqué lors de la phase d'érosion qui précède le complexe limoneux F1-F4.

Ce complexe limoneux, mis en place par ruissellement, contraste nettement avec les dépôts loessiques qui l'encadrent, lesquels évoquent classiquement un environnement sec et froid de type arctique; il paraît donc bien traduire une phase climatique plus humide et peut-être aussi plus proche d'un environnement sub-arctique. Sans doute des conditions similaires ont-elles également prévalu lors du dépôt des colluvions G2.

Quant au limon caillouteux G3, largement réparti en nappe sur l'ensemble du versant, il s'apparente à une coulée de blocs alimentée par l'escarpement calcaire. Ce type de processus spécifique des milieux périglaciaires en contexte relativement humide (French, 1976) pourrait avoir été actif à la fin d'une phase de gel profond. D'autres types de processus et de structures associées à des phases de gel profond avec permafrost sont également enregistrées à plusieurs niveaux dans la séquence. C'est le cas des langues grises étirées de F3, lesquelles procèdent probablement d'un remaniement par solifluxion de l'horizon déferrifié d'un gley de toundra.

Une autre phase à permafrost est enregistrée au sommet du complexe limoneux, ce dont témoigne la forte structure lamellaire de type ségrégation de glace développée en profondeur en F4 mais aussi les structures d'écoulement dans un sol gelé observées à la base de la couche de loess pâle G1 entre P 99 et P107 dans la tranchée de la route (Figs 5 et 8). Selon ce schéma, la couche de loess G1 qui contient l'essentiel du matériel lithique au champ de fouilles se serait déposée après un épisode d'érosion, au cours de la phase de dégradation du permafrost développé au sommet de F4.

Enfin, plusieurs épisodes de gel profond jalonnent la mise en place du complexe loessique supérieur. Ceux-ci se traduisent par un petit gley de toundra (unité H2) ou encore par des chenaux de fusion à la base de H1 et en H4. Dans ce dernier cas, les chenaux ravinent profondément les loess sous-jacents, incorporent des silex taillés en position remaniée et convergent vers la Méhaigne dans la partie basse de la tranchée de la route où ils furent recoupés par les profils ouverts en 1980 dans le talus ouest (Froment, 1980).

5. REPARTITION STRATIGRAPHIQUE ET SPATIALE DU MATERIEL PALEOLITHIQUE

Nous désignons sous le terme de couche archéologique principale la concentration de silex taillés rencontrée par F. Tihon et les Chercheurs de la Wallonie au champ de fouilles dans la couche de loess jaune pâle correspondant à l'unité G1. A cet endroit, la densité et la répartition spatiale du matériel ainsi que les traces de foyer préservées localement attestent assurément la présence d'un complexe culturel du Paléolithique supérieur préservé en place, au

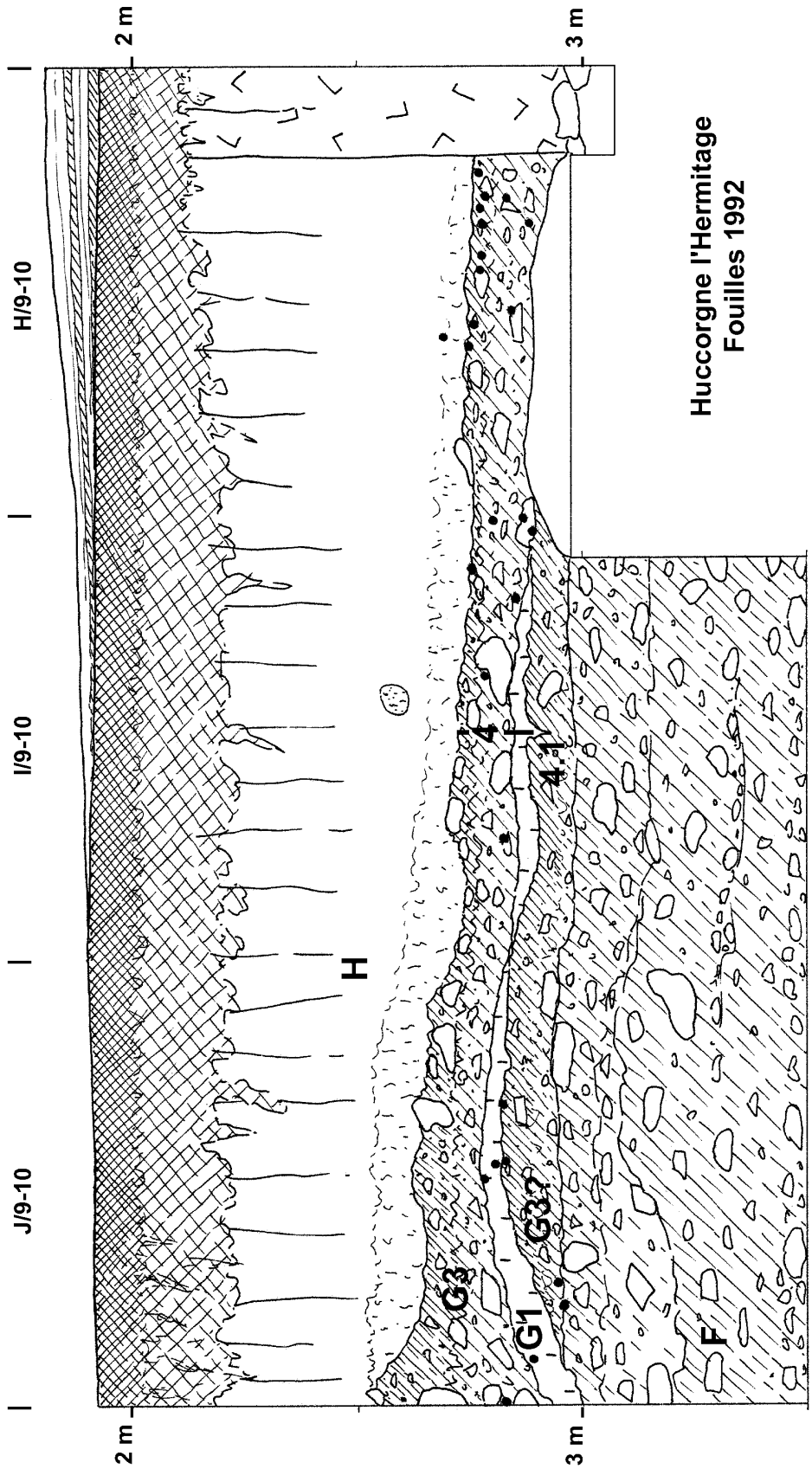

Figure 7. Station de l'Hermitage. Fouilles de 1992, profil nord-sud et position du matériel lithique des carrés J/9-10 à H/9-10. Les points noirs correspondent au matériel archéologique récolté dans le carré adjacent H9 à J9. (symboles graphiques : voie Figure 9)

sens géologique du terme. Compte tenu de la faible épaisseur de la couche loessique et de sa dynamique sédimentaire, celle-ci intègre probablement un laps de temps voisin ou inférieur à un siècle. Vers l'aval, l'extension latérale de cette occupation est jalonnée par les quelques silex taillés de facture similaire récoltés dans la couche G1 entre P 99 et P118 dans la tranchée de la route (Fig. 5)

Plus haut sur le versant la situation s'est avérée plus complexe. Dans le profil du chemin de fer (Fig. 4) et dans la coupe J/9-10 à H/9-10 de la parcelle attenante fouillée par l'équipe de L. Straus en 1992 (Fig. 7), la couche loessique G1 est discontinue, comme imbriquée dans le limon caillouteux G3, lequel à fourni une part importante du matériel lithique et des ossements récoltés à cet endroit. Toutefois, bien que nettement visible dans la coupe, les couches G1 et G3 n'ont pas été individualisées lors de la fouille de 1992, l'ensemble étant rapporté à l'unité 4 de L. Straus. De plus, la présence de silex taillés dans les unités sous-jacentes 4.1 et 4.2 (Straus *et al.*, 1997, p. 147) pourrait être indicative d'un dédoublement des couches G3 et G1 par fluage, comme cela fut observé par J. Destexhe dans le profil L-K au champ de fouilles principal (Fig. 3).

Ceci pose le problème de l'origine du matériel lithique et des ossements récoltés dans le limon caillouteux G3, lesquels étaient également présents en moindre proportion dans le secteur fouillé par J. Destexhe. S'agit-il de témoins d'une seconde occupation du site contemporaine de l'unité G3 ou plutôt de matériel remanié provenant de la couche archéologique principale (G1) située plus haut sur le versant et incorporé par solifluxion au limon caillouteux ?

Compte tenu du mode de dépôt du limon G3, la seconde hypothèse nous semble la plus probable, ce que confirme la stratigraphie dilatée du talus de la route entre P102 et P121 (Fig. 5). A cet endroit, une couche de limon ruisselé (unité G2) pouvant atteindre près de 50 cm d'épaisseur s'intercale entre G1 et le limon caillouteux G3, dans une sorte de vallon qui draine la partie centrale du versant. Deux concentrations de matériel lithique y furent rencontrées dans les dépôts sus-jacents à la couche loessique G1: respectivement en G3 sur le bord nord du vallon entre P103 et P105 et en G2, G3 et G4 dans la partie centrale du vallon entre P113 et P121. Quelques silex étaient également présents en P111 dans le complexe loessique supérieur, à la base de H1 et dans le petit gley de toundra H2 (Fig. 5).

Dans le cas de la première concentration, le remontage n°15 effectué par Martinez (ce volume) associe trois éclats de G1 en P103 et un éclat de G3 en P105 (Fig. 8), ce qui démontre assurément la position secondaire du matériel lithique de G3, remanié à partir de la couche archéologique principale. Semblable dynamique est d'ailleurs en accord avec la large distribution du limon caillouteux sur le versant, dont les éléments ont été déplacés par solifluxion sur une longue distance depuis les éboulis calcaires qui les ont alimentés.

Une situation quelque peu différente existait entre P113 et P121 au niveau de la seconde concentration dont les éléments lithiques étaient répartis au sein de plusieurs unités. De fait, la distribution verticale des silex et les remontages réalisés par Martinez attestent la position secondaire du matériel lithique, lequel paraît bien avoir été déplacé à trois reprises (Fig. 8). En premier lieu par ruissellement lors du dépôt de la partie supérieure des colluvions G2, une seconde fois pendant la mise en place de la coulée caillouteuse de G3, puis encore au début de la sédimentation loessique qui colmate le petit chenal de G4.

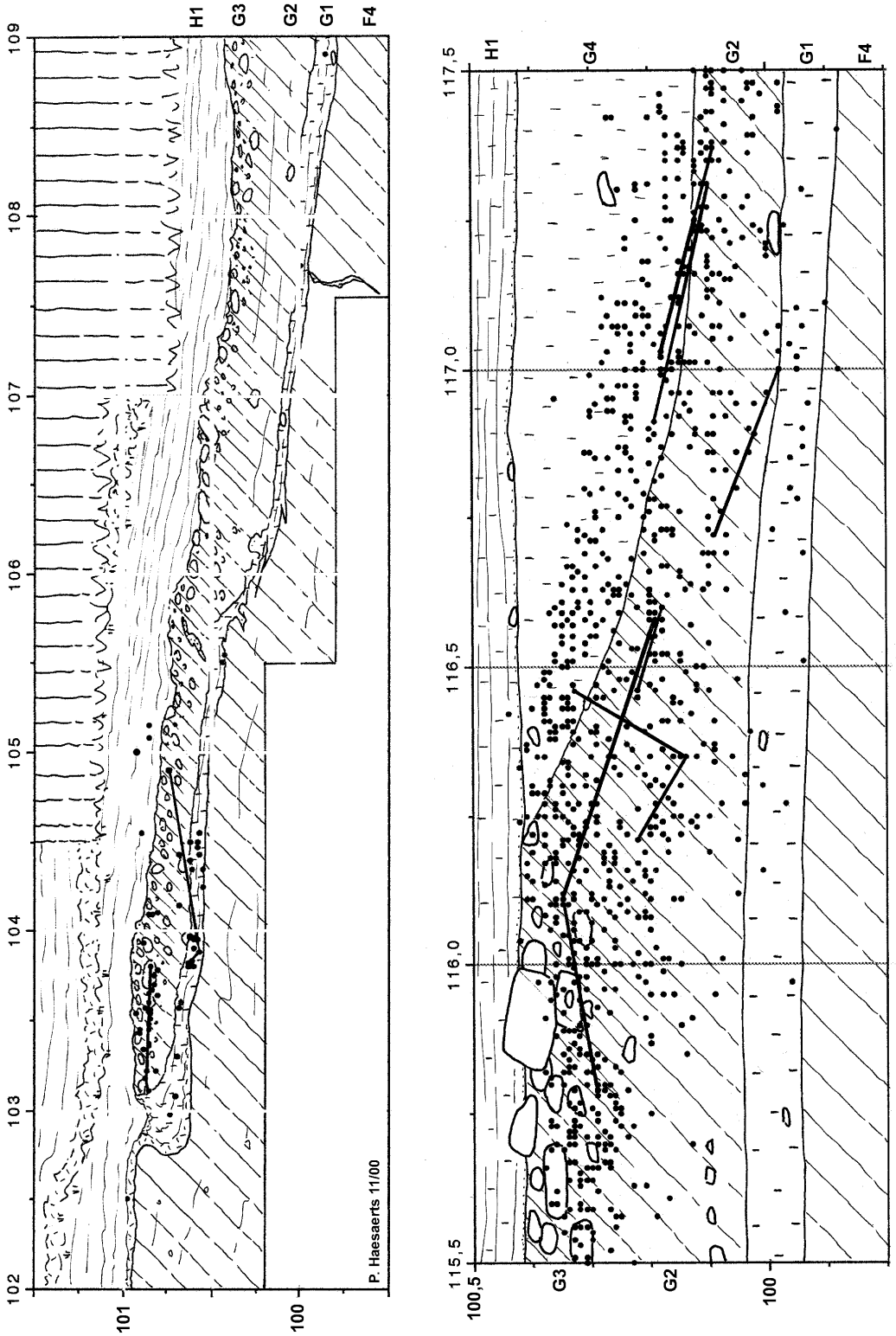

Figure 8. Station de l'Hermitage. Tranchée de la route, talus est: répartition verticale du matériel lithique et remontages. (symboles graphiques: voir Figure 9)

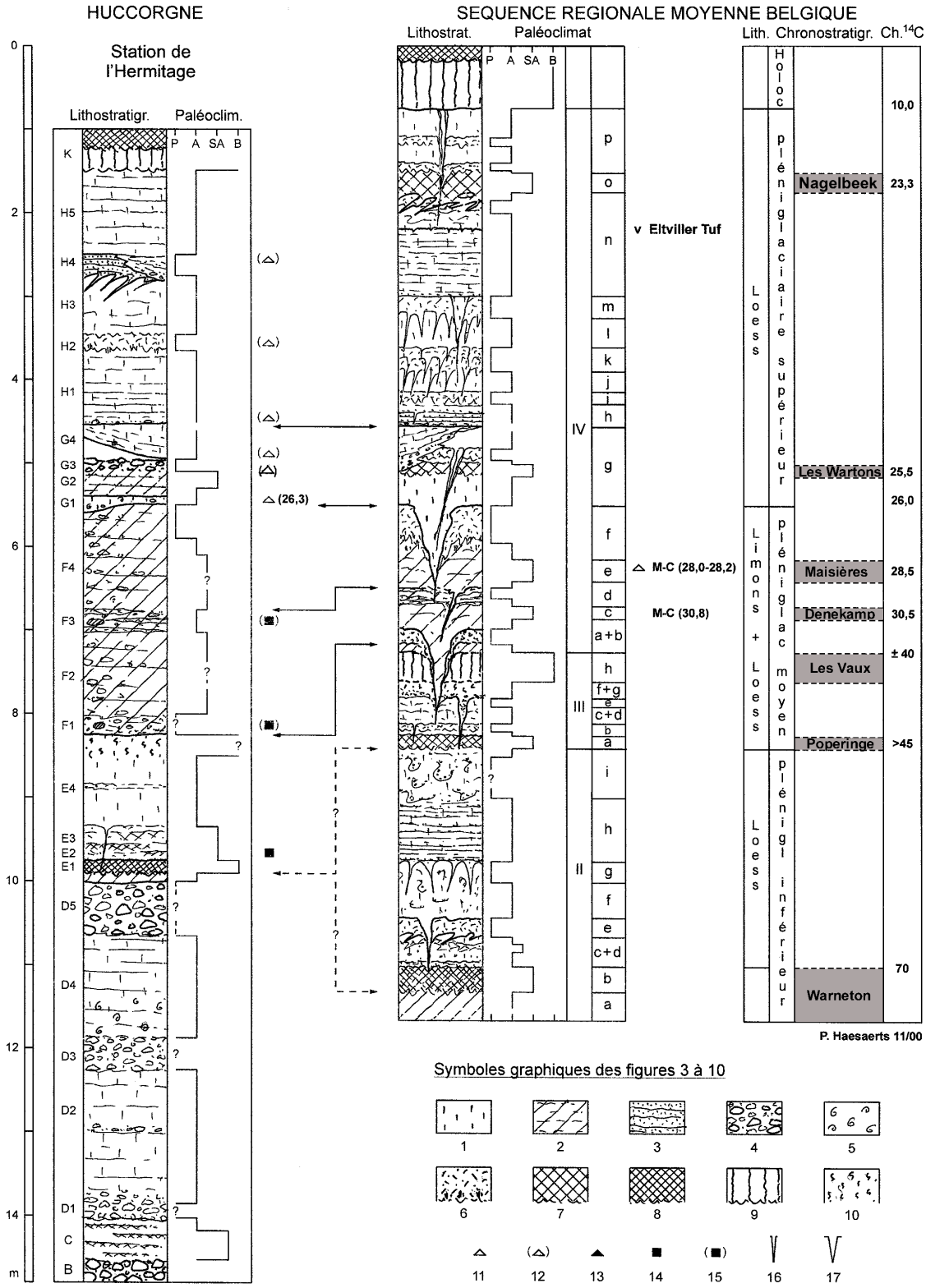
HUCCORGNE
Station de l'Hermitage
Lithostratigr.
Paléoclim.
P A SA B
K
H5
H4
H3
H2
H1
G4
G3
G2
G1
F4
F3
F2
F1
E4
E3
E2
E1
D5
D4
D3
D2
D1
C
B
(26,3)
SEQUENCE REGIONALE MOYENNE BELGIQUE
Lithostrat.
Paléoclimat
IV
III
II
p
o
n
m
l
k
j
h
g
f
e
d
c
a+b
h
f+g
e
c+d
b
a
i
h
g
f
e
c+d
b
a
v Eltviller Tuf
M-C (28,0-28,2)
M-C (30,8)
Lith.
Chronostratigr.
Ch.14C
Holoc
Loess
Limons + Loess
Loess
pléniglaciaire supérieur
pléniglaciaire moyen
pléniglaciaire inférieur
Nagelbeek
Les Warfons
Maisières
Denekamp
Les Vaux
Poperinge
Warneton
10,0
23,3
25,5
26,0
28,5
30,5
± 40
>45
70
P. Haesaerts 11/00
Symboles graphiques des figures 3 à 10
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17

Figure 9.

Tous ces éléments d'observation plaident en faveur d'une seule phase d'occupation du site par une population du Paléolithique supérieur; celle-ci correspond à la couche archéologique principale préservée dans l'unité loessique G1 dont serait issu l'essentiel du matériel paléolithique rencontré plus haut en stratigraphie. On ne peut cependant exclure la possibilité d'occupations paléolithiques ponctuelles au cours des périodes ultérieures mais dans l'état actuel des observations cette éventualité n'est pas démontrée.

Pour terminer, il faut préciser le contexte du matériel lithique de facture Paléolithique moyen (Fig. 9). Quelques éclats, manifestement en position dérivée, proviennent du complexe limoneux (F1-F4); ils furent récoltés respectivement dans le cailloutis de base (unité F1) et dans un petit niveau caillouteux associé aux bandes grises étirées en F3. Quelques éclats apparemment en place proviennent de la tranchée du chemin de fer et gisaient à plat dans le limon brunâtre juste au-dessus du sol humifère de l'unité E2.

6. CADRE CHRONOSTRATIGRAPHIQUE

Une première démarche consiste à situer la séquence lithostratigraphique de l'Hermitage par rapport à la séquence loessique régionale établie à partir des enregistrements d'Harmignies et de Maisières-Canal dans le Bassin de la Haine (Haesaerts et de Heinzelin 1979; Haesaerts et Van Vliet-Lanoë 1981) et de Remicourt en Hesbaye liégeoise (Haesaerts *et al.*, 1999).

Dès 1978 nous avons souligné les similitudes entre la séquence de l'Hermitage et celle du bassin de la Haine considérant la succession des lithofaciès, les signatures paléoclimatiques et la position des principaux hiatus (Haesaerts, 1978). Le schéma corrélatif reposait sur l'existence de deux complexes loessiques attribués respectivement au pléniglaciaire inférieur et au début du pléniglaciaire moyen (unités D1 à E4) d'une part, au pléniglaciaire supérieur (unités G1 à H5) d'autre part. Ce schéma demeure valable, du moins pour les deux tiers supérieurs de la séquence; par contre, les unités loessiques D1 à D4 riches en hornblende verte et en grenat (communication écrite de E. Juvigné) pourraient appartenir au Pléistocène moyen final, comme c'est le cas à Kesselt (Juvigné *et al.*, 1996), ce qui reviendrait à situer le sol humifère E2 au début du pléniglaciaire inférieur.

Un second point de comparaison réside dans le complexe limoneux F1-F4 et les loess ruisselés de la seconde moitié du pléniglaciaire moyen qui sont postérieurs au sol des Vaux dans le bassin de la Haine. En particulier, le gley de toundra étiré (unité F3) se retrouve dans une position identique dans la plupart des coupes de Moyenne Belgique, notamment à Remicourt et à Harmignies (Haesaerts 1983; Haesaerts *et al.* 1981; Haesaerts *et al.* 1999). A Maisières-Canal, il est distinctement présent sous l'horizon d'occupation périgordien (Haesaerts et de Heinzelin, 1979) et constitue de ce fait un marqueur précieux pour les corrélations avec l'Hermitage.

Par ailleurs, en Moyenne Belgique, le pléniglaciaire moyen se termine par un épisode extrêmement froid correspondant à l'oscillation rigoureuse IVf de la séquence climatique régionale (Haesaerts et Van Vliet-Lanoë 1981; Haesaerts et Laville, 1988). Presque partout cet épisode se marque par un gley de toundra à structure de ségrégation de gel pénétré par de grands coins de glace que viennent colmater les premiers apports loessiques du pléniglaciaire supérieur. Une situation similaire existe à l'Hermitage avec l'épisode rigoureux du sommet du

limon F4 et la couche loessique G1 sus-jacente contenant les témoins de l'occupation gravettienne.

Dans ce contexte, le petit sol humifère associé à l'oscillation des Wartons à Maisières-Canal (de Heinzelin, 1973; Haesaerts et de Heinzelin, 1979) et les chenaux colmatés de loess présents à la base de la couverture loessique supérieure à Harmignies et à Remicourt seraient équivalents aux limons G2-3 et au loess G4 de la tranchée de la route à l'Hermitage. De même, la couverture loessique du pléniglaciaire supérieur, avec les loess à petits gley de toundra du Hesbayen, l'Horizon de Nagelbeek et les loess poudreux du Brabantien, correspondrait aux unités H1 à H5 du complexe loessique supérieur de l'Hermitage.

7. CONTEXTE CHRONOLOGIQUE ET COMPARAISONS

La séquence de l'Hermitage constitue un bon exemple de l'interdépendance de la stratigraphie et de la chronologie ^{14}C. On dispose en effet pour l'Hermitage de deux séries de datations ^{14}C sur ossements qu'il importe d'intégrer dans le système.

Une première datation (GrN-9234 = 23.170 ± 160 BP) fut réalisée en 1981 sur des fragments d'ossements indéterminés provenant des fouilles des Chercheurs de la Wallonie (Haesaerts *et al.*, 1981; Gilot, 1984). Six autres datations comprises entre 16.500 ± 230 et 28.390 ± 430 BP furent obtenues par L. Straus sur des ossements récoltés en 1992 dans la parcelle attenante au chemin de fer (Straus *et al.*, 1997; Straus, ce volume).

Bien que certaines datations paraissent trop jeunes vu le cadre stratigraphique, l'écart chronologique reste considérable; cela tient pour partie à la problématique des datations sur os en milieu loessique (Damblon *et al.*, 1996) mais aussi au mode de gisement des ossements datés à l'Hermitage (voir ci-dessus, paragraphe 5). Dans un tel contexte, l'analyse des datations ne peut être dissociée des données stratigraphiques et paléoclimatiques car celles-ci assurent la cohérence de l'ensemble, principalement par leur intégration dans la séquence régionale (Fig. 9). La démarche inverse conduit à l'établissement d'une "stratigraphie ^{14}C " dépourvue de contrôle externe et souvent aléatoire.

De fait, l'intérêt de la séquence de l'Hermitage réside dans son degré de résolution stratigraphique, permettant d'associer l'occupation gravettienne aux premiers apports loessiques du pléniglaciaire supérieur, probablement vers 26.000 BP (Fig. 9). Rappelons que cette courte phase de sédimentation éolienne suit de près un important épisode rigoureux à permafrost (oscillation IVf de la séquence régionale), également enregistré à Maisières-Canal ((Haesaerts et de Heinzelin, 1979), lequel termine le pléniglaciaire moyen (Haesaerts et Laville, 1988). Selon ce schéma, la présence des gravettiens à l'Hermitage serait donc nettement postérieure à l'occupation périgordienne de Maisières-Canal (de Heinzelin, 1973), que sa position stratigraphique situe au sein de l'oscillation climatique IVe vers 28.000 BP, un âge confirmé par deux nouvelles datations ^{14}C effectuées à Groningen sur des ossements de l'horizon d'occupation (Haesaerts, en préparation).

Malgré sa haute résolution pédostratigraphique et paléoclimatique, la séquence loessique du Pléistocène supérieur de Moyenne Belgique pèche cependant par le nombre extrêmement limité de datations ^{14}C. C'est donc en Europe centrale qu'un complément d'information doit être recherché, principalement en Basse Autriche et en Tchéquie où les

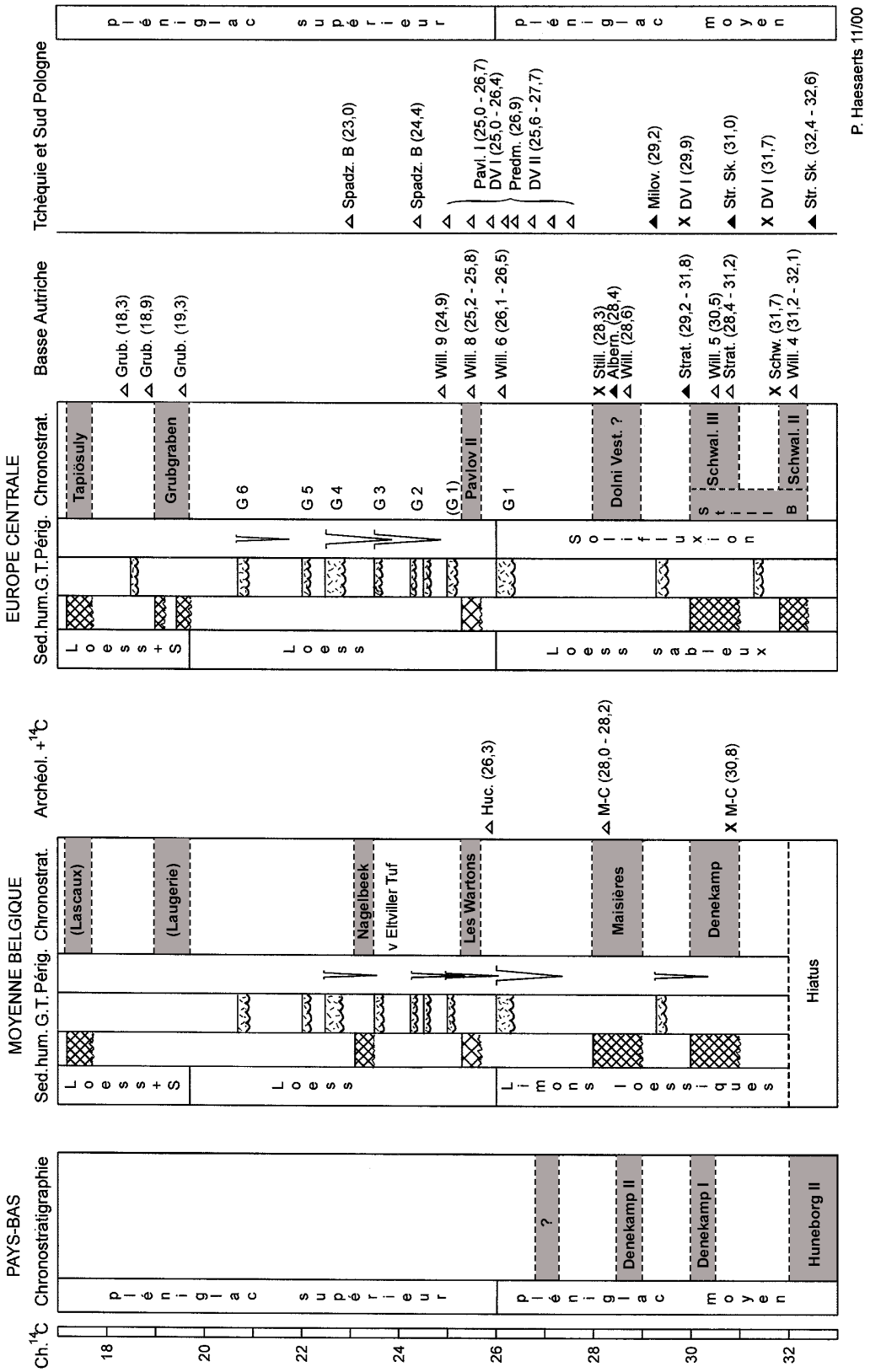
PAYS-BAS
MOYENNE BELGIQUE
EUROPE CENTRALE
Ch.14C
Chronostratigraphie
Sed.hum.
G.T.Périg.
Chronostrat.
Archéol. + 14C
Basse Autriche
Tchèquie et Sud Pologne
Huneborg II
Denekamp I
Denekamp II
Denekamp
Maisières
Les Wartons
Nagelbeek
(Laugerie)
(Lascaux)
Hiatus
v Eltviller Tuf
Huc. (26,3)
M-C (28,0 - 28,2)
M-C (30,8)
Grub. (18,3)
Grub. (18,9)
Grub. (19,3)
Will. 9 (24,9)
Will. 8 (25,2 - 25,8)
Will. 6 (26,1 - 26,5)
Still. (28,3)
Albern. (28,4)
Will. (28,6)
Strat. (29,2 - 31,8)
Will. 5 (30,5)
Strat. (28,4 - 31,2)
Schw. (31,7)
Will. 4 (31,2 - 32,1)
Spadz. B (23,0)
Spadz. B (24,4)
Pavl. I (25,0 - 26,7)
DV I (25,0 - 26,4)
Predm. (26,9)
DV II (25,6 - 27,7)
Milov. (29,2)
DV I (29,9)
Str. Sk. (31,0)
DV I (31,7)
Str. Sk. (32,4 - 32,6)
Huneborg II
Denekamp I
Denekamp II
Maisières
Les Wartons
Nagelbeek
Grubgraben
Tapiósuly
Pavlov II
Dolni Vest. ?
Schwal. III
Schwal. II
G 6
G 5
G 4
G 3
G 2
(G 1)
G 1
P. Haesaerts 11/00

Figure 10.

célèbres gisements de Willendorf et de Dolni Vestonice riche en charbons de bois fournissent un cadre stratigraphique, archéologique et chronologique bien documenté (Haesaerts, 1990, Haesaerts *et al.*, 1996; Klima, 1995; Svoboda *et al.*, 1996). A nouveau, c'est le contexte stratigraphique et paléoclimatique qui a servi de guide pour les corrélations à longue distance (Fig. 10); en particulier, la signature de la transition du pléniglaciaire moyen au pléniglaciaire supérieur est également bien exprimée en Europe centrale (Haesaerts, 1985), notamment à Willendorf où une longue série de datations ^{14}C situe cette limite entre 26.300 et 26.100 BP (Haesaerts et al, 1996). Selon ce schéma l'occupation gravettienne de l'Hermitage serait donc contemporaine des grands campements gravettiens de Dolni Vestonice, de Pavlov et de Predmosti, qui tous sont à situer au cours d'une phase de déséquilibre climatique majeur conduisant aux conditions froides mais surtout très sèches du pléniglaciaire supérieur.

REMERCIEMENTS

Nos plus sincères remerciements vont à J. Destexhe pour son accueil chaleureux; sans ses précieuses observations, notre perception du site eut été incomplète. Les recherches sur le terrain ont été menées à bien en 1976 et en 1980 grâce la coordination assurée par J. Michel, collaborateur scientifique à l'I.R.S.N.B, avec la participation de P. Cornand, M. Splingear et P. Timperman, techniciens à la Section d'Anthropologie et de Préhistoire. Ce travail constitue une contribution aux programmes de recherche Sc-04 et Sc/09 initiés par les Services Fédéraux des Affaires Scientifiques, Techniques et Culturelles.

Figure 9. Station de l'Hermitage. Séquence générale et contexte chronostratigraphique.
Symboles graphiques des figures 2 à 10: 1: loess; 2: limon; 3: sable; 4: cailloutis et blocs calcaires; 5: concrétions calcaires; 6: horizon déferrifié (gley de toundra); 7: horizon humifère évanescent; 8: horizon humifère; 9: horizon B; 10: carbonates (pseudomycélium); 11: gravettien; 12: gravettien en position dérivée; 13 aurignacien; 14 paléolithique moyen; 15 paléolithique moyen en position dérivée; 16; coins de glace occasionnels; 17: grands coins de glace en réseau.
Abréviations: P: périglaciaire avec permafrost; A: arctique; SA: sub-arctique; B: boréal. M-C: Maisières-Canal.

Figure 10. Contexte chronostratigraphique des principaux gisements paléolithiques de plein air en Moyenne Belgique et en Europe centrale pour la période 17.000 - 33.000 BP.
Chronostratigraphie: Pays-Bas (van der Hammen, 1995); Moyenne Belgique (Haesaerts et Laville 1988); Europe centrale (Haesaerts 1985; 1990; Haesaerts et al. 1996; Klima 1995; Svoboda 1996).
Abréviations: HUC: Huccorgne; M-C: Maisières-Canal; Grub: Grubgraben; Will: Willendorf; Still: Stillfried; Albern: Alberndorf; Strat: Stratzing Galgenberg; Schw: Schwallenbach; Spadz: Spadzista; Pav: Pavlov; D V: Dolni Vestonice; Predm: Predmosti; Milov: Milovice; Str.Sk: Stranska Skala.

CHAPITRE 4

LES INDUSTRIES ISSUES DES FOUILLES DU XIXe SIÈCLE

Marcel OTTE

Curieusement, il reste peu de documents préservés issus des fouilles anciennes à Huccorgne. Les auteurs décrivent pourtant une abondance remarquable mais, semble-t-il, surtout liée aux produits de débitage. En effet, Dormal et Tihon (1890-1891) évoquent de "nombreux déchets" et de "très nombreux lames et couteaux" (p. 55). Probablement, les auteurs n'ont-ils pas jugé utile de conserver l'ensemble de ce qui leur paraissait être des déchets de taille sans intérêt.

Ils font aussi allusion à des silex accumulés en "certains endroits" de forme plus ou moins circulaires, correspondant à des "ateliers" où se trouvent en outre rassemblés de nombreux ossements et des traces de feu (Dormal et Tihon, 1890-1891, p. 55). Ces ossements sont décrits comme très friables et, généralement, indéterminables. Quelques fragments peuvent être rapportés à la macrofaune : des dents de cheval et de bœuf, des bois de cerf et de chevreuil (Dormal et Tihon, 1890-1891, p. 58).

Les matériaux utilisés sont dominés par des roches d'origine locale, probablement issues des dépôts crétacés des plateaux (De Puydt et Lohest, 1884-1885, p. 131). Les traces de cortex confirment cette supposition. Ils sont majoritairement à grain fin et souvent patinés (Otte, 1979, p. 439). Cependant, deux fragments de lames sont réalisés en grès bruxellien et les auteurs signalaient la présence de lames en phtanite, non retrouvées dans les collections (Dormal et Tihon, 1890-1891, p. 56). Dans les deux cas, ces matériaux indiquent des relations avec le centre des plateaux, dans le Brabant actuel.

Malgré la déficience du matériel conservé, nous avons pu observer quelques traits techniques propres à cet ensemble.

Les lames (14 pièces) sont minces et régulières, obtenues par un débitage en deux sens opposés et à préparation latérale. Les talons sont punctiformes ou lisses. La longueur des lames complètes passe de 75 à 115 mm et la largeur se situe entre 20 et 40 mm.

L'outillage est dominé par les burins, essentiellement sur troncature. Quelques pièces sont composites, associant deux outils différents (grattoir-burin, burin-troncature). Les burins dièdres sont taillés dans l'axe de la pièce (fig. 1). Quelques supports d'outils portent des traces de retouches plates (fig. 2: 3) ou de crête seconde (fig. 2: 5-6). Quelques burins sont taillés sur encoche latérale (fig. 2: 4 et 6).

Les armatures sont toutefois les pièces les plus caractéristiques. Une pointe de la Gravette porte un dos sub-rectiligne (fig. 3: 1). Une pointe de la Font-Robert est pédonculée du côté proximal et brisée au limbe, laissé brut de débitage (fig. 3: 2). Une extrémité de lame est appointée par retouches plates bifaciales, selon une technique propre aux régions septentrionales durant le Gravettien (Otte, 1985). Enfin, une pièce sur lamelle porte un cran, retouché de façon abrupte (fig. 3: 5).

Techniquement et typologiquement, ce petit ensemble est extrêmement révélateur d'une tradition propre à nos régions, manifestement liée à celle également reconnue à Maisières-Canal. Le mode d'obtention des lames, longues et régulières, vise à la confection des armatures : larges et pédonculées (pointes de la Font-Robert) ou étroites et rectilignes (pointes de la Gravette). Tous ces supports témoignent d'une parfaite maîtrise, probablement liée aux travaux menés, en correspondance, sur les matières osseuses, par exemple l'ivoire, abondamment représenté à Maisières (de Heinzelin, 1973). Ce faciès transitionnel se retrouve également en Angleterre et, dans une moindre mesure, dans le nord de la France (Otte, 1974).

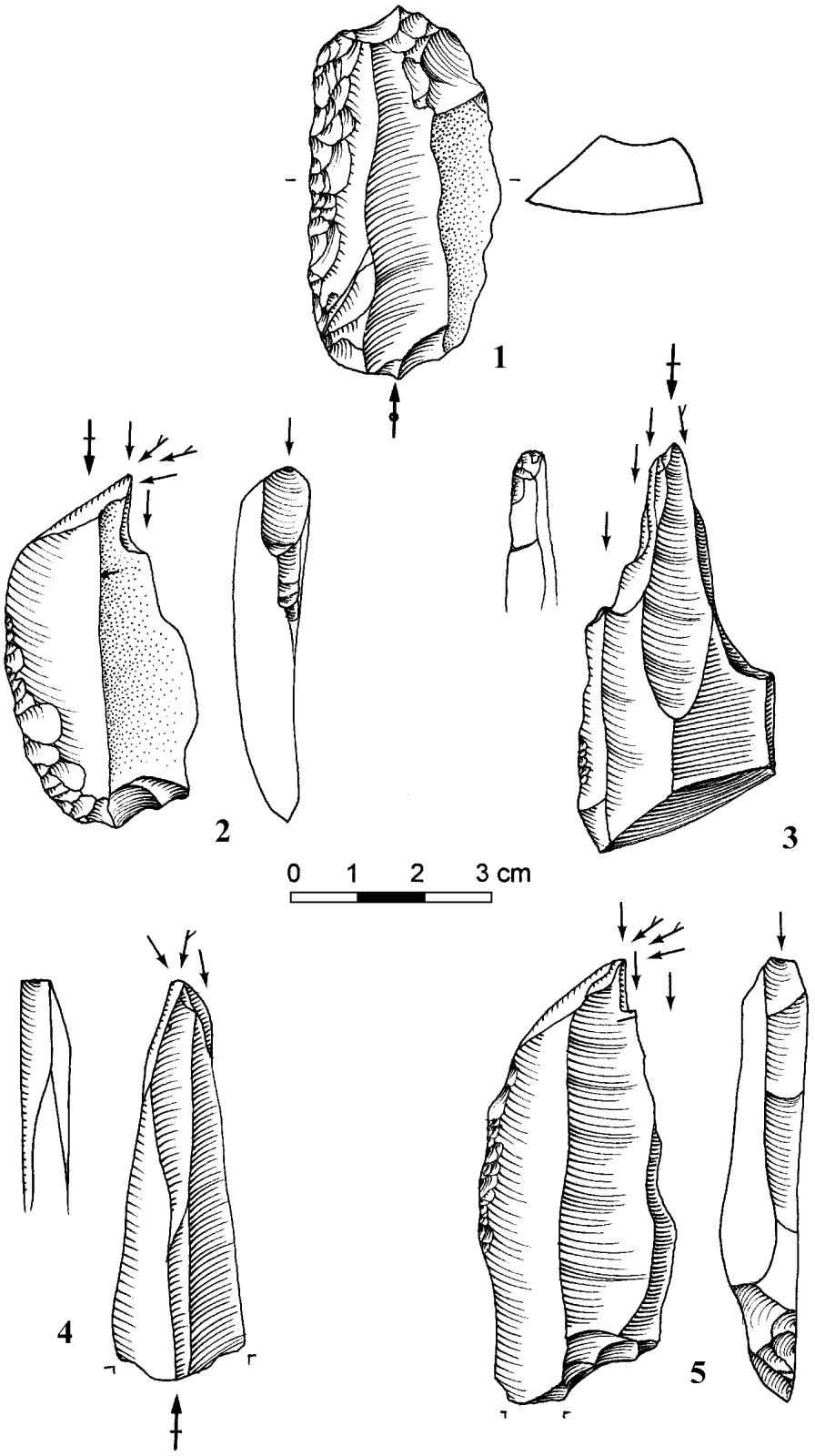

Figure 1. 1: grattoir sur lame retouchée; 2-5: burins dièdres.

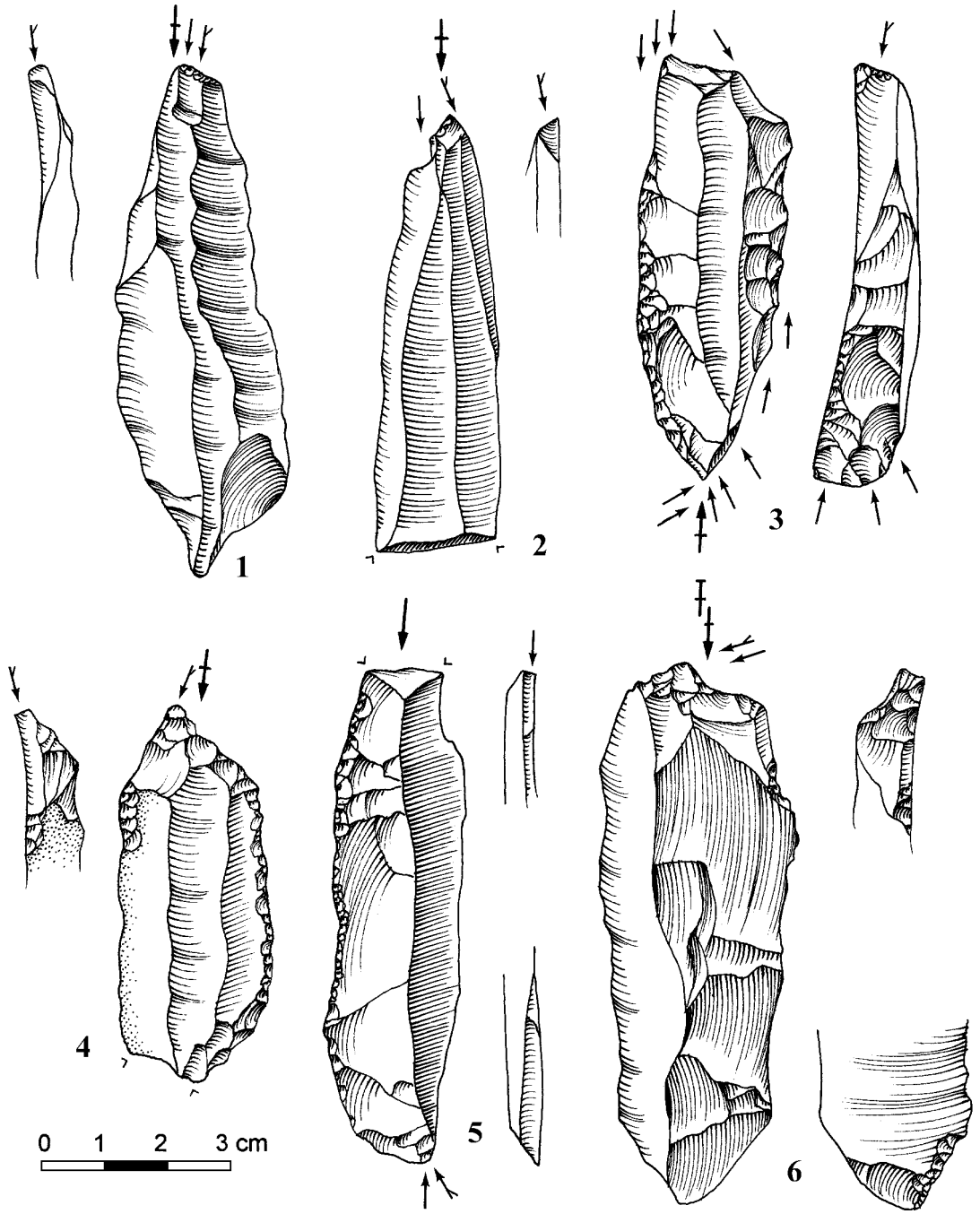

Figure 2. Burins. (3: avec retouche plate; 4,6: avec encoche latérale, 5-6: avec crête seconde).

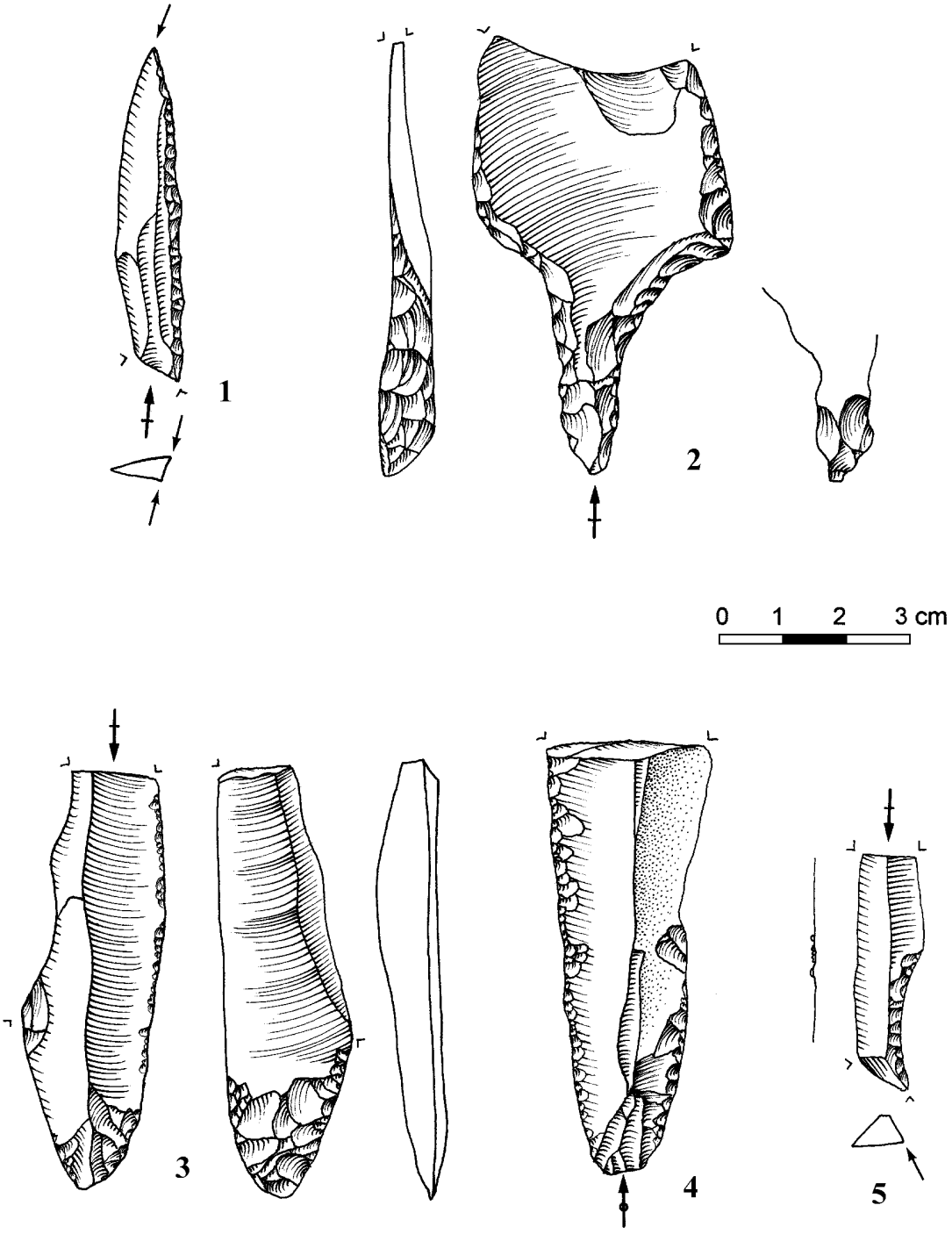

Figure 3. 1: pointe de la gravette; 2: pointe de la Font-Robert; 3-4: lames appointées; 5: lamelle à cran.

CHAPITRE 5

LES FOUILLES DIRIGÉES PAR JOSEPH DESTEXHE-JAMOTTE

Marcel OTTE et Joseph DESTEXHE-JAMOTTE

PÉRIODE DE FOUILLES

La Station de l'Hermitage fut redécouverte en décembre 1969 dans les parois d'un puits creusé pour une citerne, dans un jardin situé sur la butte. Elles se sont déroulées durant trois années successives.

SUPERFICIE

Ces campagnes de fouilles furent étendues à 148 mètres carrés (fig. 1). Le plan du quadrillage donne les concentrations horizontales du matériel lithique (fig. 2). De nettes concentrations se marquent, particulièrement dans l'aire A-D/6-12 où semble s'être situé un atelier de taille. Le reste du matériel était d'avantage dispersé au sommet du sol caillouteux (cf. ci-dessous). L'intérêt de cette fouilles réside dans sa localisation au sommet de la butte, là où les remaniements furent limités et où l'installation doit avoir eu lieu. Celle-ci se présente donc comme une aire de taille intense, à préparation technique, au moins pour une partie de l'habitat. La proximité de matière première abondante et de bonne qualité explique probablement une telle densité d'activités liées à la préparation de l'outillage. dans l'une des coupes, un foyer fut également observé, associé à ce niveau (fig. 3).

STRATIGRAPHIE

Comme dans les descriptions précédentes, de grandes unités sédimentaires furent reconnues dans la formation géologique de la butte, auxquelles les activités humaines furent quelquefois associées.

La base du socle est formée d'une agile caillouteuse (essentiellement des blocs calcaires issus des falaises proches). En certains endroits, une couche argileuse fut retrouvée au-dessus de cette unité caillouteuse (fig. 3). Ensuite, un limon jaune clair contenait les silex taillés et les traces de foyers (fig. 3 et fig. 4).

Plus haut encore, se place le dépôt le plus caractéristique fait d'un "limon jaune" ou d'un lœss pur. Cette formation, stérile sur le plan archéologique, semble correspondre à la phase, froide et sèche, du second pléniglaciaire (stade isotopique 2; Bond *et al.*, 1993). La présence de ce limon clair, également associé au matériel archéologique, montre que ce climat avait déjà prévalu lors de l'occupation gravettienne.

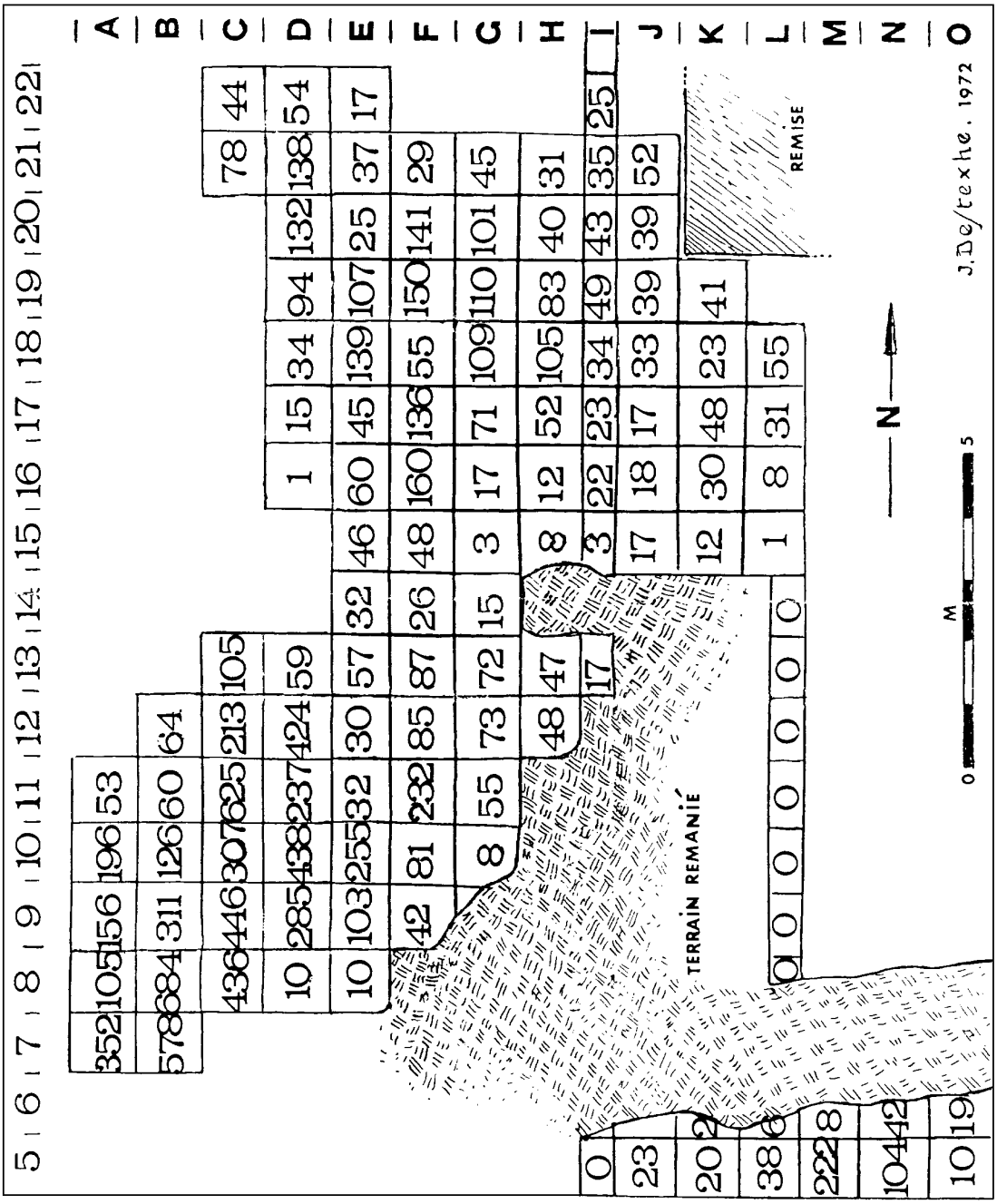

Figure 1. Fouilles Destexhe. Plan des fouilles indiquant les quantités du matériel lithique par mètre carré.

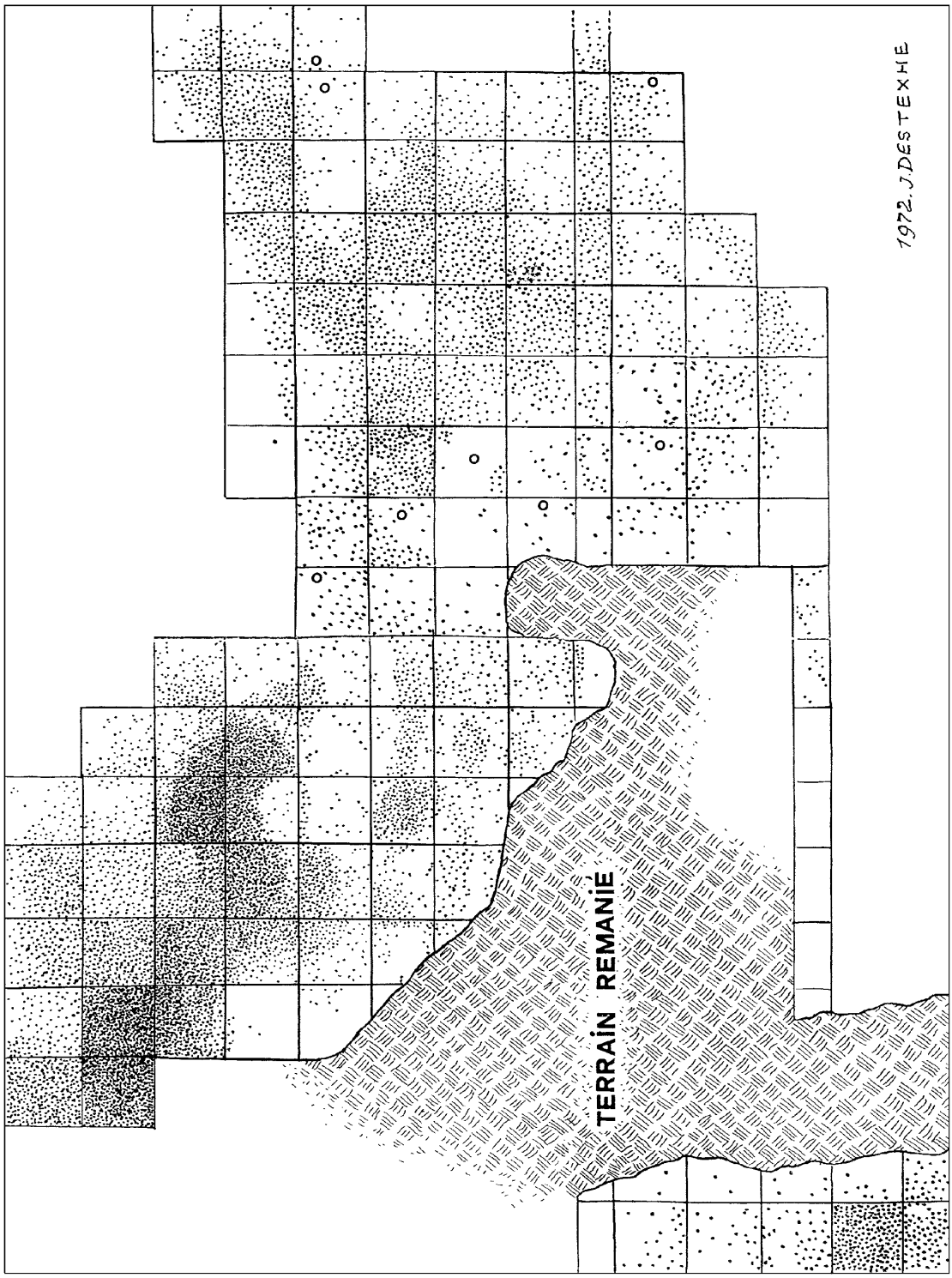

Figure 2. Fouilles Destexhe. Plan de répartition spatiale indiquant la densité des concentrations du matériel lithique.

MATÉRIAUX ET CONTACTS

L'essentiel des déchets et des outils furent façonnés en silex local, de bonne qualité, à grain fin et apparemment en abondance suffisante. En effet, la technique gravettienne requiert l'emploi de blocs homogènes et volumineux afin de permettre l'élaboration des formes élaborées, recherchées dans les supports et dans l'outillage. Les silex de Hesbaye se prêtent bien à ces techniques de mise en forme préalables du bloc par la précision du travail qu'ils autorisent.

Outre l'abondance des matériaux locaux, on observe trois autres catégories de documents, apparemment d'origine extérieure. Une grande lame appointée est faite en silex brun clair à grain grenu (fig. 5: 1). Son intense utilisation et l'extension des retouches périphériques impliquent un usage prolongé, par exemple lors du transport de l'outil, considéré comme précieux et utile, tel un canif dans nos poches aujourd'hui. La pièce fut finalement abandonnée sur ce site, probablement à cause de la cassure transversale, pratiquée à la limité de la partie appointée, peut-être là où le manche s'arrêtait. Nous ignorons l'origine géographique d'une telle roche qui ne peut être locale et qui a dû exiger un bloc de matière première massif et homogène.

Un burin, également épais, est fait en grès à grain fin "bruxellien" (fig. 6: 8). la massivité de son support le distingue des autres produits locaux. Il fut en outre fabriqué à deux reprises, lors d'aménagements massifs et opposés des biseaux latéraux.

Enfin, deux plus petites pièces (dont une armature à cran) sont faites en silex noir, fin et homogène, évoquant le silex d'Obourg, en Hainaut (fig. 5: 2). Ceci constituerait un témoignage intéressant de contacts entretenus vers l'ouest de la Moyenne Belgique, là où se situe l'habitat périgordien de Maisières, très comparable à Huccorgne quant aux traditions techniques qui y furent retrouvées (de Heinzelin, 1973).

LES OUTILS

L'outillage est dominé par les burins (fig. 6 et fig. 7: 1-3), faits sur grandes lames, essentiellement sur troncatures, plus rarement dièdres. Indirectement, ils attestent l'importance du travail réalisé sur les matières osseuses et de la régularité du débitage laminaire. Quelques grattoirs sur extrémité de lame sont aussi présents (fig. 7: 4-5), ainsi que deux racloirs latéraux (fig.7: 6).

Toutefois, les pièces les plus caractéristiques entrent dans le domaine des armatures (fig. 8 et fig. 9). Deux pièces sont pédonculées sur l'extrémité proximale de lames appointées spontanément par le débitage (fig. 8: 1-2). Une base de pédoncule est par ailleurs présente (fig. 8: 3). La massivité de certaines pièces indique qu'elles sont aussi bien pu correspondre à des outils emmanchés qu'à des pointes de traits. De grandes lames appointées sont mises en forme par des retouches plates, latérales, portées sur l'extrémité distale (fig. 8: 4-6). La fracture transversale, portée vers cette extrémité pointue, semble due au mode d'utilisation et d'emmanchement, limité à cette partie retouchée de la lame. Quelques pièces enfin portent des crans : deux lames brutes (fig. 9: 1-2) et une pointe à retouches plates sur extrémité distale (fig. 9: 3). Pour ces pièces massives, les systèmes d'emmanchement tiennent donc aux aménagements proximaux, par encoches latérales, simples ou doubles opposées.

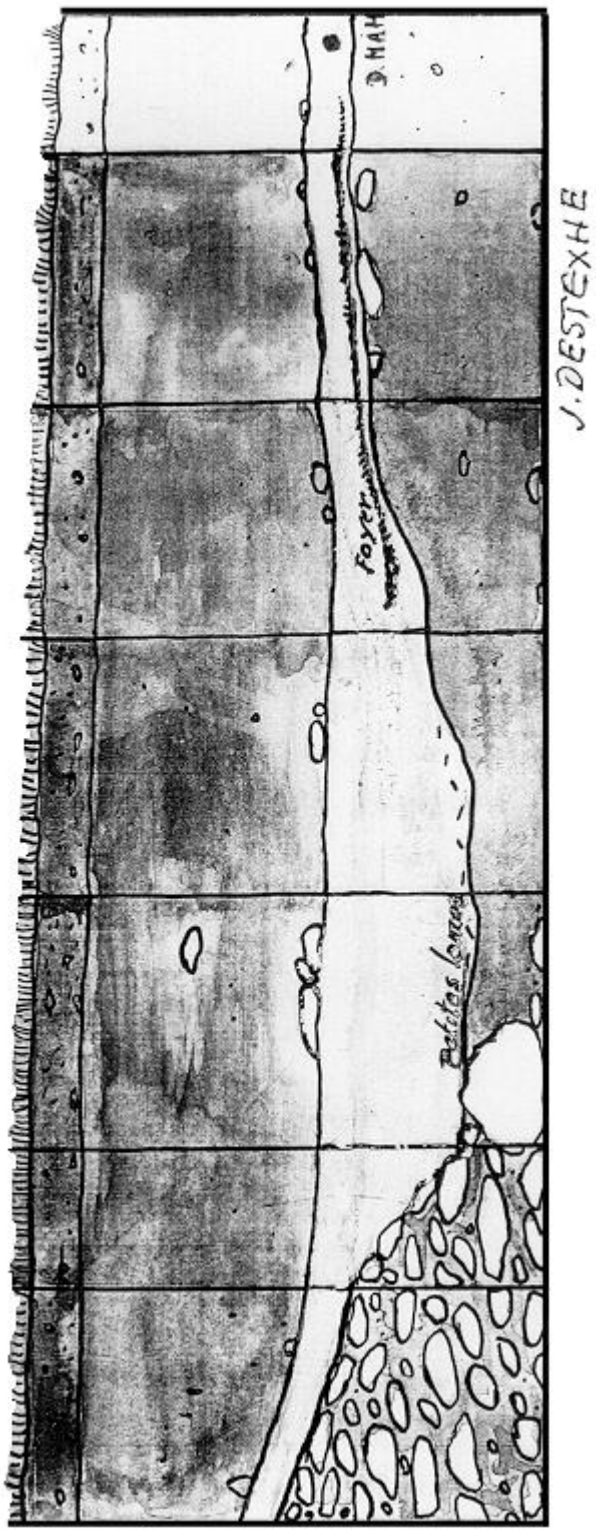

Figure 3. Fouilles Destexhe. Profile montrant un foyer *in situ* dans la couche G1.

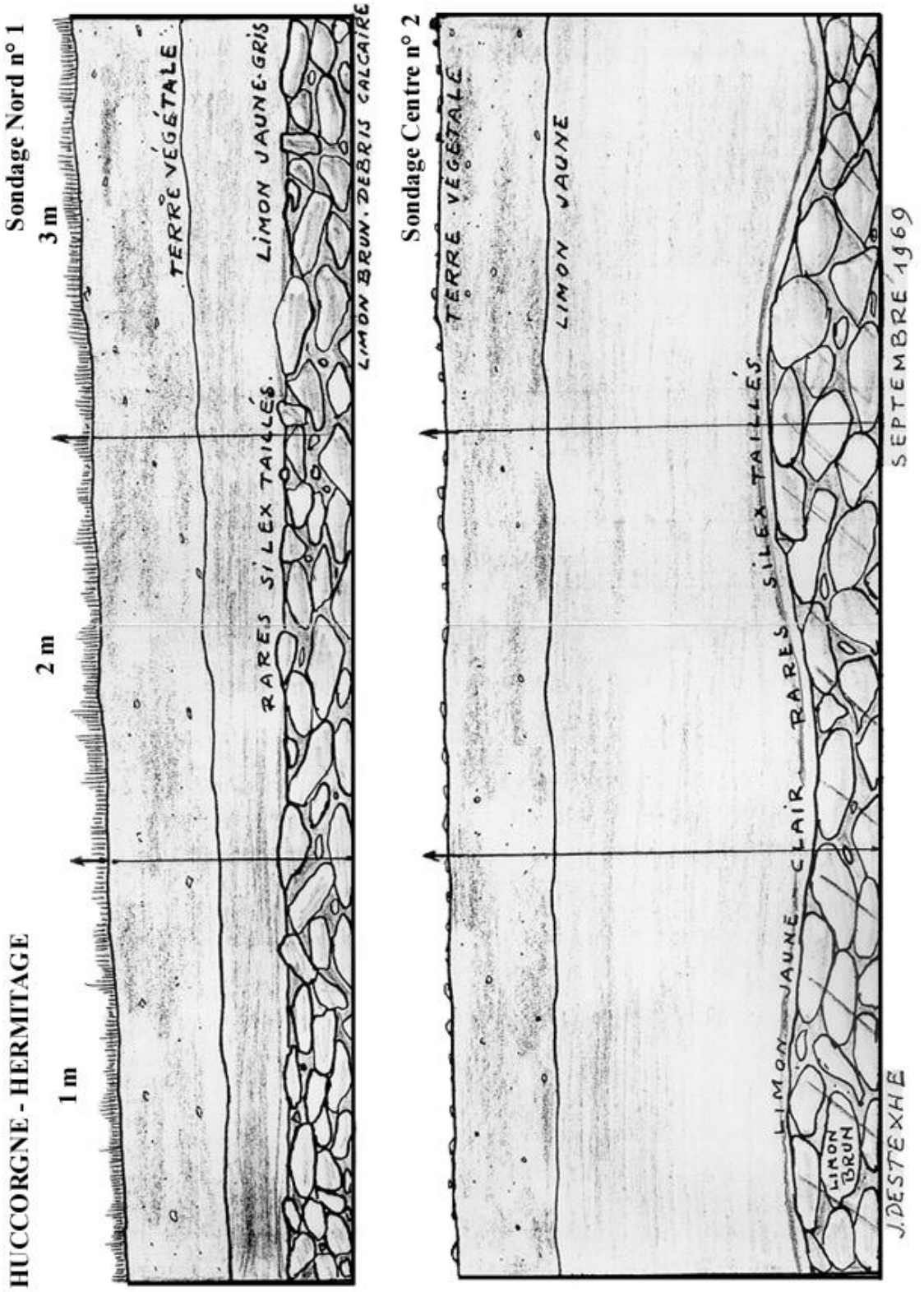

Figure 4. Fouilles Destexhe. Profiles du Sondage Nord n° 1 et du Sondage Central N° 2.

Diverses autres armatures sont microlithiques, réalisées sur lamelles, dont un bord fut abattu par retouches abruptes (fig. 9: 4-11). Ces petits éléments appointés possèdent un dos rectiligne : ils évoquent les "micrograveттes", rarement présentes à Maisières (Otte, 1976), mais caractéristiques des phases anciennes en Europe centrale (Otte, 1981). Les différences de contexte entre Huccorgne et Maisières justifient peut-être ces différences de proportions : l'orientation serait plus spécialisée vers la chasse à Huccorgne.

TECHNOLOGIE

Déjà, les supports laminaires utilisés pour les outils indiquent les procédés de débitage élaborés suivis à Huccorgne : grandes lames rectilignes, obtenues par deux sens de débitage opposés (fig. 8: 2) et après préparation latérale pour la mise en forme du bloc (fig. 6: 6).

Par ailleurs, les blocs débités restituent les procédés de mise en forme préalable par enlèvements latéraux et transversaux qui donnent l'allongement et le bombement du nucléus (fig. 10). La courbure ("cintrage") donnée à la surface de débitage a permis le départ des lames en oblique, facilitant leur appointement spontané du côté distal (Bordes, 1970).

Les lamelles semblent plutôt issues du débitage opéré sur les tranches de gros éclats (fig. 10: 1). Ils sont extraits de gros blocs, apparemment non transportés sur le site, puis préparés par des enlèvements obliques et transversaux, utilisés ultérieurement comme plans de frappe pour l'extraction des lamelles latérales.

TÉMOINS ESTHÉTIQUES

Un bloc d'oligiste, à structure oolithique, fut ramené au gisement. Il a pu être utilisé comme colorant (sur le corps ou sur les peaux).

Une extrémité d'andouiller en bois de renne porte une double perforation, disposée transversalement sur l'axe principal (fig. 11: 1). La partie supérieure à ces deux perforations fut découpée légèrement au-dessus. L'extrémité du bois fut appointée et l'ensemble a été poli régulièrement. Disposés de cette façon, tous ces aménagements suggèrent la préparation d'un masque ou d'un figurine, suggérée approximativement sur l'andouiller.

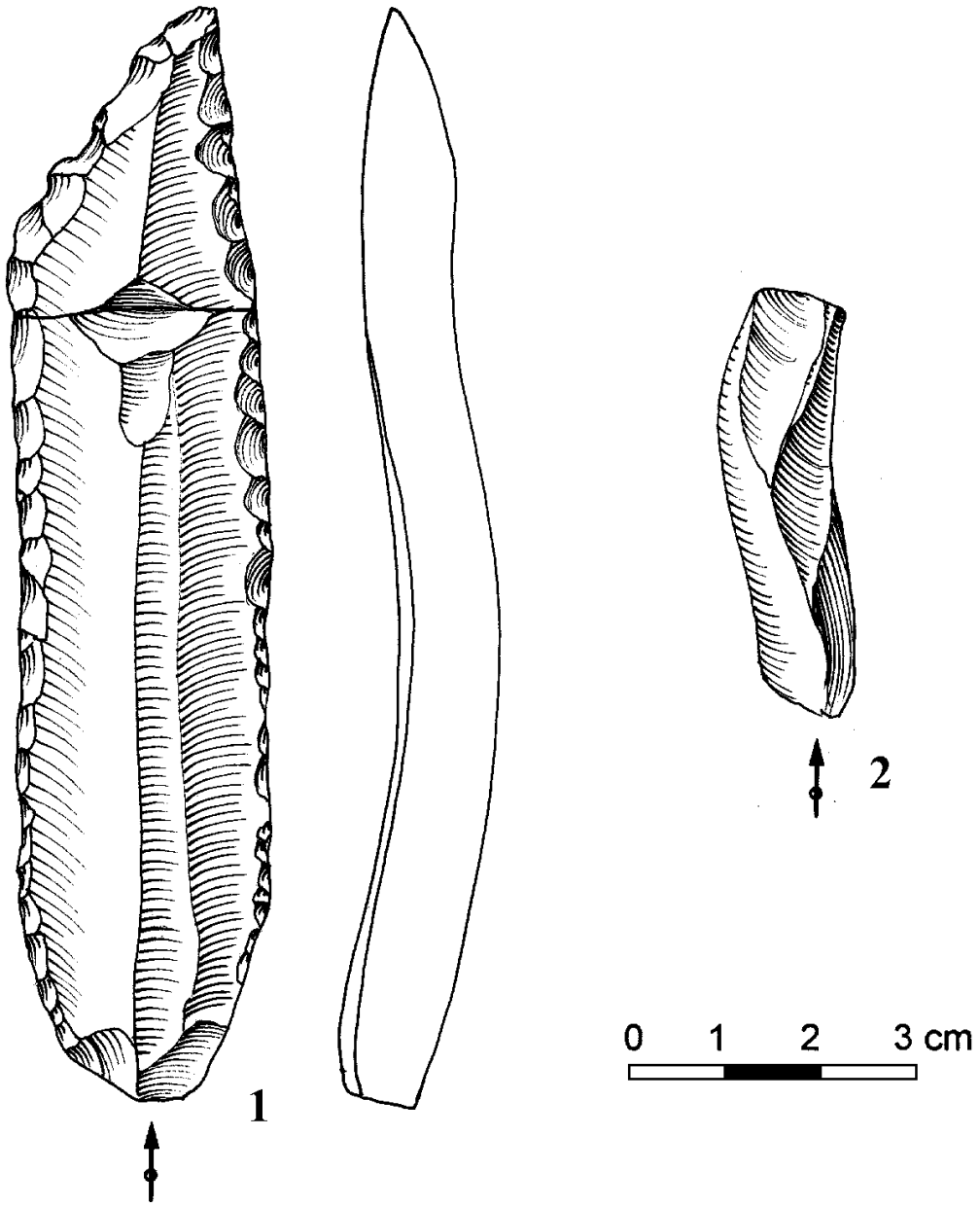

Figure 5. Fouilles Destexhe. 1: lame appointée; 2: lame.

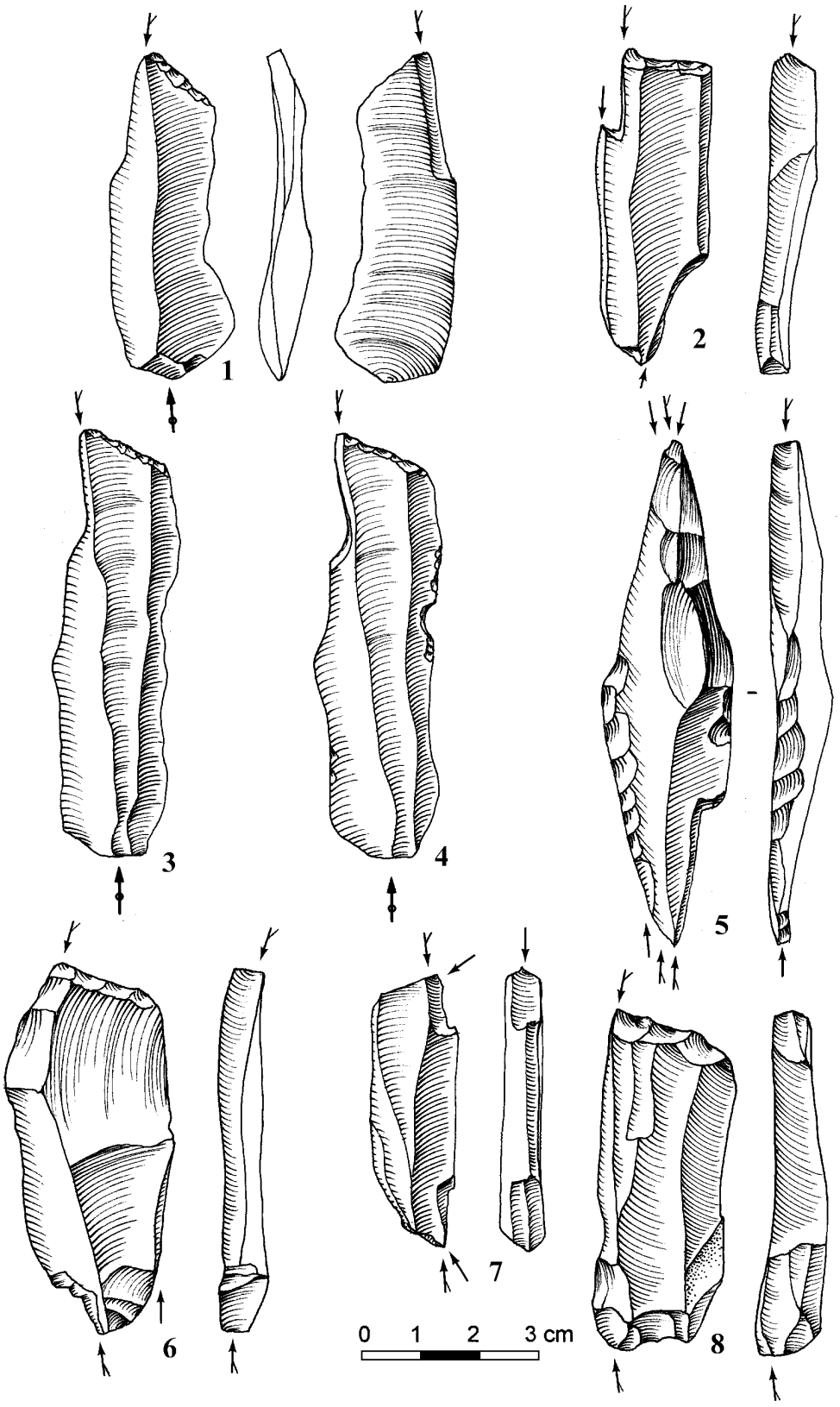

Figure 6. Fouilles Destexhe. Burins. 1-3: burins sur troncature; 4-8: burins multiples.

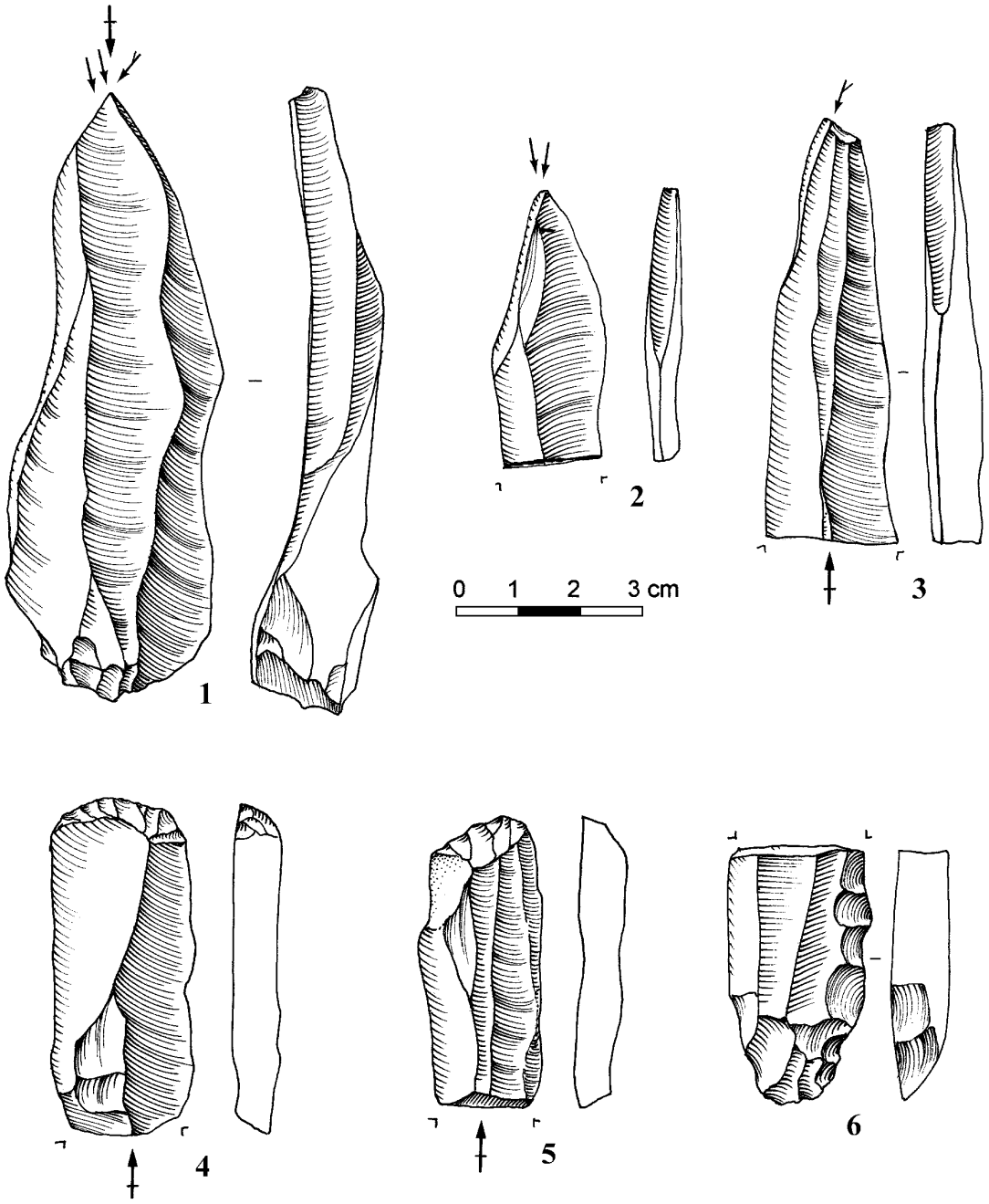

Figure 7. Fouilles Destexhe. 1-3: burins; 4-5: grattoirs sur lame; 6: racloir latéral.

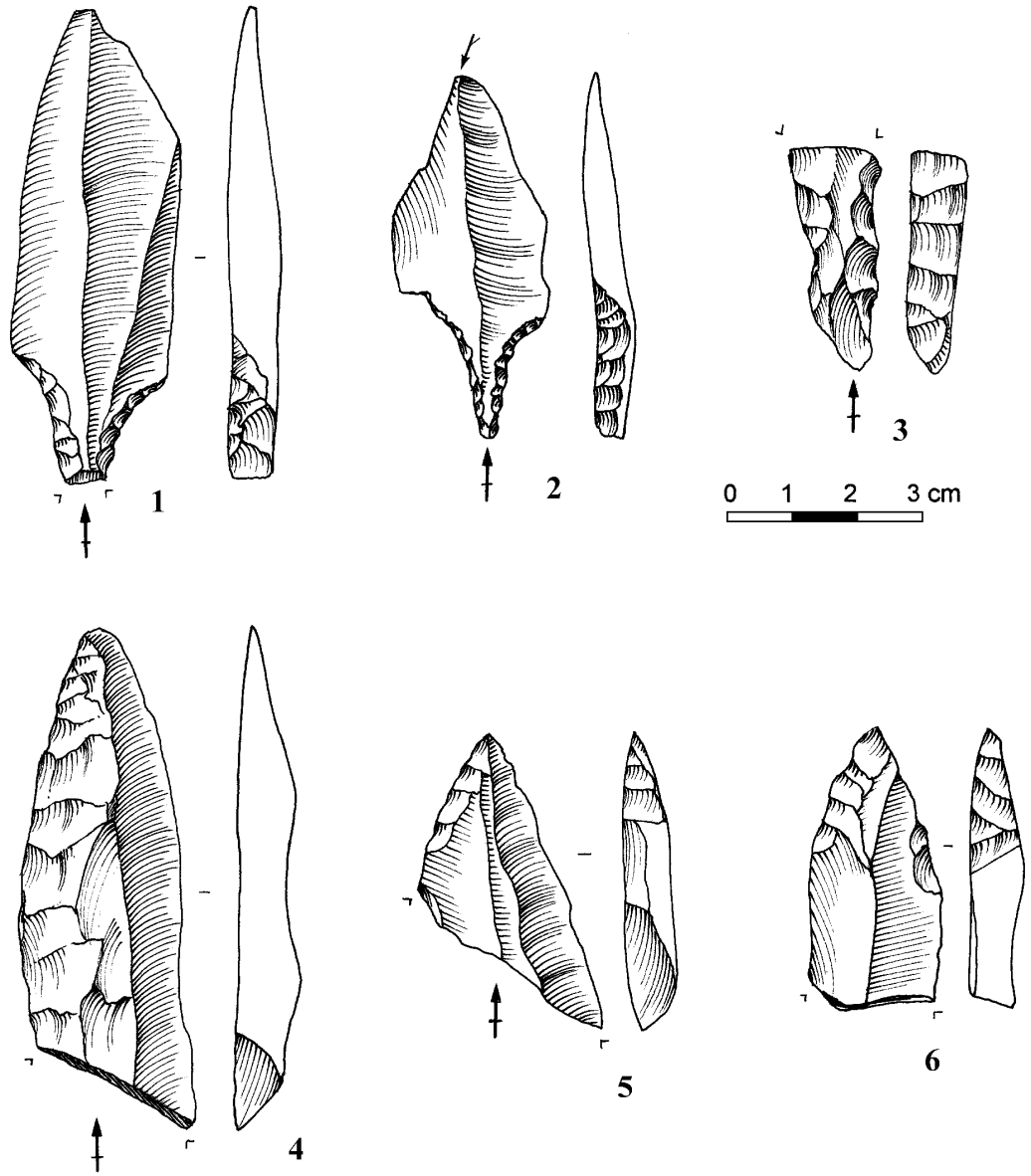

Figure 8. Fouilles Destexhe. 1-2: pièces pédonculées; 3: base de pédoncule; 4-6: lames appointées.

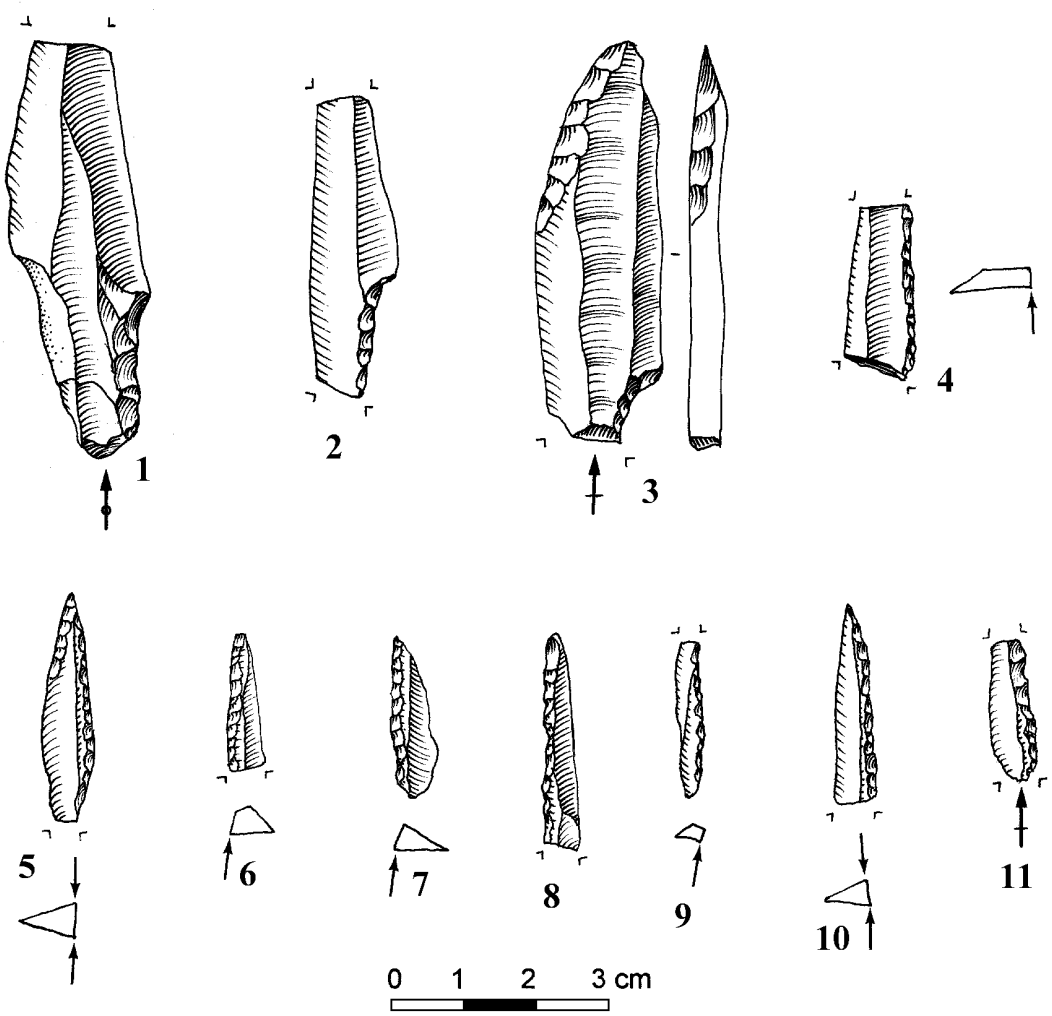

Figure 9. Fouilles Destexhe. 1-2: lames à cran; 3: pointe à retouches plates sur extrémité distale; 4-11: lamelles à dos ou "micrograveттes".

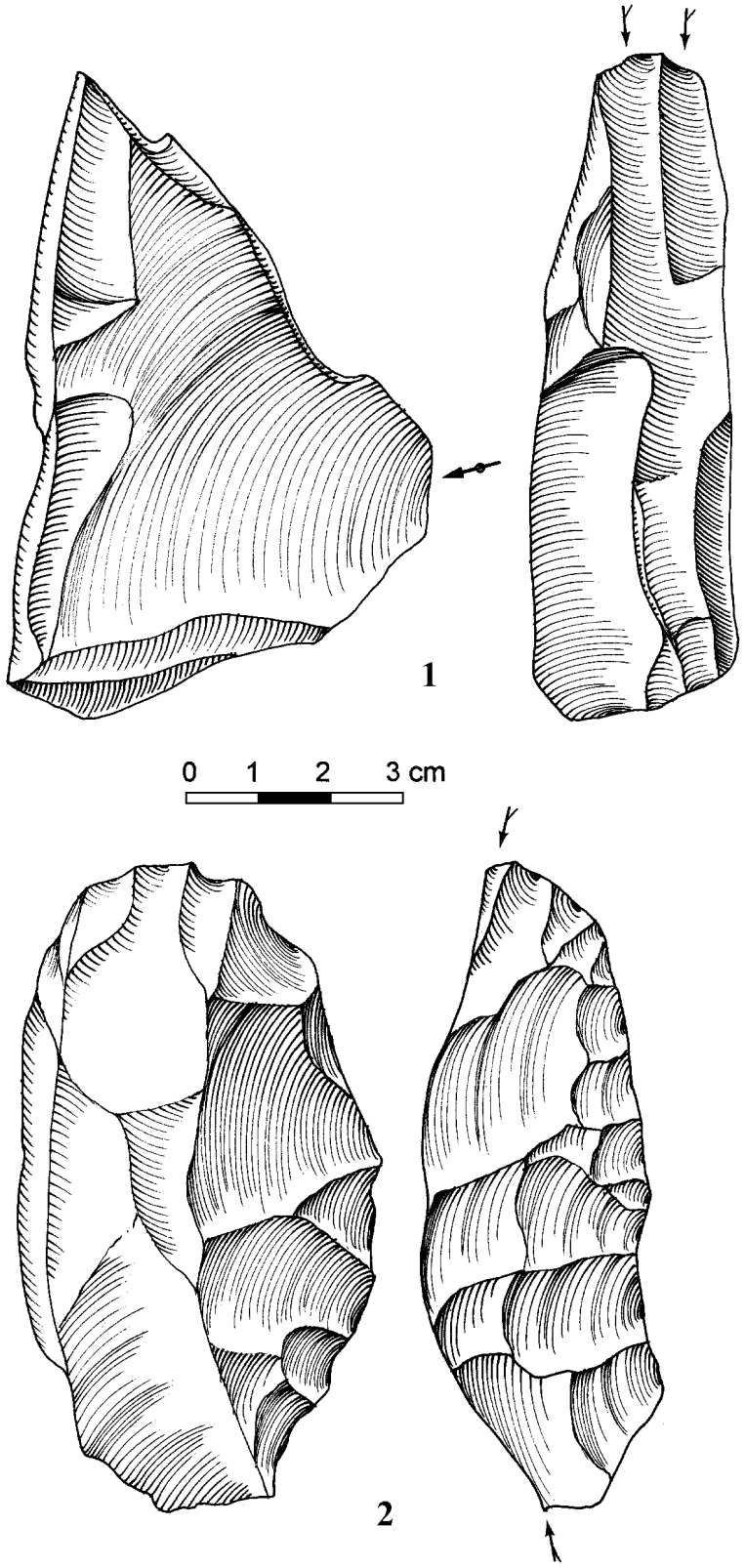

Figure 10. Fouilles Destexhe. 1: nucléus de lamelles sur éclat; 2: nucléus.

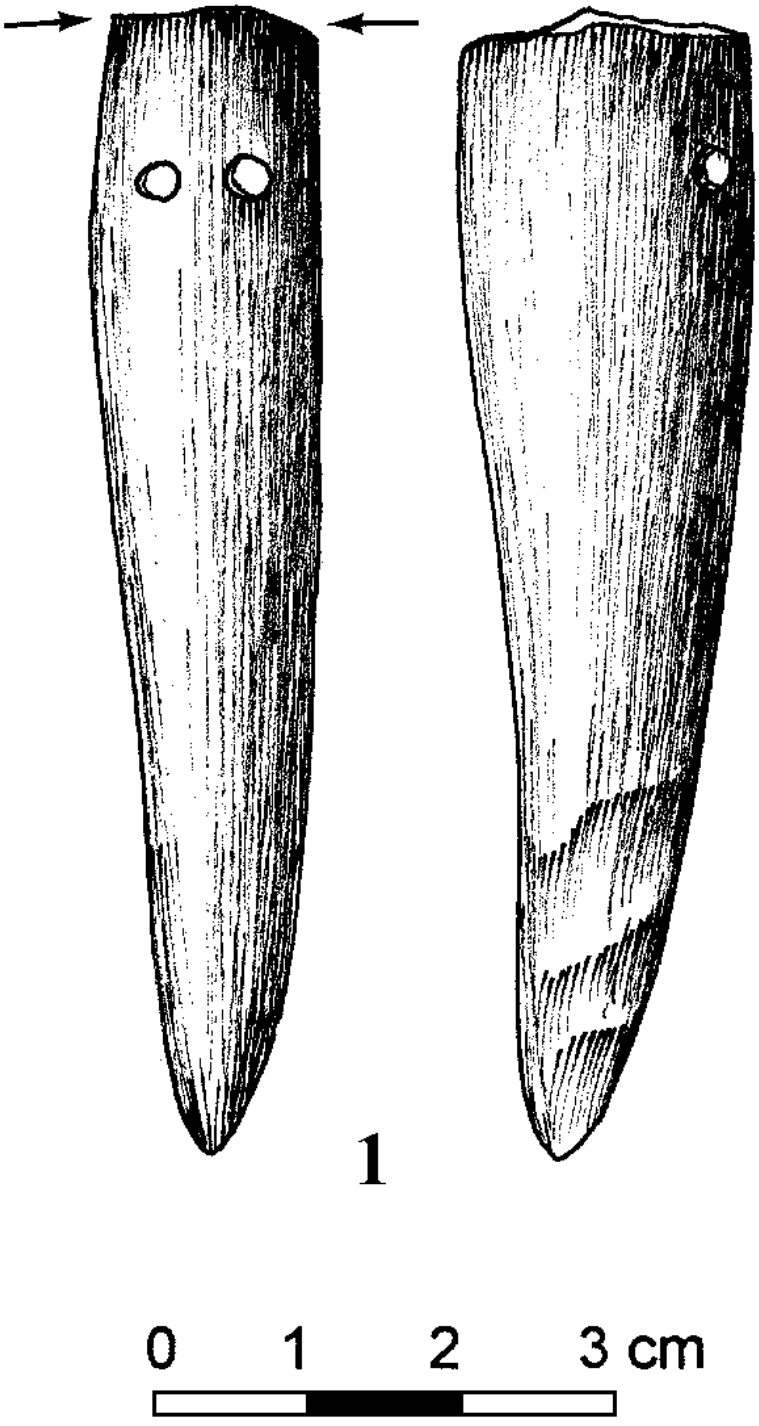

Figure 11. Fouilles Destexhe. Extrémité d'andouiller en bois de renne, polie, qui porte une double perforation.

Photo 1. Fouilles Destexhe. Lame appointée.

Photo 2. Fouilles Destexhe. Burin multiple.

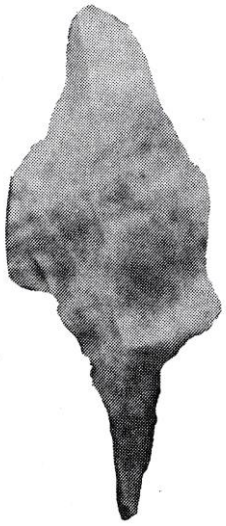

Photo 3. Fouilles Destexhe. Pièce pédonculée sur lame appointée.

Photo 4. Fouilles Destexhe. Témoin esthétique. Andouiller de bois de renne.

Straus L.G., Otte M. et Haesaerts P. (éds.), *La Station de l'Hermitage à Huccorgne*. Liège, ERAUL 94, 2000.

CHAPTER 6

THE GRAVETTIAN COLLECTIONS FROM THE IRSNB EXCAVATIONS ALONG THE ROAD CUT AT HUCCORGNE-HERMITAGE

Lawrence Guy Straus

INTRODUCTION

In 1976 and 1980, Dr. Paul Haesaerts of the Institut Royal des Sciences Naturelles de Belgique dug two long trenches and a *sondage* between them along the eastern face of the road cut in the area due west of the main part of the site (HU) where Tihon's and Destexhe's excavations had been done and also directly opposite Haesaerts' own section along the western face of the railroad cut. Haesaerts' two trenches along the eastern side of the road cut totalled about 20 m long and the total surface he dug came to about 40 sq.m. Also in 1980, Serge Froment, an M.A. student of Haesaerts, dug three smaller trenches (totalling some 7 sq.m) along the western face of the road cut, mainly south of the southern end of Haesaerts' southernmost trench along the eastern face of the road cut. All these trenches were identified in terms of meters south (downslope) of a property marker at the top of the eastern face of the road cut due west of the axis of Haesaerts' railroad cut trench. This marker was assigned the label "P100" for measuring purposes, with Haesaerts' east roadside trenches extending down to P122 (i.e., 22 m approximately south of the origin point). Froment's trenches were located at 117.5-118.5 m, 121-123 m and 127-131 m south of the property marker on the opposite side of the road. In both sets of IRSNB excavations the squares are referred to by the metric indicator at their northern end. If more than 1 m wide, the parallel meter squares are referred to as "A", "B" etc. from west to east (e.g., square P115 A).

All lithics--even very small chips--were piece-plotted *in situ*, but the sediments were not screened. This does not seem to have affected the representation of microdébitage in the collections--fully comparable with the UNM/ULg collections, which did result in part from fine screening. Visibility of even the smallest flints in the fine, light beige loess is excellent--and they audibly "clink" as the trowel passes over them.

Haesaerts' Gravettian horizon is generally divided into three levels: G1 at the base is a primary aeolian loess formed under cold conditions with permafrost; G2 is a colluvially redeposited loess; G3 is similar but with large limestone blocks (*éboulis*) soliflucted down from the cliff atop a frozen substratum (P.Haesaerts, personal communication, 1994). Judging from Haesaerts' section drawings, Stratum G4 seems to be a channel fill in the "downstream" area of P116-121. The main band of dense artifacts was, however, continuous from G3 into G4. The artifacts in the latter may have been redeposited from the former.

The Haesaerts trenches uncovered dense scatters of Gravettian flint artifacts together with limited numbers of faunal remains. He plotted the finds in vertical space along the length of his transect, which was usually 1-2 m wide. Many of them fell within his level G3, but they were also scattered within underlying G2 and especially G1 and (sometimes) overlying G4. Most finds were in a band that was generally 10-20 cm thick, although is some places the majority were concentrated more tightly. (The maximum vertical scatter of presumably Gravettian artifacts is c. 40 cm in P121

and 25-35 cm being more common, as in P116.) Locally there can be vertical separation between artifact scatters, suggesting an initial occupation in G1 followed by a gap in G2 and then a much denser accumulation of finds in G3/G4 (the latter possibly representing a palimpsest of residues from several visits to the site). In most areas all occupation traces are merged into one more or less continuous vertical distribution. Haesaerts also plotted the finds on a horizontal plane in some sectors of his trenches. Particularly rich was the dense cluster of artifacts in the sector between P115-118. This concentration of objects was associated with a group of limestone blocks reminiscent of the feature in our railroad-side excavation block. Lack of preferred orientation among the elongated finds around this group of rocks (as shown in the detailed plan made available to Straus by Haesaerts) suggests that the distribution may represent an intact activity area. In other areas, however, Haesaerts suspects the role of running water in slight disturbance of the Gravettian finds.

Because the distribution of finds in vertical space cannot be separated in most parts of Haesaerts' trenches and because those trenches are nearly continuous on the horizontal north-south axis, I have analytically lumped all the finds together as one collection, fully cognizant of the fact that they almost certainly represent multiple occupations. Indeed among the 17 sets of lithic artifact refits that Straus and Martinez were able to obtain in the Haesaerts collection, 7 cross stratum boundaries (i.e., G2/3-4, G2-4, G3-4, G1-3, H1/G3-G2). Thus there is no choice but to treat "G" as one analytical unit.

Froment's finds from his three much smaller trenches along the west face of the road cut were also lumped for analytical purposes. Most of them are from his level H.A., which is a reddish brown silt equivalent to Haesaerts' level G, 10 m away on the east side of the road (=our Stratum 3). There are some flints in Froment's level H.B, which is a fine, powdery, yellowish silt with stones at its base. Froment believes that his H.B. is equivalent to Haesaerts' H (our Stratum 3 with some Gravettian intrusive artifacts?). There is evidence of flow at the interface between H.A. and H.B. (Froment 1980:34). Finally there are also a few, clearly derived flints in Froment's level H.C., which a complex of coarse grey-brown sands, powdery yellow silt and lenses of sandy silt filling a small channel that cuts through the underlying H.B. and H.A. Froment's stratigraphic sections graphically illustrate major convolutions between the top of H.A. and the base of H.C. There was clearly higher energy flow in the downsteam location of Froment's trenches than in Haesaerts' ones only a few meters distant. There are, however, no obviously non-Gravettian intrusive artifacts in Froment's collections, so they can be studied as a Gravettian ensemble, although they clearly represent an hydraulically disturbed palimpsest.

THE IRSNB GRAVETTIAN COLLECTIONS

With the authorization of Haesaerts and Dr. Daniel Cahen (Director of the IRSNB), Straus classified the collections from the 1976 and 1980 geological excavations along the road cut. This was done (in 1994) following the same methods and typologies used in the classification of the 1991-93 finds from the UNM-ULg excavations. Of course the problem of inter-classifier variation was not present, since the IRSNB classification and measurement were done by Straus alone.

The combined collection from Haesaerts' trenches along the eastern side of the road cut includes 5681 items of knapping debris and 138 retouched tools, while the combined collection from Froment's pits along the western side have only 225 pieces of debris and 7 tools (Tables 1 & 2; Figures 1a-d). Microdébitage (trimming flakes and shatter, all <1cm in length) totals just over half the east-side debris assemblage (50.4%). Exactly 19% of the collection is made up of flakes versus

TABLE 1

HUCCORGNE: LITHIC DEBRIS
IRSNB (HAESAERTS & FROMENT) EXCAVATIONS, STRATUM 4 SENSU LATO ("G")

	East Road		West Road	
Debitage type	**n**	**%**	**n**	**%**
Non cortical trimming flake	2361	41.6	17	7.6
Cortical trimming flake	253	4.5		
Non cortical shatter	161	2.8	6	2.7
Cortical shatter	83	1.5		
Plain flake	582	10.2	54	24
Primary decortication flake	93	1.6	7	3.1
Secondary decortication flake	404	7.1	44	19.6
Plain whole/proximal blade	307	5.4	2	5.3
Plain distal/mesial blade	426	7.5	26	11.6
Whole/proximal 1DC blade	2	0.1		
Whole/proximal 2DC blade	72	1.3		
Mesial/distal decortication blade	135	2.4	6	2.7
Unidirectional crested blade	44	0.8		
Bidirectional crested blade	16	0.3		
Plain whole/proximal bladelet	389	6.8	2	0.9
Plain mesial/distal bladelet	22	0.4		
Whole/proximal cortical bladelet	17	0.3		
Mesial/proximal cortical bladelet	1	0.1		
Burin spall	45	0.8	2	0.9
Flake core	1	0.1	3	1.3
Prismatic blade core	2	0.1		
Pyramidal blade core	2	0.1		
Pyramidal bladelet core	1	0.1		
Mixed core	2	0.1		
Non-cortical chunk	102	1.8	20	8.9
Cortical chunk	113	2.0	25	11.1
Platform renewal flake	45	0.8	1	0.4
TOTAL	**5681**	**100.0**	**225**	**100.0**

1DC = Primary Decortication
2DC = Secondary Decortication

TABLE 2
HUCCORGNE: GRAVETTIAN TOOLS
IRSNB (HAESAERTS & FROMENT) EXCAVATIONS, STRATUM 4
SENSU LATO ("G")

	East Road		West Road
	n	**%**	**n**
1 simple endscraper	1	0.7	2
8 endscraper on flake	3	2.2	-
23 perforator	2	1.4	-
26 microperforator	1	0.7	-
30 angle burin on break	20	14.5	-
31 multiple dihedral burin	3	2.2	2
35 burin on oblique truncation	4	2.9	-
36 burin on concave truncation	1	0.7	-
38 transversal burin on lateral truncation	2	1.4	-
41 multiple mixed burin	2	1.4	-
56 shouldered Gravettian point	1	0.7	-
57 shouldered piece	1	0.7	-
58 backed blade	24	17.4	-
59 partially backed blade	2	1.4	-
60 straight truncated piece	2	1.4	-
61 oblique truncated piece	2	1.4	-
62 concave truncated piece	2	1.4	1
63 convex truncated piece	3	2.2	-
65 continuously retouched piece- 1 edge	22	15.9	1
66 continuously retouched piece- 2 edges	2	1.4	-
74 notch	11	8.0	-
75 denticulate	11	8.0	-
77 sidescraper	1	0.7	1
85 backed bladelet	9	6.5	-
88 denticulated bladelet	4	2.9	-
89 notched bladelet	1	0.7	-
90 Dufour bladelet	1	0.7	-
Total	**138**	**100.0**	**7**

18% blades and 7.6% bladelets. Cores (mainly blade/bladelet types) are not very common (0.5%), but chunks, which include many exhausted core remnants, make up 3.8% of the total. There are 45 platform renewal flakes among the flakes (0.8%) and 60 crested blades among the blades (1.1%). Splintered pieces (bipolar cores) are absent. Burin spalls total 45 (0.8%). Fully a fifth (20.7%) of the debris have some cortex, although primary decortication flakes and blades are relatively few. This is an assemblage that shows an emphasis on laminar blank production. Presumably many of the best blades were exported from here to other locales.

The Froment collection from the west side of the road is dramatically different even though the excavation methods used were the same as Haesaerts. Microdébitage makes up only 10.3% and bladelets make up only 0.9% of the Froment collection, no doubt because the smallest items had been washed away by running water in this channelled downstream area. On the other hand, chunks, which are heavy items, total 20% of the collection. (But there are only 3 cores: 1.3%.) Flakes make up 37.4% and blades 19.6%. There are only 2 burin spalls (0.9%). A high 63.2% of the debris has cortex. There is only 1 platform renewal flake (0.4%) and no crested blades.

The debris from the combined Haesaerts Gravettian collection is overwhelmingly dominated by the fine-grain, blue-grey Hesbaye flint (91.1% by count, 99.1% by weight). This is followed by yellowish patinated Hesbaye flint (4.7% by count, 0.4% by weight). The figures are similar for the Froment collection, but with slightly more of the patinated Hesbaye flint (15.0% by count, 12.9% by weight) vis à vis the unpatinated fine-grain blue-grey Hesbaye flint (88.9% by count, 85.3% by weight). There are traces of non-local raw materials (e.g., Brussels sandstone, psammite, quartzite, fine-grain Tertiary flint), but no more than 2-3 items each. Humans clearly knew that they did not need to come to Huccorgne with (or bring to it) stone artifacts from elsewhere, since they went to this site to acquire and work the abundant, excellent-quality flint locally available there.

The Froment collection has 2 endscrapers, 2 burins, a truncation, a continuously retouched piece and a sidescraper--all types present among the larger collections from HH. The Haesaerts collection from the eastern side of the road cut has only 4 endscrapers (2.9%) and 3 perforators (2.1%) versus 32 burins (23.2%)--mainly simple burins on break. There are a couple of projectile point fragments (shouldered points), plus 35 backed blades and bladelets (25.3%). There are 9 truncated pieces (6.4%), 24 continuously retouched pieces (17.3%). Notches and denticulates (22) make up 16.0%. There is 1 sidescraper. Various kinds of retouched bladelets (6) make up 4.3%. The relative abundance of burins, backed and truncated pieces make this a fairly "typical" Gravettian assemblage. The scarcity of endscrapers points to the relative unimportance of hide-working at this locale, since numerous microwear studies almost always show this to be the function of endscrapers. On the other hand, the relative abundance of so-called "Mousterian" tool types is rather striking.

In addition to the artifacts from Stratum G, Haesaerts found 7 items of debris from overlying level H (probably equivalent to our Stratum 3) and 42 in underlying level F (=our 5). The latter assemblage is heavily dominated by flakes (versus only 5 blades). While the H artifacts might be derived from the Gravettian horizon, the F collection is probably Mousterian, as in the other excavations at HH. There are, however, no tools from these pre-Gravettian levels in the IRSNB excavations along the road cut. In general, the site seems to have been only very ephemerally visited during pre-Gravettian times, with no evidence of the intensity of flint collection and knapping that occurred in the period immediately before the Last Glacial Maximum. There is simply no indication in the Middle Paleolithic that HH was being systematically "mined"as it was to be in the mid-Upper Paleolithic--presumably for export of tool blanks to other sites such as the Ardennes caves.

COMPARISON BETWEEN THE COLLECTIONS FROM THE 1976/1980 AND 1991-93 EXCAVATIONS

Table 3 compares the principal characteristics of the IRSNB and UNM/ULg collections from the Gravettian horizon at HH. It is difficult to compare the different excavation pits and trenches because they are of very unequal areas and, most importantly, they were located in very different parts of the site: some peripheral (our "railroad-side" and western "Smetz" areas and the western "road-side" IRSNB pits excavated by Froment) and others more central (Haesaerts' eastern "road-side" trenches and our "road-side" *sondage*). Of course, the most "central" of the excavations, that of J.Destexhe and the Chercheurs de la Wallonie, cannot be included in the comparison, as those collections (especially the knapping debris) have not been analyzed in detail.

The differences among the collections in terms of microdébitage and bladelets have already been commented. These small objects seem to have been winnowed away from the "downstream", channelled area exposed in the trenches dug by Froment along the western face of the road cut. The similarities between the two main collections (our block west of the railroad cut and Haesaerts' trenches along the eastern face of the road cut) are, however, generally striking. There are few cores, but relatively many cores; microdébitage slightly exceeds 50%; flakes are around 20-25%, blades are around 10-15%, bladelets are around 10%. The collection from our road-side *sondage* bears many similarities to those two collections in terms of cores, chunks, and blades. Microdébitage items and (to a lesser extent) bladelets are far fewer--probably due do winnowing by running water. This fact is even more pronounced in the IRSNB pits along the western face of the road cut, where it is obvious that small, light objects had been washed away. Blades are a fairly constant category (11-20%) among all the collections. Cortical items make up around 20% of all the collections east of the road (i.e., in the main site area), but (for reasons that are unclear) about double that percentage in the excavations west of the road.

Only one of the collections (Haesaerts' eastern road-side trenches) has a significant number of retouched tools (138). Burins are a high-percentage constant among all the collections, while endscrapers are always present but in very small numbers. Points are very rare (and, unlike the Tihon and Destexhe collections from the center of the main site, do not include tanged Font-Robert points). Continuously retouched pieces (and sidescrapers) are found in small numbers in all the collections. The Haesaerts collection is unique in having backed blades and bladelets--and not just a few, but actually 25.3%. Denticulates and notches (as well as retouched and denticulated bladelets and truncated pieces) are really only numerous in the Haesaerts collection.

TABLE 3

HUCCORGNE-HERMITAGE SITE:
SUMMARY OF LITHIC ASSEMBLAGES, 1976,1980,1991-93 EXCAVATIONS
(INSTITUT ROYAL DES SCIENCES NATURELLES DE BELGIQUE [IRSNB] AND
UNIVERSITIES OF NEW MEXICO [UNM] & LIEGE [ULg])

Excavation	**Between Railroad and Road Trenches ("Dock")**			**West of the road**	
Unit:	**East RR Block (H-U6-9)**	**Road Pit (Q-R/25-26)**	**East Road Section**	**West Road Section**	**Main West Pit (J-U53-55)**
Debris	**UNM/ULg**	**UNM/ULg**	**IRSNB**	**IRSNB**	**UNM/ULg**
Core	0.2%	0.1%	0.1%	1.3%	6.5%
Chunk	7.6	7.3	3.8	20.0	9.9
Platform Renewal Flk.	---	---	0.8	0.4	1.6
Crested Blade	---	---	1.1	---	---
Flake (>1cm)	26.5	44.6	19.7	47.1	39.3
Microdebitage (<1cm	55.6	23.7	50.4	10.3	23.0
Blade (>2cm)	9.9	17.4	16.6	19.6	11.5
Bladelet (<2cm)	11.2	6.7	7.5	0.9	22.5
Burin Spall	0.2	---	0.8	0.9	---
N	1,327	998	5,681	225	61
All cortical items	22.1%	21.2%	20.9%	36.5%	40.9%
Tools	**n**	**n**	**%**	**n**	**n**
Endscraper	1	1	2.9	2	1
Burin	7	---	23.1	2	2
Endscraper-Burin	2	---	---	---	---
Perforator	1	---	2.1	---	---
Backed Blade(let)	---	---	25.3	---	---
Point	1 Gravette	1 Gravette	1.4 Shouldered	---	---
Truncated Pc.	---	---	6.4	1	---
CRP+S/S*	5	3	18.0	2	1**
Dentic.+Notch	3	---	16.0	---	---
Ret.+Dentic.Bladelet	---	---	4.3	---	1**
N	20	5	138	7	5

*: Continuously retouched piece + sidescraper.
**: From the small western pit, JJ-KK/45-46.

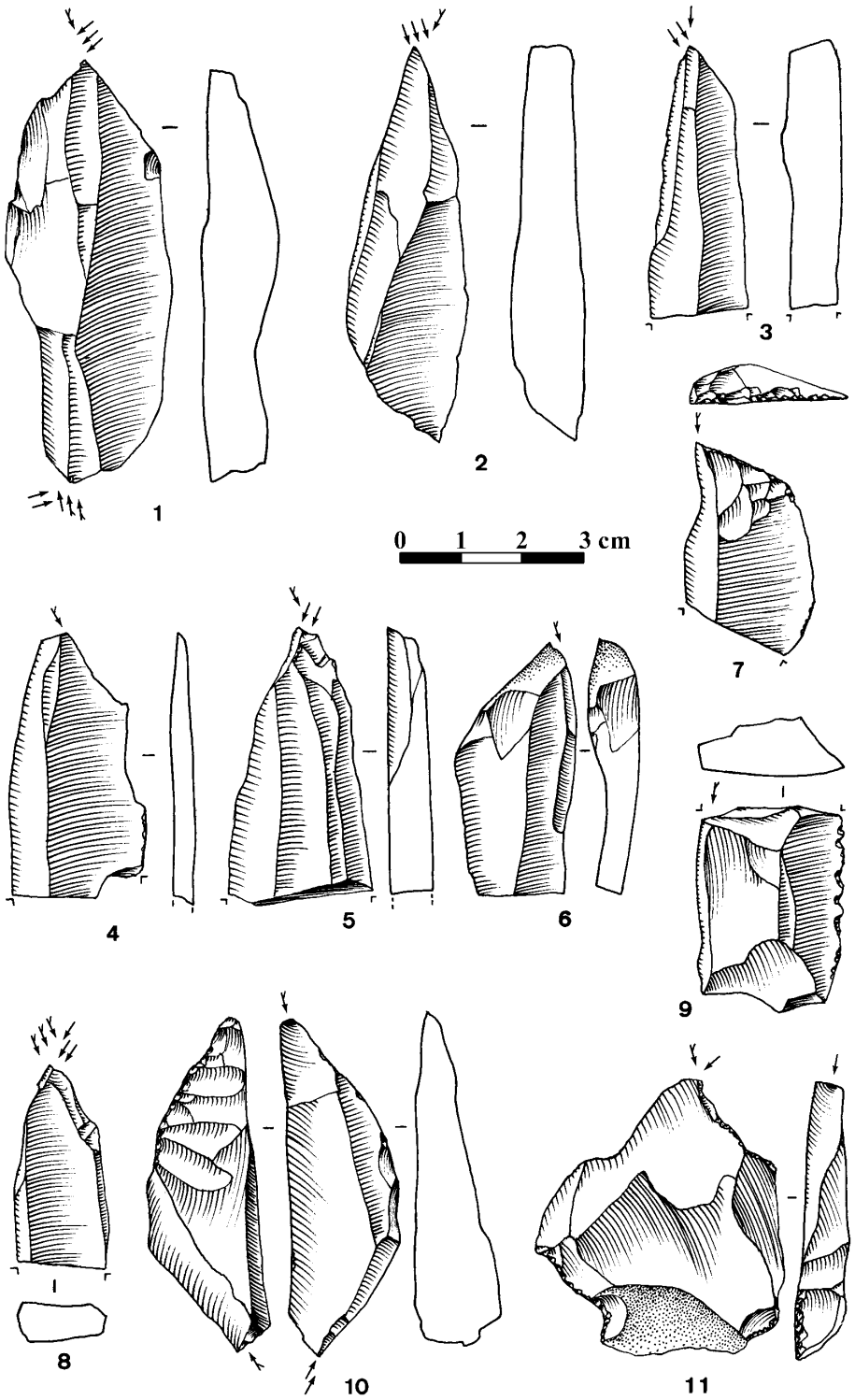

Figure 1a. Upper Paleolithic Tools: 1-3, 8, 10. multiple dihedral burins; 4, 6. angle burins on break; 5, 7, 11. burins on oblique retouched truncation; 9. angle burin on break and denticulate.

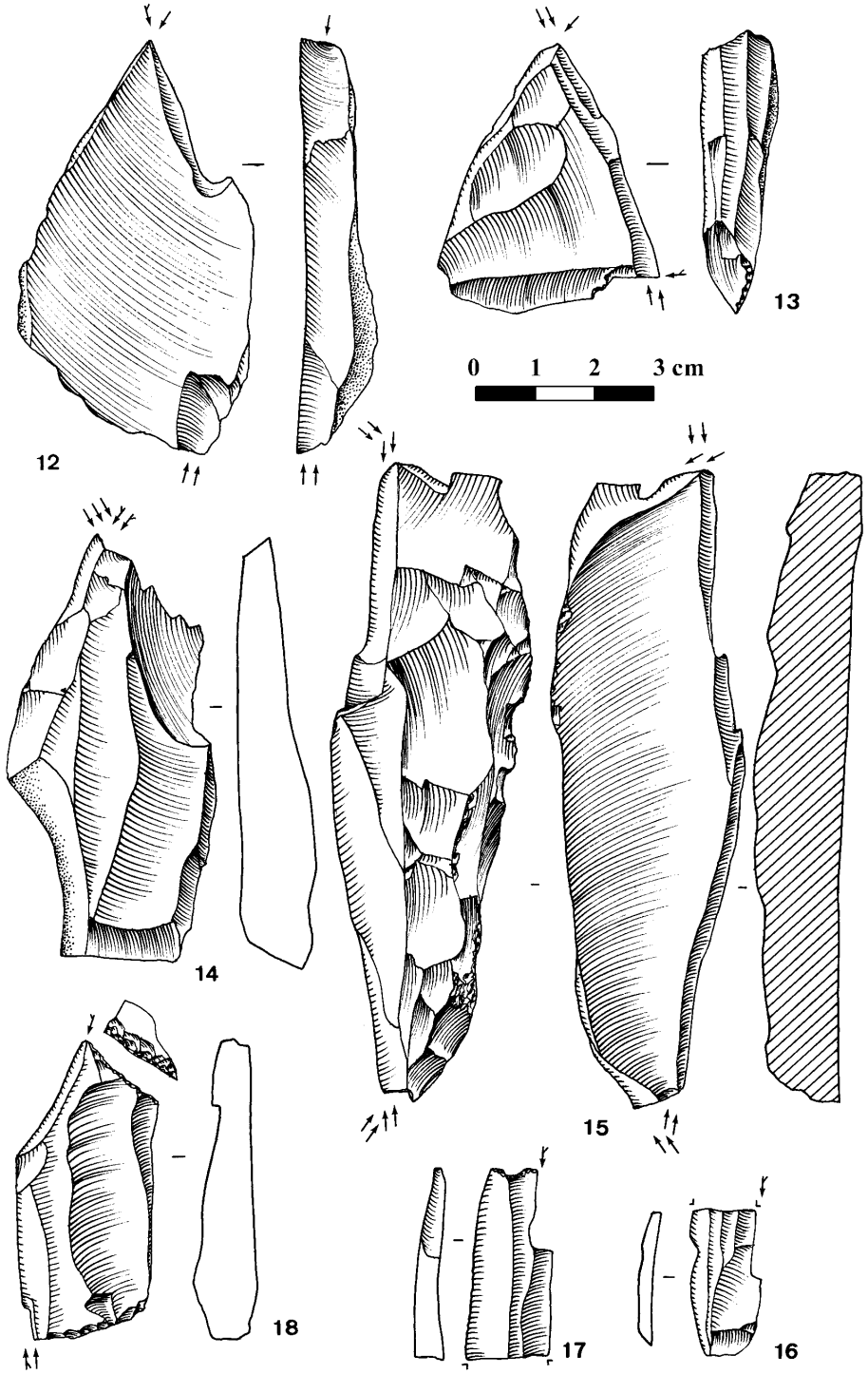

Figure 1b. Upper Paleolithic Tools: 12. multiple mixed burin; 13, 14, 15. multiple dihedral burins; 16. burin on break; 17. burin on concave retouched truncation 18. multiple truncation burin.

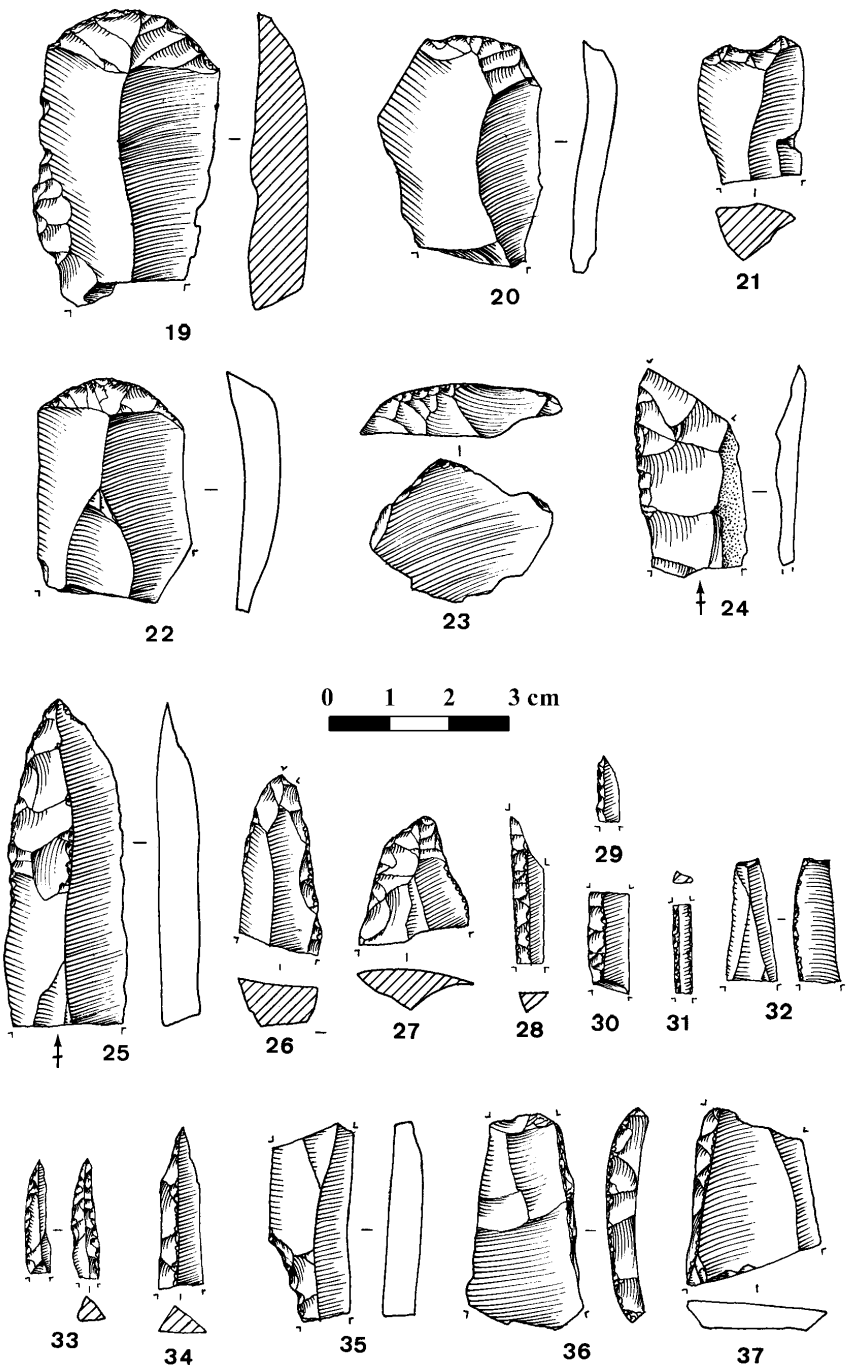

Figure 1c. Upper Paleolithic Tools: 19. endscraper on retouched blade; 20. carinated endscraper; 21. piece with concave retouched truncation; 22. endscraper on blade; 23. endscraper on flake; 24. unifacial point fragment; 25-27. pointed retouched blades (unifacial points?); 28-31. backed bladelets; 32. Dufour bladelet; 33. micro-Gravette or micro-perforator; 34. perforator; 35. shouldered point (?) fragment; 36-37. backed blades.

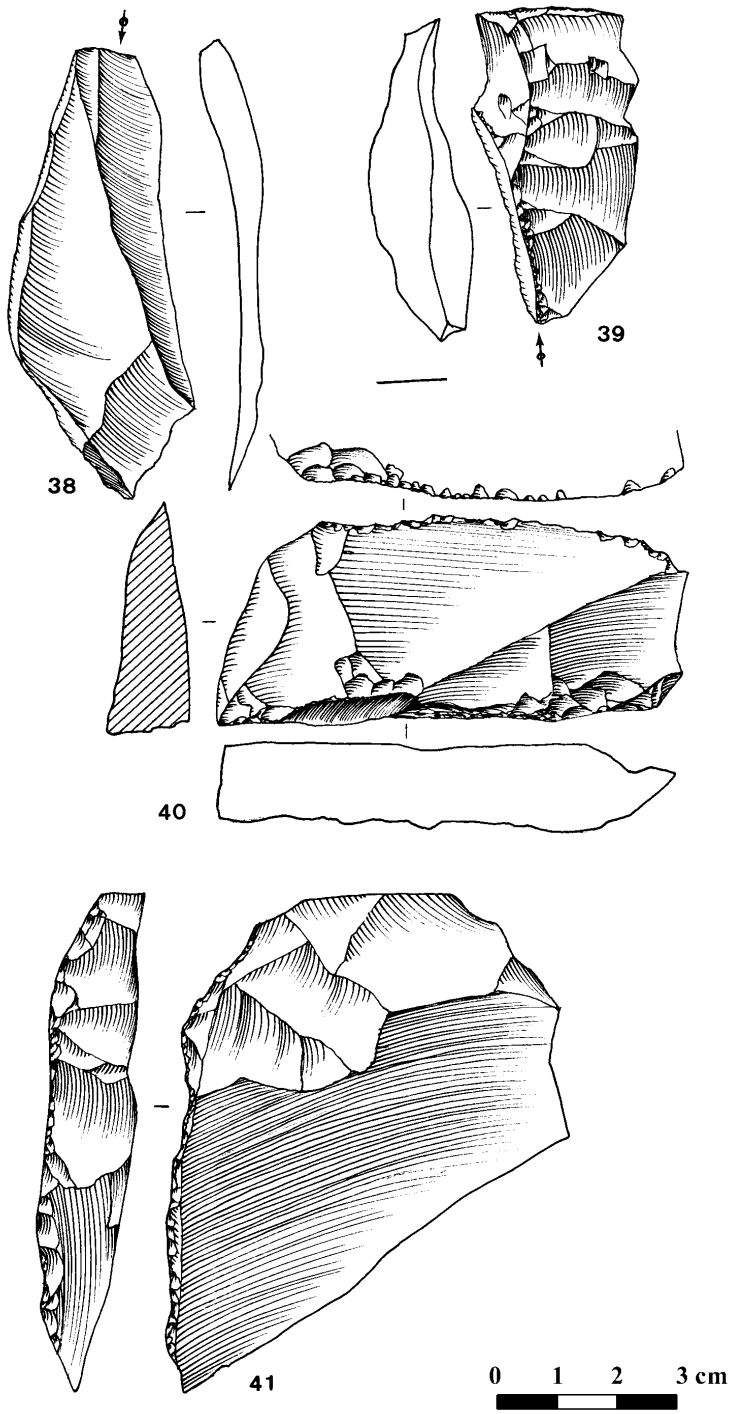

Figure 1d. Upper Paleolithic Artifacts: 38. blade; 39. platform renewal flake; 40. denticulate on platform renewal blade; 41. sidescraper.

Straus L.G., Otte M. et Haesaerts P. (éds.), *La Station de l'Hermitage à Huccorgne*. Liège, ERAUL 94, 2000.

CHAPTER 7

THE 1991-1993 EXCAVATIONS BY THE UNIVERSITIES OF NEW MEXICO AND LIEGE

Lawrence Guy Straus

METHODOLOGY AND CHRONICLE OF THE 1991-1993 EXCAVATIONS

The Belgian-American team worked at Huccorgne from July 9-August 6, 1991, June 6-July 14, 1992, and June 22-July 9 and July 29-30, 1993. The 1993 campaign was preceded by the shovel removal of sterile loess Stratum 3 in squares J-L/53-55 of the Smetz area by members of the Belgian crew. The Belgian crew worked alone in digging the second Smetz area pit (JJ-KK/45-46) between July 1-9, 1993, but this pit was finished by the American crew. Each digging season was followed by days of artifact classification and drawing in Belgium. Total crew sizes varied from time to time, but were usually on the order of 10-12 people, mainly from the Universities of New Mexico and Liège, but also from Tohoku University (Japan), New College (Florida) and City University of New York, plus occasional, short-time visitor-participants (including ones from Belgium, Netherlands, Morocco, Poland and Spain).

Excavation was done by a combination of shovelling (in archeologically sterile deposits) and trowelling. For provenience control of screen and non-piece-plotted finds, each meter square was actually dug by quarter squares, labeled "a" (NW quadrant), "b" (NE), "c" (SW) and "d" (SE). Sediments (generally fine, powdery loess [wind-blown silt] or clayey silt) were dry-screened through 2.5-3 mm mesh. Nevertheless, due to the fine, loose texture and light color of the sediments, artifacts were generally found *in situ*, especially when trowelling. When digging in cultural layers, all *in situ* finds (lithics >1 cm in length; all teeth; bones >5 cm) were piece-plotted with reference to a metric grid we established for the main ("Dock" property) site (hereafter "HU") and which was later extended to the western ("Smetz" property) area (hereafter "HS"). We aligned the north-south axis of our grid so as to be roughly parallel to the main trends of the railroad and road cuts in their transections of the center of the known site. In this way the east-west axis of our grid was aligned with that of Haesaerts' deep stratigraphic trench dug into the western face of the railroad cut, which is where we began our work in 1991. Our grid was tied into property markers around the edges of the Dock lawn as they existed at the time. (It should be noted however, that some of the markers to which Haesaerts' grid had been tied for his 1976 trenches along the eastern face of the road cut were apparently already missing in 1991, thus making correlation of his trenches with our grid somewhat imprecise.) On the north-south axis the squares are labeled from A (which coincides with the southern end of the larger, northernmost of two shed) to Z and then from AA to NN (which corresponds to the southern end of the Dock property and the convergence of the rims of the road and railroad cuts). On the east-west axis the squares are designated from 0-55, with the "0" (zero) column being in the railroad trench, near its western edge. In order to accommodate a small test pit we dug on the eastern side of the railroad trench, we repeated the series of row letters ZZ-MM, this time descending northward from the "A" row, and we created a series of negative number column designations going eastward from "0"(zero) to -23.

The datum plane for our excavations was set by optical transit to be above present ground surface in all areas of the site and was marked at about 1.8 m above present surrounding

ground surface on sheds both north and south of our main (railroad-side) excavation, as well as secondarily on a metal utility pole (numbered--in 1991--by the Belgian electric company as "11") along the western side of the main (Moha-Huccorgne) paved road cut, 4 m north of the junction of a dirt road that provided entrance to the Smetz property and the western end of the oxbow ridge. The base of this utility pole is at 6.19 m below our datum plane. The site was mapped using the transit by A.E.Martinez, V.Ancion and Straus (Figure 1.3).

All finds were washed and labeled at the Université de Liège dig house in Dinant (kindly made available by the City of Dinant, Namur Province), where the artifacts were also measured and classified. All faunal remains were weighed, inspected for modification, and delivered to Prof. Achilles Gautier (Universiteit Gent) for identification and analysis. Some were then selected for AMS radiocarbon dating by the Lawrence Livermore National Laboratory (after biochemical analysis and collagen extraction by Dr. Thomas Stafford [INSTAAR, University of Colorado]) or by the University of Oxford Research Laboratory for Archaeology (Dr. Rupert Housley).

Stratigraphic sections were inspected and compared with his master sequences from HH by Dr. Haesaerts. The main pits at both HU and HS were sampled for pollen at the close of the 1991 and 1992 seasons respectively by Claudine Noirel-Schutz (Institut de Paléontologie Humaine, Paris). Unfortunately, all the samples turned out to be nearly or completely sterile.

Our work at HU (Dock property) began with the clearance of vegetation around Haesaerts' trench into the western face of the railroad cut; once that stratigraphy was visible and cleaned, we extended the upper part of that stratigraphic section back 0.5-1.0 m toward the west. We found the Gravettian cultural horizon at/near the base of a loess deposit. The cultural horizon became our Stratum 4, at the base of which is a reddish lens (a weathering/oxidation zone) which we called 4.1, but which archeologically is simply the lower part of Stratum 4. Our immediate goal was to try to expose this horizon over as large an area as possible between the railroad cut and the eastern edge of Destexhe's large block excavation in the center (and apparently richest, most intact part) of the site. We were helped in determining approximately where that was by Mr. François Tromme, an amateur archeologist who had participated in Destexhe's excavations. (Later, we were provided with copies of Destexhe's sketch plans by Haesaerts and these confirmed Tromme's indications and our own findings, namely our intersection of Destexhe trench walls in places where indeed they were to be expected.) In the eastern part of Destexhe's dig, Tromme reported that the Gravettian component lay no more than about 80 cm below the 1969 surface, although it became increasingly deeper (up to or somewhat over 2 m) toward the south and west. Our cleaning of the railroad cut section ended up covering a linear distance of 9 m corresponding to squares D-L/ 6. The discovery of large limestone slabs (a possibly man-made arrangement or feature) and bones in Stratum 4 of I-J/6 led us to also open the eastern halves of squares I-J/7 in 1991. More limestone slabs, numerous (albeit badly preserved) bones and flint artifacts (including several refits indicating the intact nature of this feature) were found and recorded. In order to more closely correlate the Gravettian cultural component uncovered by Haesaerts' roadside trenches, by Destexhe's central excavation block and now by our westward extension of Haesaerts' railroad section, in 1991 we also opened a 2x2 m *sondage* near the rim of the road cut about 4 m east of two of Haesaerts' 1976 trenches and (at the closest) 16 m southwest of our main block excavation near the railroad cut as the latter was eventually in 1992. Our roadside *sondage* corresponded to the northern half of Q/25-26, all of R/25-26 and the southern half of S/25-26. The Gravettian horizon was indeed reached at 1.9-2 m below ground surface, as predicted by Tromme and Haesaerts.

In 1992, in order to uncover a substantially larger area of the apparent feature near the railroad cut, we opened a further 3x3 m block corresponding to squares H-J/7-9, which was finally expanded to include K7 and the northern half of K8. To maintain close stratigraphic control, this area was initially dug as a series of three 0.5 m-wide slit trenches with temporary balks between them which were eventually removed to expose a broad area of the Gravettian horizon. A corner of Destexhe's main block was intersected by our square H9 and the end of one of his exploratory slit trenches was cut across by our square J9. We did not encounter the late 19th century trench of F. Tihon, although its northern edge is likely to lie within about a meter of our square L6 and an irregular disturbance in the SW corner of our square K7 might be a badger hole extending northward from Tihon's trench.

In 1992 we also opened a 3x3 m *sondage* (J-L/53-55) c. 2 m west of the rim of the road cut in the Smetz property, 43 m due west of our main Dock area excavation along the railroad cut. (This work took advantage of the fact that the trees in this former woodlot had recently been felled for lumber.) Ground surface here was at almost exactly (1.8-2 m below datum) the same elevation as in the area of our main excavation, but we could expect (given the already proven slope) that the Gravettian horizon would be considerably deeper here than at the eastern side of the site. The bottom limit for possible excavation in this *sondage* was provided by our discovery of weathered limestone bedrock outcropping below yellowish orange loess at c. 6.35 m below datum at the base of the unpaved entry road cut of the Smetz area of the site (hence c. 4.5 m below general ground surface in this area). It also outcrops along the base of the western edge of the main road cut, downslope (south) of this entry to the Smetz property. (The bedrock is also visible under loess and colluvia/alluvia along the southern face of the oxbow meander of the Méhaigne at the north side of the Smetz property.)

Finally, in 1992 we also dug a small step trench into the upper part of the eastern edge of the railroad cut at the edge of a sivicultural field owned by Mr. Y.Collinet. This was done to check if the site might extend this far toward the base of the Méhaigne valleyside in the direction of the Roua valley mouth. The area dug here included NN/-22, half each of MM/-22, NN/-21, NN/-23 and OO/-22, and a quarter each of MM/-21, NN/-23, OO/-21 and OO/-23--maximally 2x2 m. Correlation with Haesaerts' deep step trench dug from the top to the base of the western face of the railroad cut led him to suggest that the Gravettian component was missing along the eastern face in this MM-NN-OO section and that its strata corresponded earlier periods, with evidence of a dark brown loam weathering horizon (soil formation)(our Stratum E) that might date to the Moershoofd (c. 45 kya) or Hengelo (c. 38 kya) temperate/humid oscillation. Above this is a reddish lens (D), a grey-light brown calcified loess layer (C) topped by a mantle of stones. Above the stony layer is a thick stratum of pure light beige loess (B'). Haesaerts believes this layer to be equivalent to his level F on the west side of the railroad cut; this layer was leached and calcified during the Les Cottés (c.35 kya) temperate/humid oscillation. This in turn is overlain by a calcified yellowish-orange beige loess (B) with few stones. In turn, this layer is overlain by the surficial humic layer (topsoil)(A). The exhausted core fragment we found in the brown loam (E) is probably Mousterian. Deposits dating to oxygen isotope stage 2 may have been eroded away from this upslope area and indications of slope dismantling are present in the main site (especially at the eastern end of our main railroad-side excavation block) in the form of stony mantles within Stratum 3 (solifluction? colluvium?). However, we did find two atypical endscrapers in the lower half of loess Stratum B' and this could conceivably correspond to Stratum 4 in the main site, lying as it does atop a stony layer that could be equivalent to Stratum 5. If this hypothesis is correct, this unit would not correlate temporally to Les Cottés and the upper part of the stratigraphic sequence would not be missing in the footslope area east of the railroad cut. In that event, the calcified loess equivalent to Haesaerts' F (and hence possibly dating to Les Cottés, c.35 kya)

would be our east railroad trench Stratum C. It is, however, impossible to test these alternative hypotheses with the available data.

In 1993, the main "Smetz" *sondage* (J-L/53-55) was continued well below the probable Gravettian component, exposing a series of probable Mousterian levels (already hinted at in Tihon's, Haesaerts' and our Q-S/24-25 excavations). Finally, to test the southern extent of the site in the Smetz area and to check Haesaerts' hypothesis of channel flow disturbance of the Gravettian horizon along the western edge of the paved road (in Froment's sections of 1980), we laid out and dug a 2x2 m test pit (JJ-KK/45-46) near the southeastern ("downstream") corner of the Smetz property (not far from the property line of the "Hermitage" manor property). This pit yielded inconclusive, somewhat problematical results, which, nonetheless tend to support the disturbance hypothesis, although there is clearly an upper loess (4) lying atop a stony layer (5).

STRATIGRAPHIES

In this section, the stratigraphic sequences in our five excavations are described from an archeological perspective. All are described from top to bottom.

Step Trench at East Face of Railroad Cut (MM-OO/-21-23) (Figure 1):
Stratum A. Grey-brown, humic surficial layer (topsoil). 30-45 cm.
Stratum B: Orangish-brown, clayey loess with small stones. 5-25 cm.
Stratum B': Pure light beige loess; calcified. 80-90 cm.
Stratum C: Light brown, humic calcified loess with stones (some large). 30-35 cm.
Stratum D: Reddish (oxidation/weathering) lens. 2-4 cm.
Stratum E: Dark brown, humic, calcified loess (stoneless, but one flint core). 15-25 cm. (May correspond to Moershoofd or Hengelo temperate phase according to Haesaerts.)
Stratum F: Bright orange clayey silt (loess). 25 cm.
Stratum F': Yellow loess lens. 2-5 cm.
Stratum G: Light greyish loess. >10 cm.

HU ("Dock") Railroad-side block excavation (*H-K*/6-9, *with extensions*)(Figures 2-6):
Stratum 1: Grey-brown, humic surficial layer (topsoil: "A" horizon). 10-40 cm.
Stratum 2: Dark, yellowish or orange brown mottled silty clay with some water-worn pebbles. 25-65 cm. (Where 2 is subdivided, this upper unit is called 2.1 or 2.0 [crumbly, reddish clayey, silty loam]) Contains some modern artifacts. Stratum 2 ("B" horizon) *sensu lato* has rodent and worm holes and roots.
Stratum 2.2: Reddish-brown (weathering?) lens within 2. Discontinuous.
Stratum 2.3: Light yellowish beige-brown, less mottled silty clay-clayey silt. Localized lens.
Stratum 3: Gravelly, clayey silt with abundant, locally very dense limestone clasts-gravels. 20-25 cm. Sometimes divided into two distinct stony layers. Stone mantles are discontinuous; 3 is absent in some places. Some water-worn pebbles. A few isolated flint artifacts.
Stratum 4: Fine, powdery, yellowish beige loess ("lehm") with few stones (except in a possibly anthropogenic feature). 10-40 cm. The pure loess *per se* is discontinuous and its thickness is variable. Base of 4 can be marked by small channels or rills which are filled in with this loess. Locally dense artifacts and faunal remains, but more scattered in other areas.
Stratum 4.1: Reddish (weathering?) silt lens at base of 4. 2-10 cm. Archeologically coterminous with 4. Stratum 4 can infill rills and small channels in 4.1, suggesting a wet episode that interrupted early upper loess formation (i.e., the 4.1 weathering followed by erosion).
Stratum 4.2: Localized yellowish-beige silt lens with charcoal flecks. 5-10 cm.

Stratum 5: Stony layer, variably clayier or siltier, beige in color. More continuously stony ("pavement"-like) than 3. 15-35 cm. A few flint artifacts.
Stratum 6: Pure beige clayey silt (with few or no stones). 10-55 cm.
Levels observed only in cleaning the west face of Haesaerts' section along the railroad cut (H-J/4-5: Figure 2).
Stratum 7.1: Fine gravel. 6-8cm.
Stratum 7.2: Pure beige silt. 4-10 cm.
Stratum 7.3: Larger stones at top of Stratum 8. 6-10 cm.
Stratum 8: Beige, sandy, gritty silt with isolated stones and gravels. 60-65 cm.
Stratum 9: Beige, powdery pure loess, pinkish at base of exposed section. Columnar structure. A few isolated stones. c. 130 cm.

HU ("Dock") Road-side sondage (*Q-S*/25-26) (Figure 7)
Stratum 1: Grey-brown humic surficial layer (topsoil: "A" horizon). 10-15 cm.
Stratum 2: Yellowish-reddish brown silty, clayey loam ("B" horizon). A few isolated flakes and a reddened (burnt?) slab (=possible Mesolithic, as found nearby by Destexhe). 110-125 cm.
(Stony layer [Stratum 3] is absent here.)
Stratum 4: Yellowish beige loess (55-60 cm. thick) with thin but dense scatter of small flint artifacts and small water-worn pebbles at base.
Stratum 4.1: Thin reddish clayey silt lens (weathering horizon) at base of 4. 3-5 cm. Contains the lowest of the concentrated flints, whose distribution really cross-cuts 4.1 and basal 4. The flint and pebble scatter in 4 base/4.1 slopes downward and is less dense from NE to SW, suggesting a gentle wash in that direction. Indications of rilling.
Stratum 5: Beige-brown clayey silt/loess, locally rich in sandstone rocks and gravels. A few flints. 5-10 cm.
Stratum 6: Yellowish-beige, mottled, gritty, clayey silt with manganese oxide stains and fewer stones. > 50 cm. A blade at top of stratum and a piece of shatter at base; rest is sterile.

HS ("Smetz") Main Pit (J-L/53-55) (Figure 8)
Stratum 1: Grey-brown surficial humus layer (topsoil). 30-35 cm.
Stratum 2: Pure, yellowish-light brown to beige loess (without stones). Archeologically sterile (except for a railroad spike in an intrusive pit in J53, the NE corner, closest to the road cut). 160-190 cm.
(No Stratum 3; i.e., no upper stony layer.)
Stratum 4: Thick (65-110 cm) whitish-light beige compact loess ("lehm"). Scattered flints at base. Possible frost cracks (ice wedges?) at base. 60-110 cm.
Stratum 5: Stony layer with light, yellowish-beige silt matrix. Scattered flints (including some burnt), flecks of charcoal and bone. Possible frost cracks. 5-30 cm.
Stratum 6: Dark, reddish brown clayey silt with fewer stones. Archeologically sterile. Possible frost cracks. 5-30 cm.
Stratum 6.1: Localized lens of greyish, yellowish green sand in square L55.
Stratum 7: Wedge of mottled reddish or brown-beige clayey loess (thin at north; thicker at south). A few flints (including a refit pair). 10-20 cm.
Stratum 8: Pure, yellowish-beige loess, darker with depth. Scattered flints. Possible frost cracks. 45-55 cm.
Stratum 9: Orangish-light brown stony loess. Archeologically sterile. 10-15 cm.
Stratum 10: Pure, dark reddish-brown loess. A few flints. 10-20 cm.
Stratum 11: Light brown stony loess. Archeologically sterile. 20-30 cm.
Stratum 12: Pure, very pale brown loess. Archeologically sterile. >20 cm.

HS ("Smetz") Southeastern road-side sondage (JJ-JJ/45-46)(Figure 9)
Stratum 1: Grey-brown humic layer (topsoil: "A" horizon). 10-15 cm.
Stratum 2: Yellowish-orange brown crumbly loess-loam with roots and worm holes ("B" horizon). Archeologically sterile. 35-40 cm.
Stratum 3: Darker brown loess. ("C" horizon). Archeologically sterile. 10-25 cm.
Stratum 4: Beige-tan to light brown pure loess. Archeologically sterile. 85-90 cm.
Stratum 5: Thin (1-3 cm), discontinuous, convoluted lens of reddish brown loess (possibly equivalent to 4.1 in "Dock" area?), with weathered limestone *éboulis* blocks and a few water-worn cobbles embedded in underlying Stratum 6. A few scattered flints--some possibly artifactual. Cryoturbated and/or soliflucted? 5-20 cm.
Stratum 6: Very fine, powdery, pure, whitish-beige loess. Archeologically sterile. Cannot be far from bedrock, since this was found by Haesaerts and Froment in adjacent trench along west face of road cut and visible at edge of pavement at base of roadcut itself. >30 cm.

There are clear analogies among the stratigraphic sequences of our Dock railroad- and road-side trenches and our main Smetz *sondage*, with the principal exception that the upper stony layer (Stratum 3) exists only in the first area. This is no doubt because the limestone blocks and rocks are *éboulis* from the limestone cliffbase talus slope which is near to only the railroad cut at the eastern side of the site. The Gravettian artifacts--dense in the Dock property excavations and rather rare in the Smetz excavation--are found at the base of the fine, light yellowish-beige loess ("lehm") (Stratum 4), the bottom of which is locally weathered or oxidized (Stratum 4.1). This upper loess had already begun to be deposited when the first Gravettian occupations took place, perhaps during a humid phase which is represented by the weathering of its base (reddish 4.1), itself not very rich in flints (most of which are in the lower few cm of yellowish-beige Stratum 4 per se. The underlying layer (Stratum 5) is universally stony, even in the western (Smetz) area of the site. It and sometimes underlying Stratum 6 (clayey silt everywhere, except in the JJ-KK/45-46 *sondage* in the southern end of the Smetz property, where it is a loess and possibly not correlatable with Stratum 6 in the rest of the excavations) yielded a few scattered artifacts, possibly Mousterian in age (notably Levallois cores and flakes in our main "Smetz" pit and a sidescraper in our "Dock "roadside pit).

Haesaerts (1978; Froment 1980) established a composite stratigraphic sequence for the main HU site, based on his trenches all the way down the steep western face of the railroad cut (from which we extended our main block excavation) and along the eastern face of the road cut. His and our strata (from top to botto) are readily (if not exactly) comparable for the main HU ("Dock") site (Table 1):

TABLE 1.
COMPARISON OF THE STRATIGRAPHIES OF THE
UNM/ULg AND IRSNB EXCAVATIONS AT HUCCORGNE (MAIN / "DOCK" SITE)

Straus and Otte	**Haesaerts**
1	K (Humic topsoil) (Tihon's traces of possible Neolithic material)
2	H upper (=Destexhe's "Mesolithic")
3	H lower (=upper/reworked Gravettian material; possibly equivalent to B in the east section of the railroad cut)
4	G4-1 (basal 4+4.1, main Gravettian artifact layer = Haesaerts's G3 = Destexhe's Gravettian horizon; B' in our step trench on the east face of the railroad cut is possibly roughly equivalent)
5	F (=Haesaerts' uppermost Mousterian = Destexhe's Mousterian; base possibly corresponds to Les Cottés temperate oscillation according to Haesaerts; possibly equivalent to C in east railroad step trench)
6	E4 (?)
7	E3 (?)
8	E2 (?)
9	E1 (?) (Possibly corresponds to Moershoofd, according to Haesaerts; possibly equivalent of Stratum E in our small step trench in the eastern railroad section [MM-OO/21-23].)

The Gravettian artifacts are mostly situated within the bottom 10-20 cm of Stratum 4, as well as in 4.1--but mainly at the base of 4--in our excavation block east of the railroad cut. In our *sondage* near the western side of the road cut (Q-S/25-26) the artifacts are even more tightly localized in vertical space; they are almost all found within a spread of no more than 5-10 cm. The vertical distribution is more dilated in the western ("Smetz") J-L/53-55 pit, but artifacts there are, at any rate, much scarcer than in the main ("Dock") site area. The localization of the Gravettian flints (and bones, plus features) in the basal centimeters of the upper light yellowish beige coincides with earlier descriptions of the situation by Haesaerts, Destexhe and Tihon.

RADIOCARBON CHRONOLOGY

Following Destexhe's excavations, Haesaerts obtained a conventional radiocarbon date on a bulk bone sample (probably from several small pieces) from the Gravettian horizon by the Groningen laboratory: 23,170±160 BP (GrN-9234)(Caspar 1984, citing Haesaerts et al. 1981). Long accepted as a reasonable "Tursac" oscillation age for Huccorgne-Hermitage (albeit perhaps slightly "young"), this date is younger or much younger than the large, but discordant and stratigraphically incoherent series of conventional dates run on humic soils from within and below the Gravettian horizon at Maisières-Canal (35,970+3140/-2250 - 23,160+550/-510 BP, with most of the nine Louvain and Groningen determinations being in two clusters at around 30 kya and 25 kya) (Caspar 1984). The HH date was also rather late for a human occupation of NW Europe in the face of the onset of the Last Glacial Maximum (even if it did occur during the Tursac "amelioration"). For these reasons, it was imperative to obtain new, higher precision radiocarbon dates from this important site in Europe's "Far North".

The relative "abundance" of mammoth bones in our railroad-side block excavation provided the opportunity for trying to run several determinations, but the problem would be to

find adequately preserved collagen uncontaminated by humates, etc. Analyses of the organic content of bone samples were conducted by Dr. Thomas Stafford (INSTAAR, University of Colorado). Bone samples from Stratum 4.1 (squares Q/25-26) did not preserve sufficient collagen to be datable according to his analyses. However two individual (albeit fragmented), piece-plotted mammoth ribs--both from square J7c, Stratum 4 (at depths between 280-285 cm below datum in the "feature" and intimately associated with numerous flint artifacts) proved to be extraordinarily well preserved, with about 30% of the original amount of protein preserved and amino acid content essentially identical to that of modern bone collagen, meaning about 1000/3000 nanomoles of amino acids per milligram of bone. The percentages of nitrogen for these ribs are 1.15% (lab no. NSRL-1044) and 1.55% (NSRL-1045)(T.Stafford, *in litteris*, January 26, 1993). Two determinations were run under Stafford's personal supervision by accelerator mass spectrometry (AMS) at Lawrence Livermore Laboratories on each of these two bones: for NSRL-1044 on KOH-extracted collagen (base extracted gelatin hydrolysaty) and gelatin from bone collagen; for NSRL-1045 on KOH-extracted collagen and on the individual amino acid, aspartic acid, which can only have come from the bone. The latter of these determinations (CAMS-6371) should technically be considered the most valid of all the Huccorgne dates: 28,170±430 BP. It is statistically identical to the older of the two determinations run on the other rib: 28,390±430 BP (CAMS-5891) done on gelatin from bone collagen. Each of these two ribs also gave younger determinations on whole collagen: 26,670±350 (CAMS-5895) and 24,170±250 (CAMS-5893) respectively. The former of these whole collagen dates is statistically identical to a whole collagen AMS date run by Dr. Rupert Housley at the Oxford Accelerator Laboratory on a single bone from Stratum 4 at 277 cm below datum in upslope square J6: 26,300±350 BP (OxA-3886). It is also associated with several flints.

One additional date run by Stafford at Livermore on a bag of small bone fragments from Stratum 4 in square D6 along the west face of the railroad trench did not give such satisfactory results. Its nitrogen percentage was only 0.74% and the determination on aspartic acid yielded a date of 16,900±230 BP (CAMS-10365). Clearly this bulk sample was contaminated by some recent material (bone percolated from above or from the side via burrows?). Finally an attempt to date a small lump of charcoal found in Stratum 4.1 near the edge of the railroad trench in square G6 produced clear evidence of downward percolation (via burrows, roots, or worm holes?). The determination, done by AMS at Livermore, after sample preparation by the late Dr. Harrold Krueger at Geochron Laboratories, is 284±52 BP (GX-17016). Obviously this is charcoal from a 17th century fire that percolated downward the < 1 m from the ground surface at the time--or sideward the < 1 m from the side of the 19th century railroad cut.

In sum, the most likely radiocarbon age for the Gravettian component is probably around 28.3-26.5 kya, with the older estimate normally the best approximation. The younger 23-24 kya dates are likely to be explainable as the result of contamination from humic acids, etc., even if the possibility of several occupations--perhaps over an extended period of time--remains open. An occupation (or, more likely, a series of occupations) during the Maisières oscillation is probable and hence penecontemporaneous with the Gravettian horizon at the site of Maisières-Canal, 85 km to the west of HH in Hainaut. But visits to HH during the later Tursac oscillation are also conceivable, and would have represented the very last times that humans were present on the territory of Belgium until recolonization during the Upper Magdalenian, c. 12,600 BP (uncal.). All the radiocarbon dates from HH are detailed in Table 2.

TABLE 2
HUCCORGNE GRAVETTIAN / STRATUM 4
RADIOCARBON DETERMINATIONS

Lab Numbers	**Material**	**Square**	**Method**	**Date**	**±1 Sigma**
GrN-9234	bbc	Destexhe	conv.	23,170	160
CAMS-5893(NSRL-1044)*	ibc	J7	AMS	24,170	250
CAMS-5891(NSRL-1044)*	ibg	J7	AMS	28,390	430
CAMS-5895(NSRL-1045)^	ibc	J7	AMS	26,670	350
CAMS-6371(NSRL-1045)^	ibaa	J7	AMS	28,170	430
OxA-3886	ibc	J6	AMS	26,300	350
Dates to be rejected as too young, due to contamination:					
CAMS-10365(NSRL-558)	bbaa	D6	AMS	16,900	230
GX-17016	ch	G6	AMS	284	52

bbc=bulk bone collagen; ibc=individual bone collagen; ibg=individual bone gelatin; ibaa= individual bone aspartic acid; bbaa=bulk bone aspartic acid; ch=charcoal.
*=same bone; ^=same bone; conv.=conventional radiocarbon; AMS=accelerator mass spectrometry.

In the larger "Smetz" area excavation, at the top of Stratum 5 in square L54, we uncovered a surface "paved" with limestone clasts, some of which were reddened and broken, presumably by fire. Among these stones were a few artifacts including five burned flints. Two of these plus a piece of burnt limestone, together with associated silt samples, were sealed in aluminum foil and sent to Drs.Hélène Valladas and Norbert Mercier of the CNRS Centre des Faibles Radioactivités in Gif-sur-Yvette (France) for thermoluminescence dating. They provided a dosimeter which was placed by J-M. Léotard in the stratigraphic section at a depth corresponding to the Mousterian "pavement". Unfortunately, as reported by H.Valladas (*in litteris*, 15 September, 1998), the stones proved to have been insufficiently heated to be datable. Such dating would have allowed us to test the hypothesis that there had been a major depositional hiatus between the Mousterian component in Stratum 5 and the apparent traces of Gravettian occupation in Stratum 4.

GRAVETTIAN FEATURES: NATURAL OR ARTIFICIAL?

Both the Tihon and Destexhe excavations uncovered evidence for concentrations of knapping debris (i.e., the abundant flint artifacts in the Gravettian horizon at the top of the ridge in the "Dock" area were not distributed evenly across the surface). Both excavations also yielded indications of hearths, with hints of more or less circular clusters of débitage around these features, which are unfortunately not further documented (see Otte, chapters 4 and 5, this volume). Haesaerts also found areas of densely concentrated flints, sometimes associated with limestone slabs along the east side of the road cut (notably in his P115-116 squares). In contrast, other areas had much lighter scatters of flints.

Neither Haesaerts' nor our excavations produced evidence of heaths, probably because both were rather peripheral to the central area of the site. However, like Tihon and Destexhe

(and unlike Haesaerts), we did uncover relatively substantial quantities of bone (especially mammoth) associated with several large limestone slabs and a concentration of flints at the base of Stratum 4/Stratum 4.1 in squares I-K/6-8 (Figure 10).

Obviously, interpretation of this concentration of stones and bones requires some discussion of the possible role of natural processes before attributing all aspects of the pattern to human activity. Limestone blocks are absent in Stratum 4 in our western (roadside) *sondage* in the "Dock" area; they were not common in equivalent Stratum G in Haesaerts' trenches along the eastern face of the road cut; and they are very rare in the apparently equivalent loess stratum 4 in our J-L/53-55 "Smetz" area excavation. On the other hand, the stony layer (Stratum 3--sometimes with two separate mantles of stones), is present only in our western railroad-side excavation: mostly at the easternmost side closest to the railroad cut and--more relevantly--to the talus at the foot of the gorge-side cliff. (Stratum 3 is absent at the western end of the excavation block.) So it seems most likely that the limestone blocks in the upper zones of the HH stratigraphy came from the cliff. On the other hand, the concentration of slabs and blocks in the "feature" is *not* aligned parallel to the talus slope as one would expect if the clasts had simply rolled, slid or flowed in solifluction down from the cliffbase to their ultimate resting place. Instead, the concentration of blocks and large bones seems to be oriented at roughly 45º to the axis of the cliffbase, although a few individual bones and blades are in fact oriented almost perpendicularly to the axis of the concentration as a whole. This would suggest that some human arrangement may have occurred, at least as concerns the larger blocks. In addition, the rocks are intimately associated with remains of mammoths and other ungulates (horse, deer) and with distinct concentrations of flints, many of which refit (see Martinez, this volume). Among the flint artifacts in this "feature", there are two cores, one of which provided a significant number of refits.

With a degree of imagination, one can "see" in this concentration two curvilinear strings of rocks--both open to the west-northwest and both facing a larger block from which they are separated by c. 50-70 cm. The mammoth long bones, intermingled with the stones as they are (especially in the larger of the two sub-clusters), could be speculatively interpreted as construction elements. Each of the two sub-clusters also has a fairly clear concentration of lithic artifacts (mainly debris). These are centered on K8a and J7b+J6a (the latter including the refitted blade core). Could the two crescent-shaped groups of rocks and bones represent the bases of some small sort of shelters or windbreaks facing individual seats? If so, their orientation would seem to be wrong. And there is no evidence of hearths (or pits). Among all the squares over which the "feature" occurs there is no more than a dozen burnt flints, one calcined tooth and less than a half-dozen possibly burnt bones. There are no fire-cracked rocks. Deliberate structure remnants or not, the two sub-clusters of rocks and bones and the concentration as a whole do stand out relative to the amounts of material we found in adjacent squares; there are few if any limestone blocks or bones and relatively few stones in squares H-J9, I8, H6-8, K-L6 or D-G6 outside the "feature" area. Interestingly, more than half the retouched tools (11) we found in our main, railroad-side excavation were found in or very near this concentration of blocks and stones. In fact, these (few!) tools represent nearly half of all the tools we found in both our excavations in the "Dock" area. In contrast, the amounts of débitage are impressive, emphasizing the central lithic workshop function of the HH site. The concentration we found--whether it is a deliberate, constructed feature or not--concords with the earlier observations by Tihon and Destexhe of distinct knapping areas in the central part of the site. The refits attest to a high degree of integrity in at least the eastern part of the site and they suggest at least two (and probably more) visits to the site within a fairly short period of time. The western end of the "feature" is underlain by an east to west trending channel cut into Stratum 4.1 and filled with beige Stratum 4 loess (Figures 11 and 12). This is probably a natural

feature that existed on the landsurface before the slabs and bones of the concentration were deposited in squares J8-9.

The contrast between our "railroad-side" (eastern) and "road-side" (western) excavations on the "Dock" property is great. Strata 4+4.1 in the latter *sondage* (Q-S/25-26) yielded no limestone blocks, virtually no faunal remains (4--mainly teeth--versus 193 bones and teeth in the eastern excavation block), and a much lower percentage of microdébitage than in the eastern excavation (23.7% trimming flakes + shatter versus 55.6%). Perhaps the very light-weight chips had been winnowed or washed away from the western part of the "Dock" area, where Haesaerts suspected that there had been a gully in Gravettian times. Strata 4+4.1 in the Q-S/25-26 pit also have a few water-worn pebbles. In short, there is no indication of any anthropic feature here, but, to the contrary, suggestions of some (at least slight) reworking by water flow and rilling on a gentle slope oriented toward the southwest, although there do not seem to be preferred orientations among the limited sample of elongated objects (i.e., blades). The *in situ* concentrations of knapping debris (activity areas) found by Tihon, Destexhe and us were located a few meters upslope, toward the east. Our eastern excavation area presents all the signs of *in situ* knapping: very abundant microdébitage, cores and numerous refits. Indeed the large limestone slabs could at least be interpreted as having served as seats used during knapping, whether they were moved by humans or not.

A MOUSTERIAN HEARTH?

As noted above, when we reached the top of stony Stratum 5 in the main "Smetz" area pit, we found a number of burnt (reddened, cracked and/or potlidded) pieces of limestone and flint concentrated in the southwestern half of square L54 (Figure 13). The burnt limestone rocks total 12 and the burnt flints are 5 (plus a few very small reddened chips). (Unfortunately there are no preserved faunal remains here or elsewhere in the J-L/53-55 pit.) There was no hint of a pit or of any particular arrangement of the burnt stones that would set them apart from the apparently naturally stone-"paved" nature of Stratum 5. Nor was there evidence of burnt (reddened) sediments. Charcoal and ash--if ever present--were not preserved, although a lump of charcoal had been found a few centimeters higher. To the north of this small concentration of burnt stones, in adjacent squares K/54-55 (plus a small area of the southwest corner of J54), there was a very large limestone block (c.170x130 cm) at the top of Stratum 5. The southern edge of this block was no more than 30 cm from the northernmost of the burnt limestone rocks and 75 cm from the northernmost burnt flint. It is possible that this large, strangely isolated block served as "site furniture", namely a fireside seat. It is unclear as to whether the block was brought here from elsewhere by humans or not, although it is hard to see what natural phenomenon could explain its presence here. All the other limestone blocks in Stratum 5 are *much* smaller, the largest being no more than 30-40 cm long.

This "hearth" was 2.9 m below present ground surface. It is in a matrix of compact, slightly clayey, orangish-light brown loess. The oxidated (weathered) base of overlying Stratum 4 (light beige powdery loess) has calcium carbonate concretions ("*poupées*"). The tops of the Stratum 5 limestone rocks also have a calcium carbonate precipitate crust. There seems to have been a very wet episode after deposition of Stratum 5, whose rocks served as an "armor plate" to hold the surrounding sediment in place. First there was erosion of whatever had been deposited above the Stratum 5 stony "pavement"; then there was calcium carbonate precipitation; and finally, after Stratum 4 loess had begun to be laid down, there was an episode of weathering. The first (and most significant) of the humid periods presumably responsible for these

phenomena, could pertain to either some phase early within the Würm Interpleniglacial or even to the Last Interglacial (or a later humid phase of oxygen isotope stage 5). Discriminating among these possibilities is impossible at present without radiometric dates (given the failure of the attempt to TL date the burnt flints) or diagnostic fauna. That Stratum 5 is Mousterian seems well established by the presence in square J55 of a centripetal Levallois core and a Levallois flake with a facetted platform which refits with the core. The presumably Gravettian artifacts at the base of Stratum 4 were within only a few centimeters of the top of Stratum 4 and included some narrow, elongated blades that would fit well into the Gravettian assemblages from the main ("Dock") site.

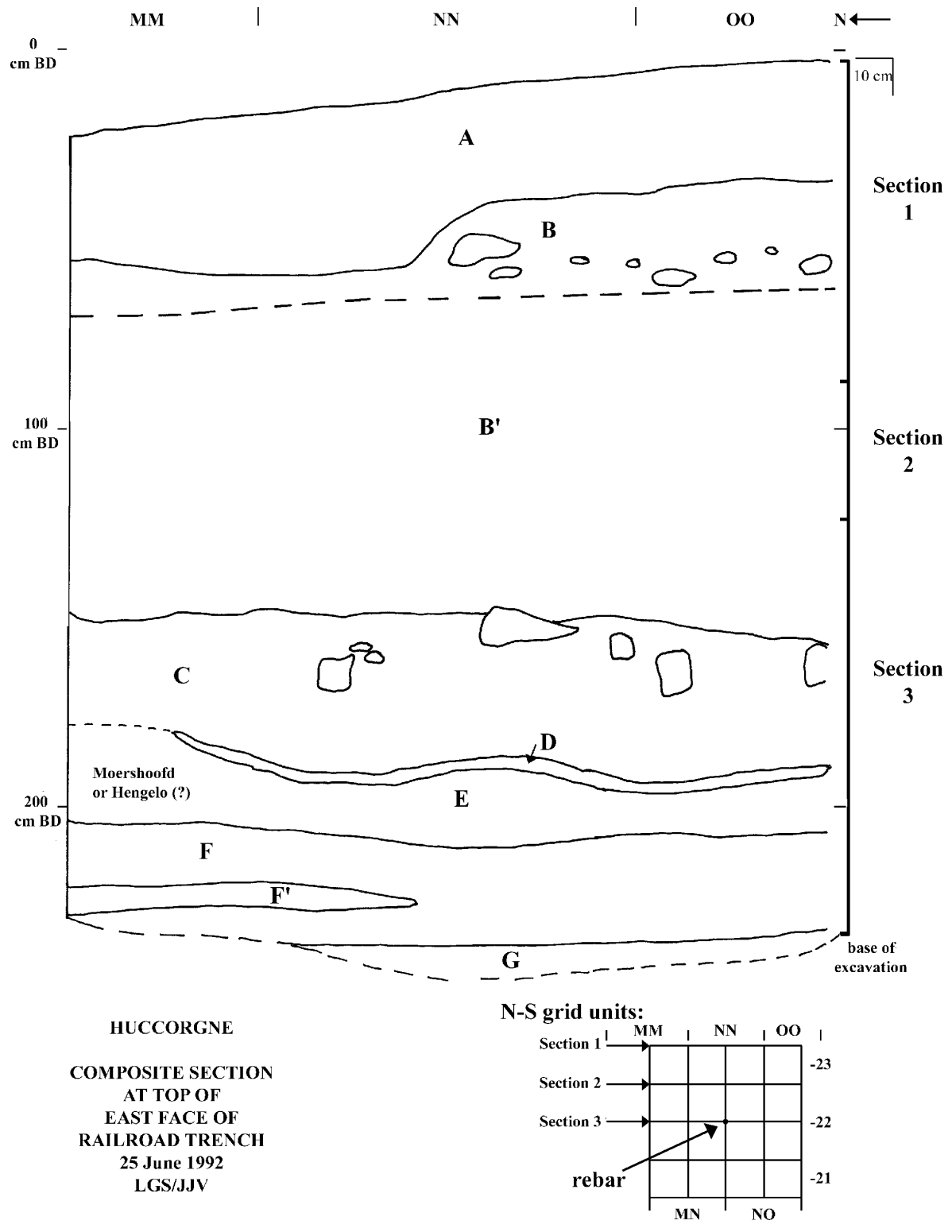

Figure 1. Huccorgne. Composite stepped stratigraphic section of MM-OO/21-23 (east face of railroad trench). Stratigraphy: A: humus, B: orangish brown clayey loess, B': pure light beige loess, C: light brown humic layer, calcified loess, D: red, E: darker brown humic calcified loess, F: bright orange loess (clayey), F': yellow loess lens, G: light greyish loess. Sections: 1: at 100 cm east of rebar, 2: at 50 cm east of rebar, 3: at rebar. Grid at bottom indicate location of the tri-section stratigraphy.

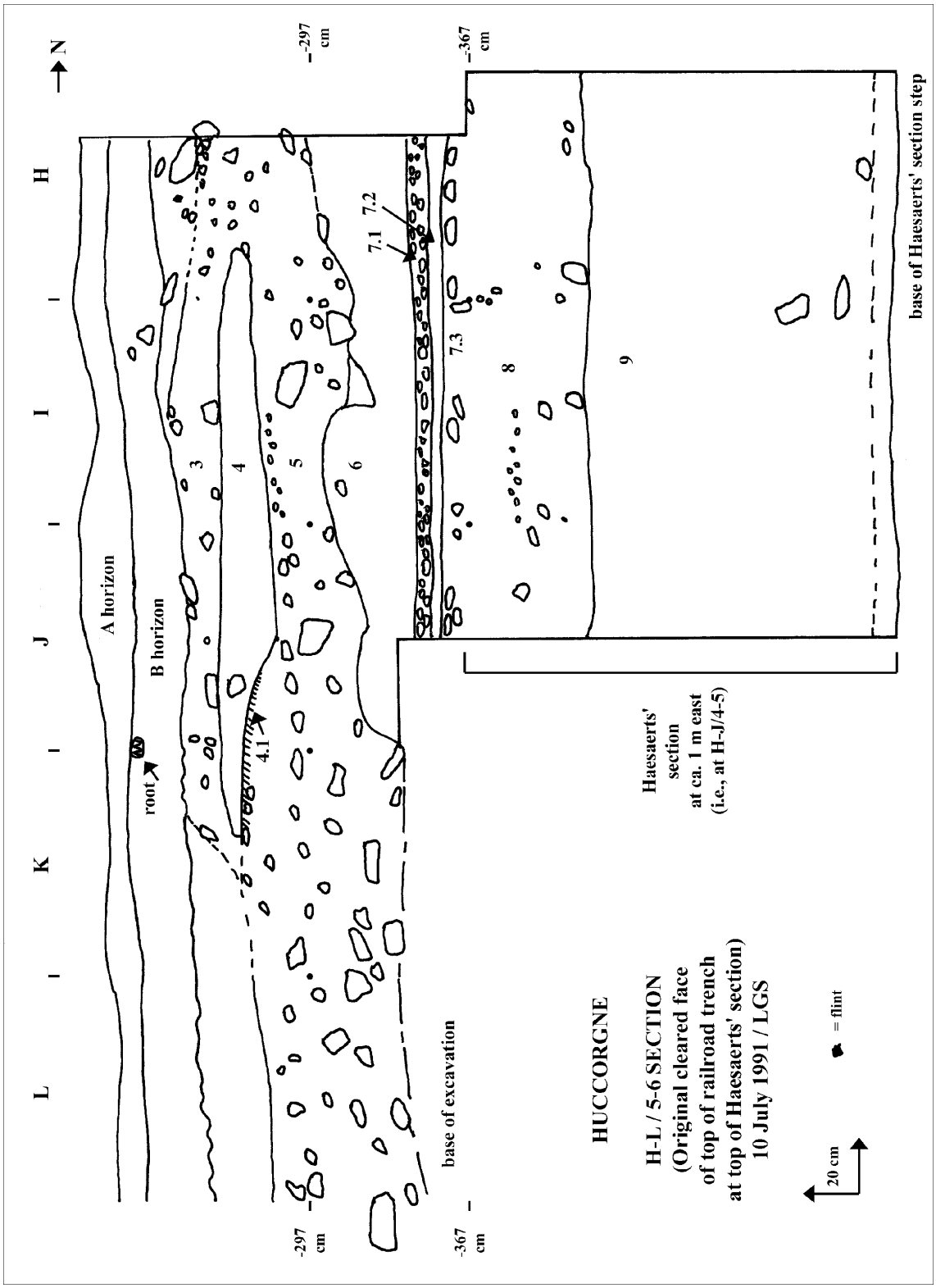

Figure 2. Huccorgne. H-L / 5-6 section (original cleared west face of top of railroad trench at top of Haesarts' section). Stratigraphy: A horizon: humus; B horizon: grey, mottled, clayey silt; 3: yellowish-brown clayey silt (without stones in L-K, stony in K-H); 4: light yellow silt without stones; 4.1: red lens with gravel; 5: stony layer; 6: yellowish-beige clayey silt (loess); 7.1: fine gravel layer; 7.2: pure silt; 7.3: larger stone layer; 8: beige, sandy, gritty silt; 9: pure loess, beige, very fine, powdery, pinkish at base of stratum.

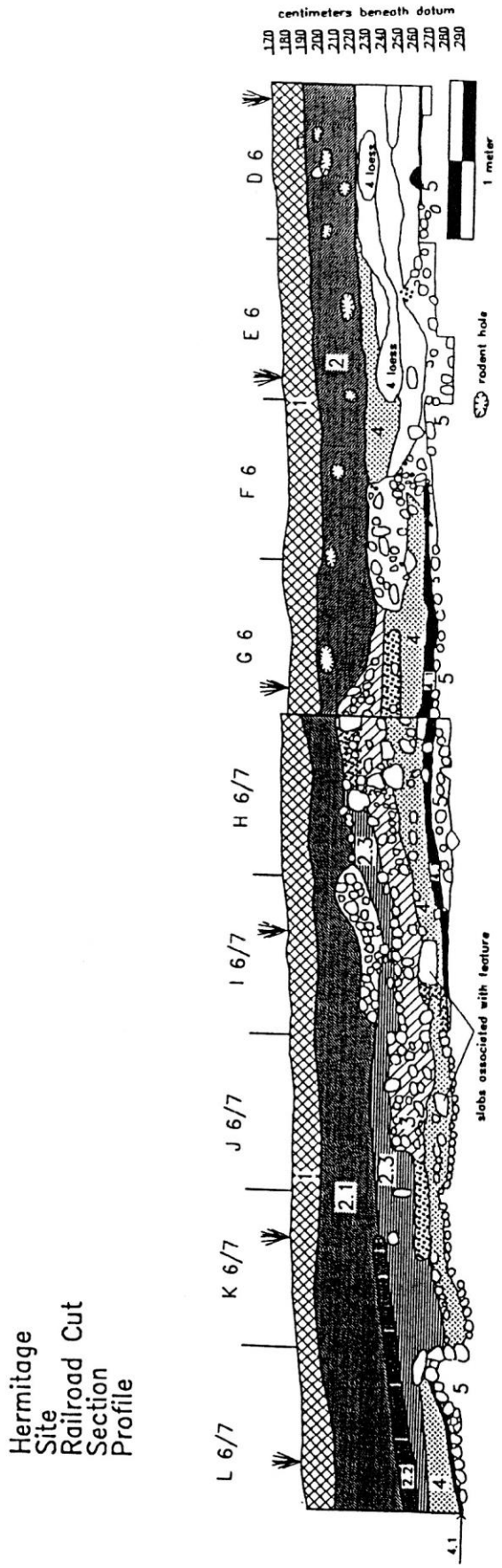

Figure 3. Stratigraphic section D-G/6 mid + H-L/6-7 (railroad-side excavation, "Dock" area).

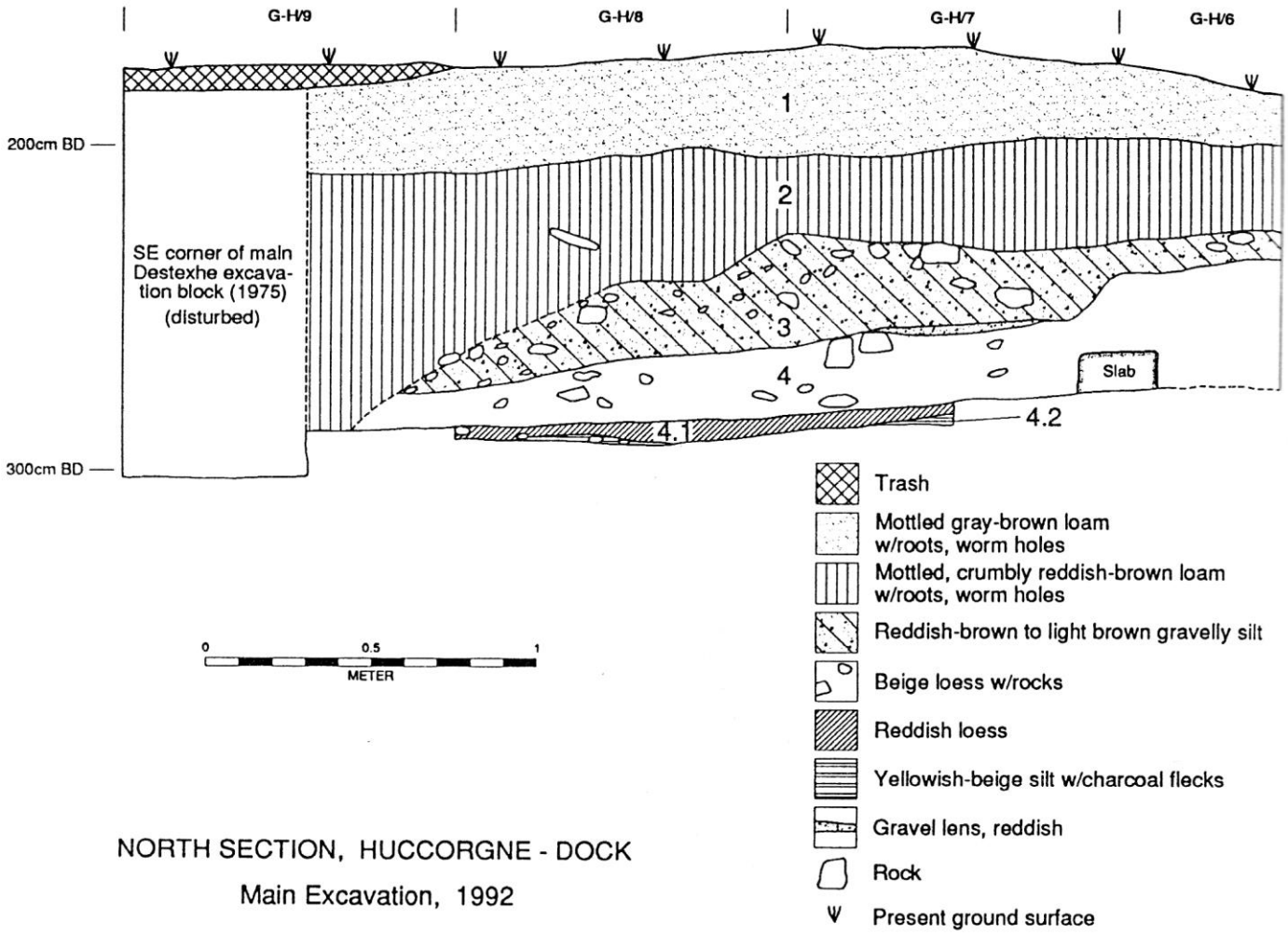

Figure 4. Stratigraphic section G-H/6-9 (railroad-side excavation, "Dock" area).

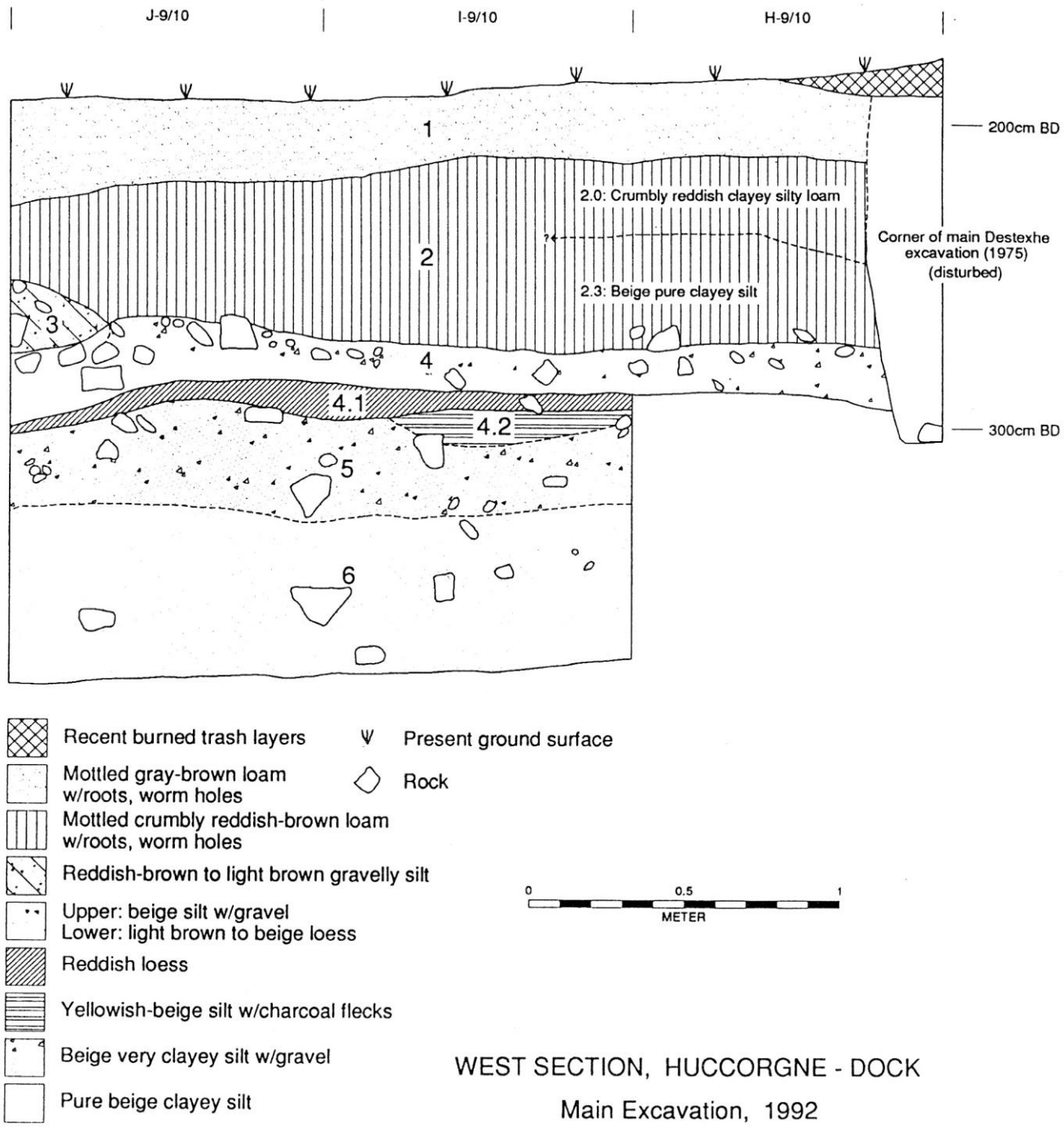

Figure 5. Stratigraphic section H-J/9-10 (railroad-side excavation, "Dock" area).

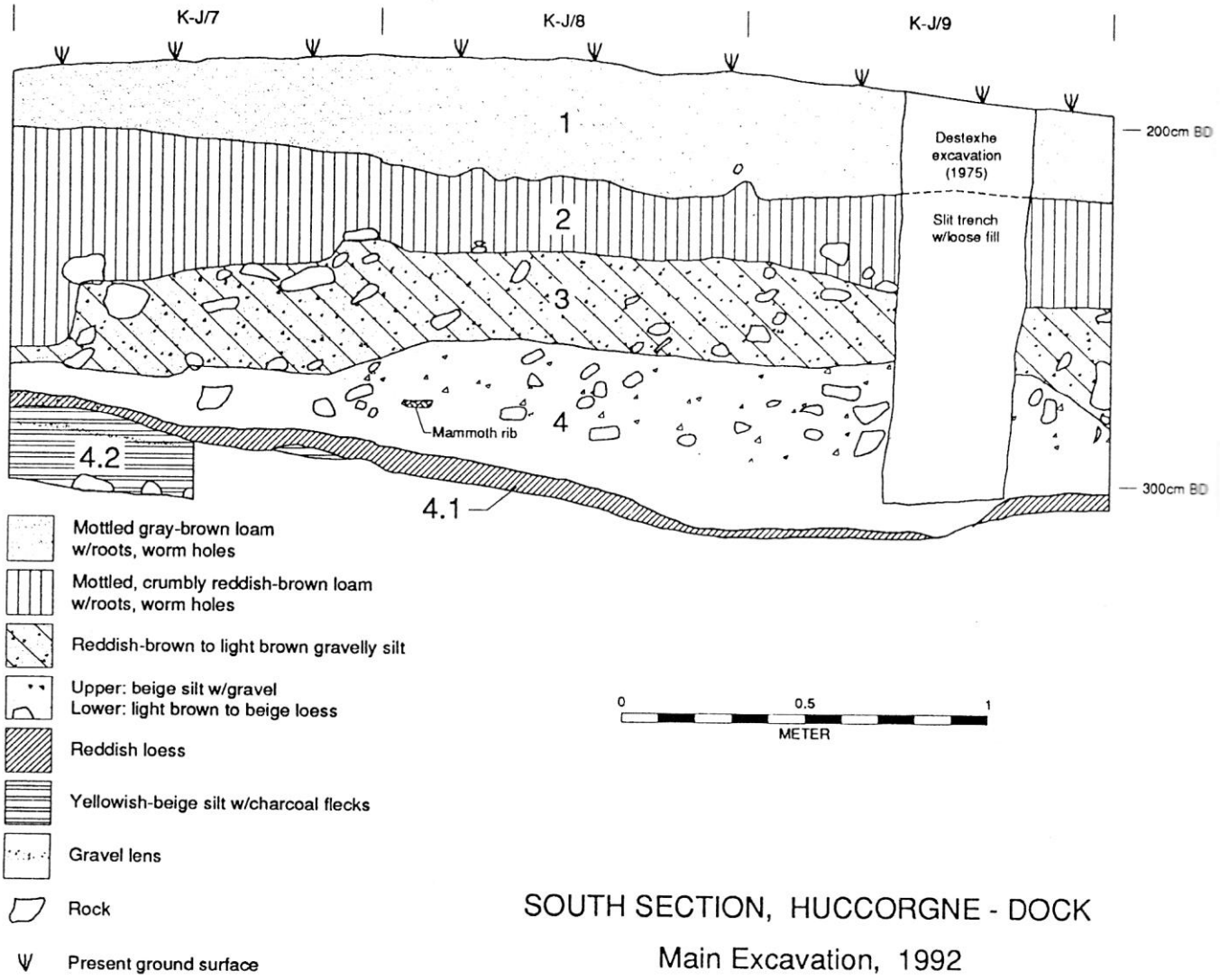

Figure 6. Stratigraphic section J-K/7-9 (railroad-side excavation, "Dock" area).

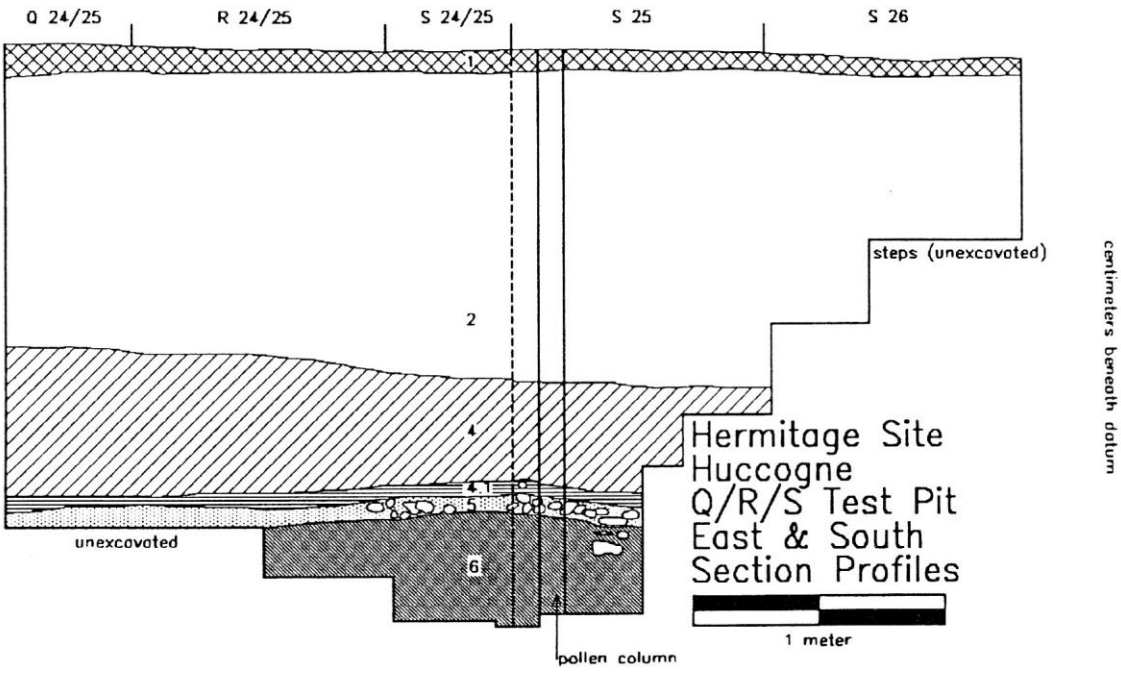

Figure 7. Stratigraphic sections Q-S/24-25 + S/25-26 mid (road-side sondage, "Dock" area).

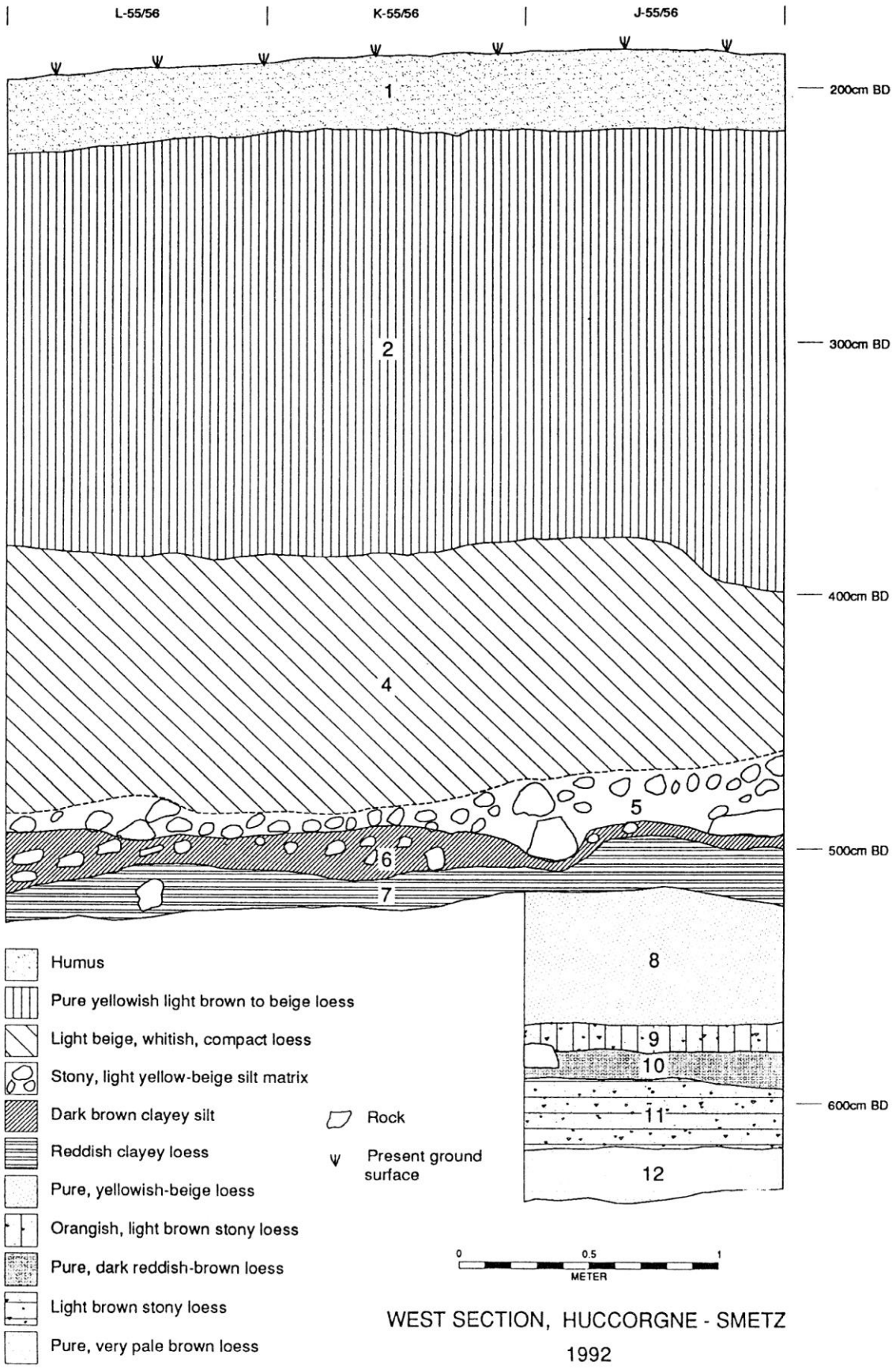

Figure 8. Stratigraphic section J-L/55-56 (main west /"Smetz" area excavation).

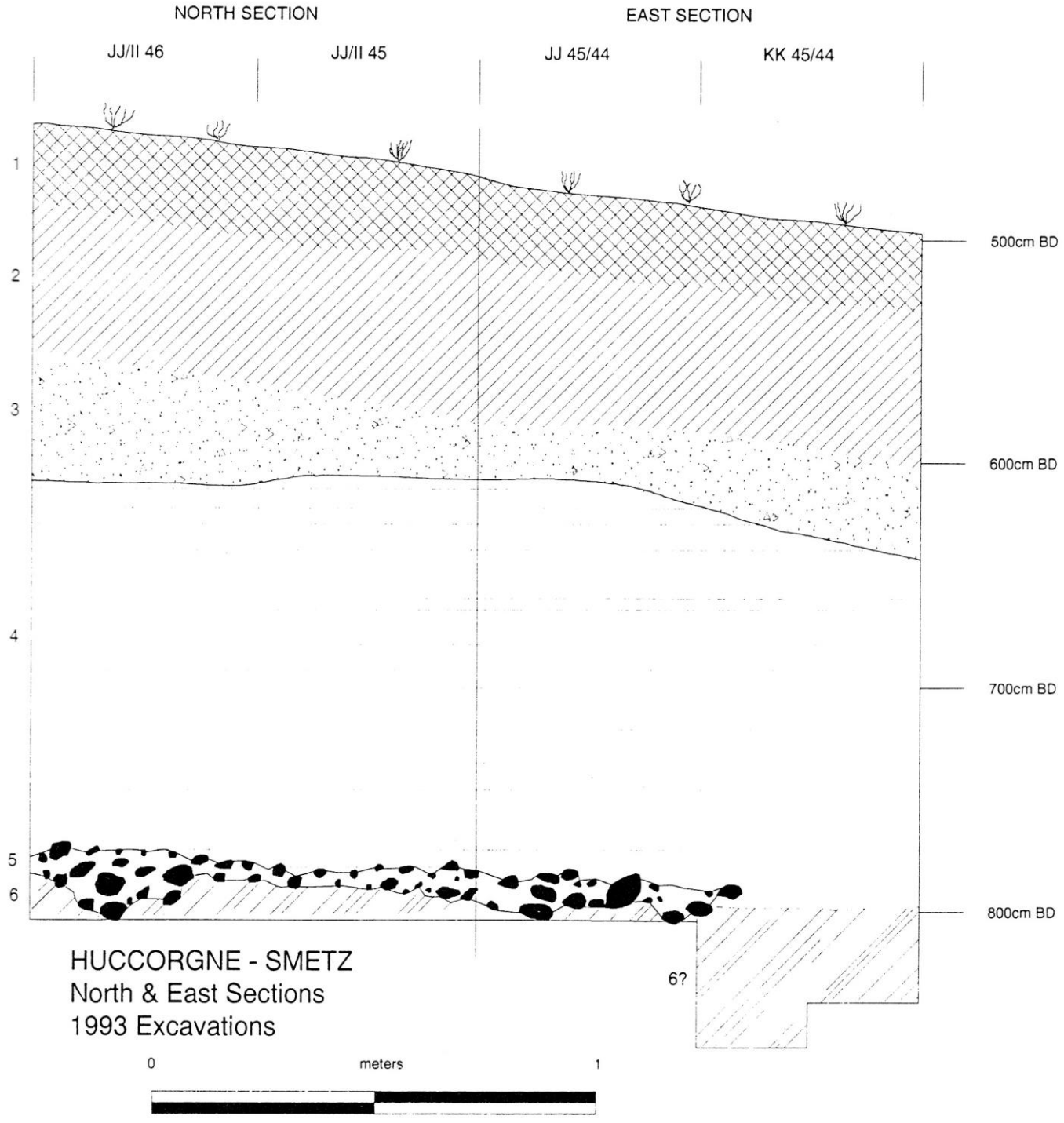

Figure 9. Stratigraphic sections JJ-II/45-46 + JJ-KK/45-44 (west/"Smetz" area sondage).

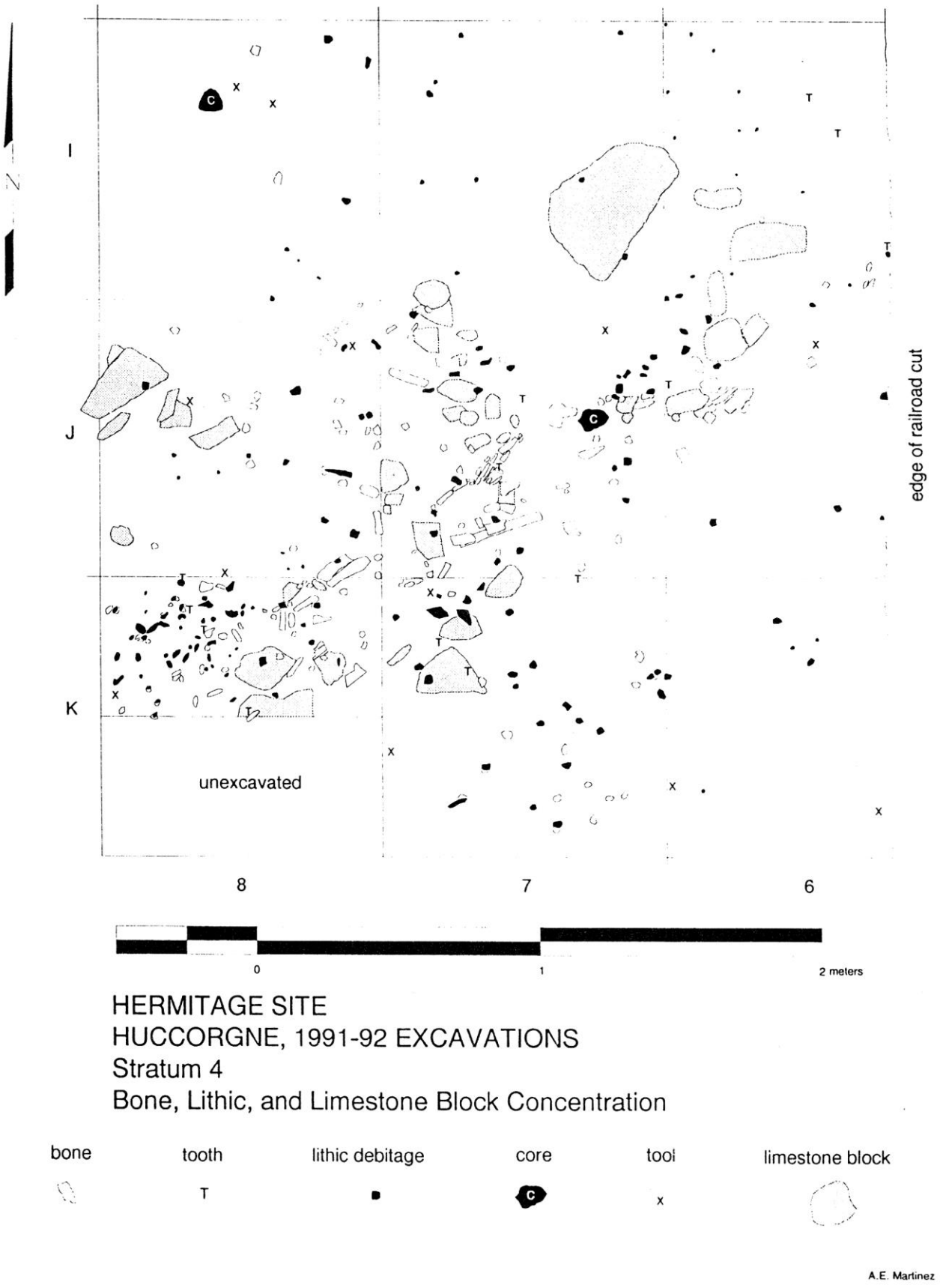

Figure 10. Plan of "feature", Stratum 4, squares I-K/6-8.

Figure 11. Plan and longitudinal profile of channel, Stratum 4.1, squares J8-9 (railroad-size excavation). Channel filled with Stratum 4 material (pure, almost sterile, light brown-beige loess). The base is formed by sloping continuous Stratum 4.1 material.

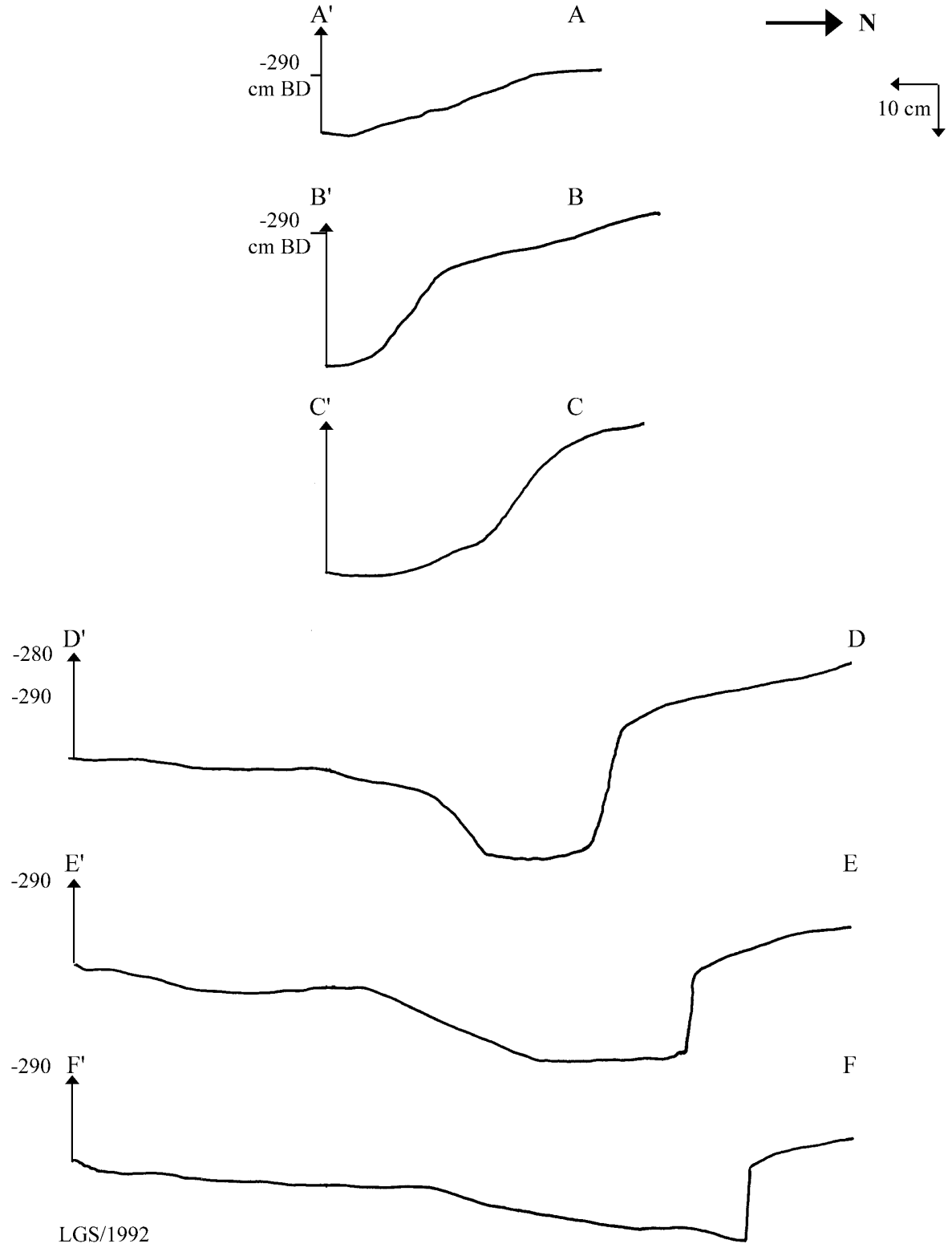

Figure 12. Transversal profiles of channel, Stratum 4.1, squares J8-9 (railroad-side excavation). Cross-sections of "channel" in J9 and J8 on S-N axes. Ground surface at top of Stratum 4.1 (reddish, gravelly).

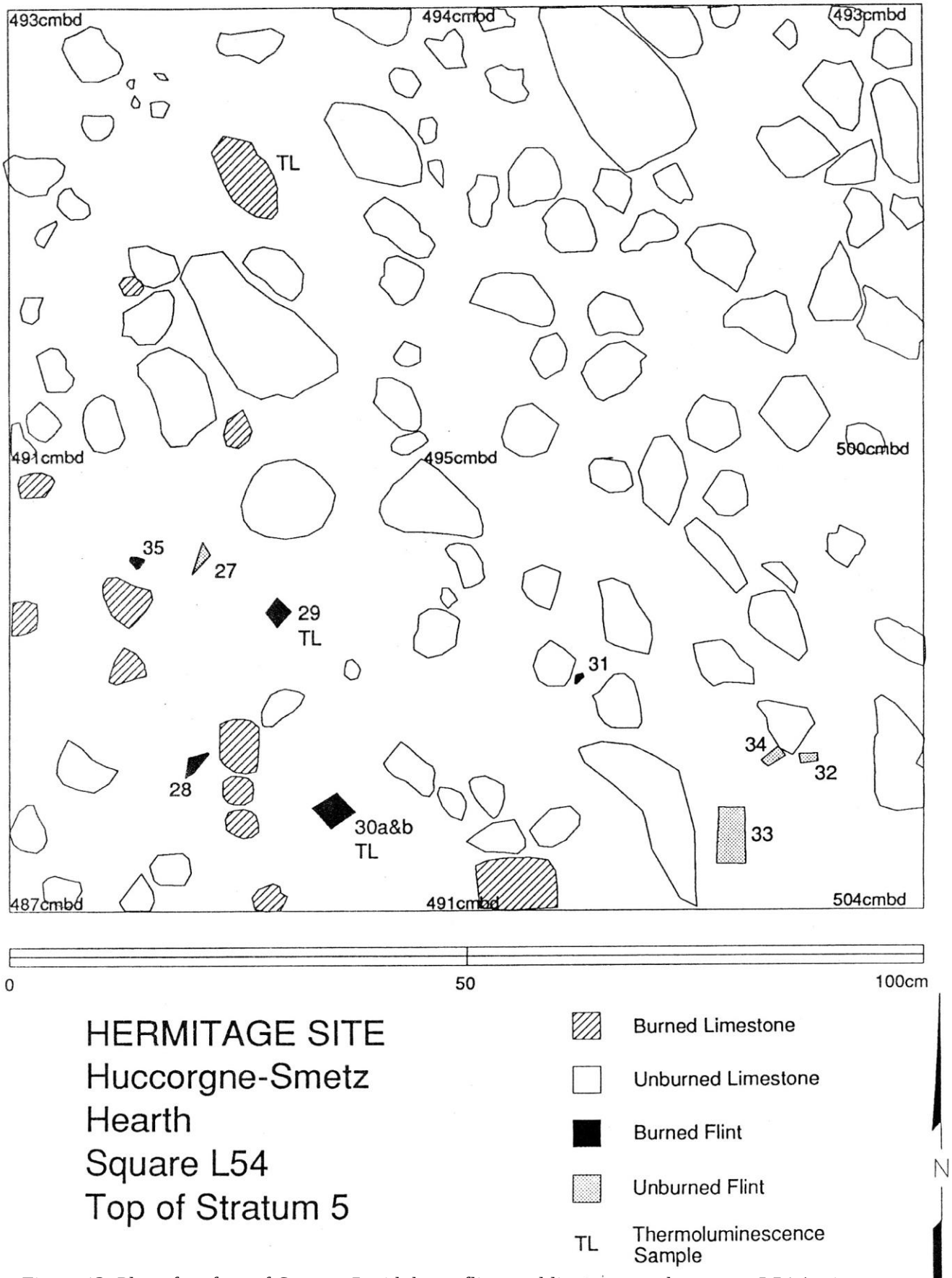

Figure 13. Plan of surface of Stratum 5 with burnt flints and limestone rocks, square L54 (main west area excavation).

Plate 1. 1991 excavation along the westernface of the railroad cut in the main ("Dock")area, at the top of the section dug by Haesaerts in 1976.

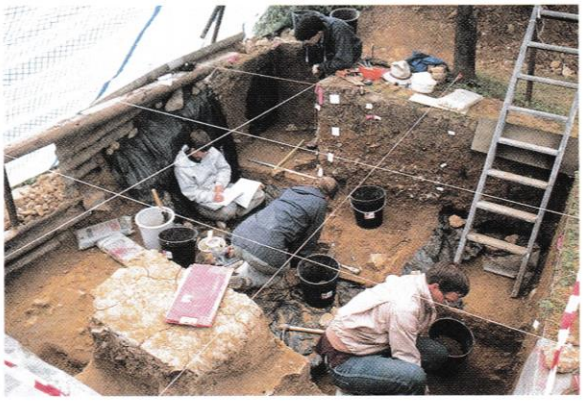

Plate 2. 1992 excavations adjacent to the railroad cut in the main ("Dock") area.

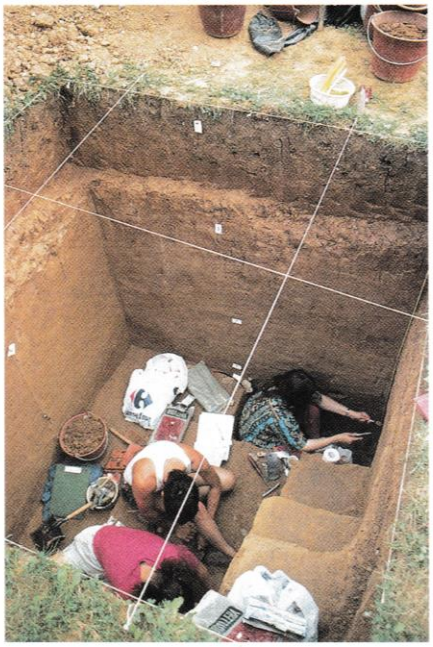

Plate 3. 1991 sondage adjacent to the road cut in the main ("Dock") area.

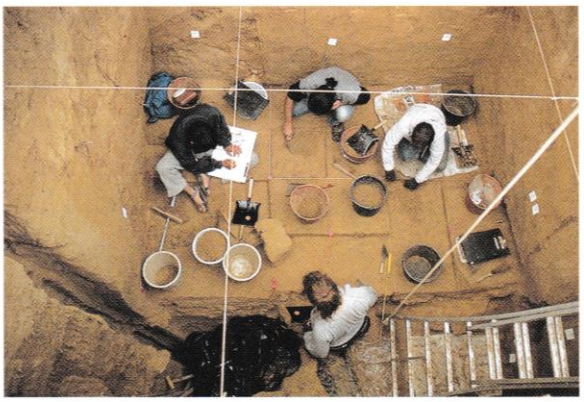

Plate 4. 1993 excavation of the larger trench in the western ("Smetz") area.

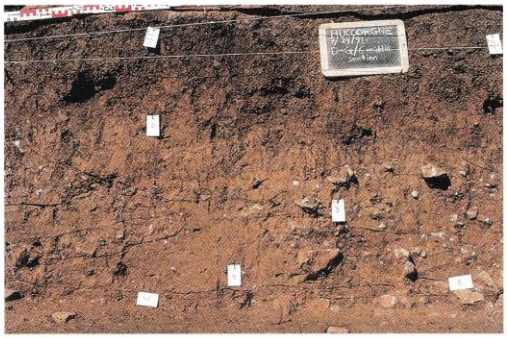

Plate 5. South-north stratigraphic section midway through squares F-G/6 along the top of the railroad cut at the eastern edge of the main ("Dock") area.

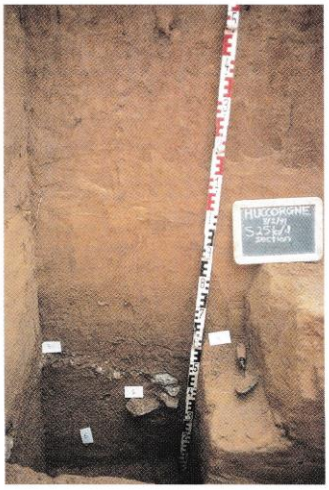

Plate 6. Stratigraphic section mid-way through square S25 in the *sondage* adjacent to the road cut in the main ("Dock") area.

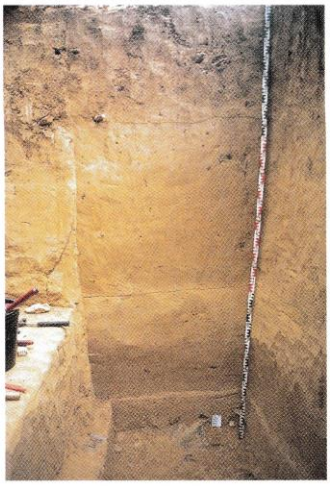

Plate 7. L-M/55 stratigraphic section of the larger excavation trench in the western ("Smetz") area; note stony Stratum 5 with Levallois core at the base of photo.

Plate 8. J6, Stratum 4 "feature" before removal of bones.

Plate 9. I-J6, Stratum 4 "feature" after expansion of excavation and removal of bones.

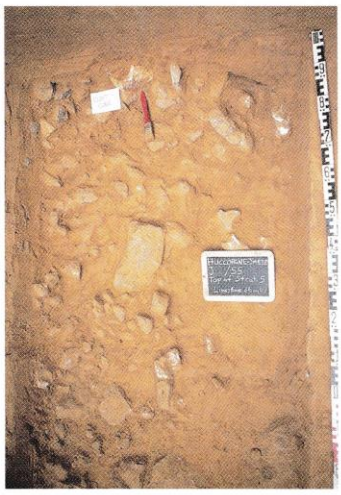

Plate 10. Stony pavement with burnt flints and limestone rocks ans de Levallois core at top of Stratum 5 in J55

Straus L.G., Otte M. et Haesaerts P. (éds.), *La Station de l'Hermitage à Huccorgne*. Liège, ERAUL 94, 2000.

CHAPTER 8

THE GRAVETTIAN ARTIFACT ASSEMBLAGES FROM THE 1991-1993 EXCAVATIONS

Lawrence Guy Straus

INTRODUCTION
ON THE CONTINUITY AND UNITY OF THE HH GRAVETTIAN HORIZON

The Gravettian horizon at HH is undoubtedly a palimpsest (albeit not very thick) of several occupations of the site. There is, however, no realistic way of separating individual occupation levels. Even distinction between loess Stratum 4 and the reddish lens at its base (4.1), which is found in most areas of our two excavations at the HU ("Dock") area, is chimeric, since 4.1 simply represents a *post hoc* weathering zone. The vast majority of artifacts and essentially all the faunal remains are from the base of Stratum 4 and 4.1, between which the restricted vertical distribution is absolutely continuous. For this reason, the assemblages from 4 and 4.1 will be considered together. There are a very few artifacts in the upper zones of Stratum 4 (probably derived from basal 4 via burrows and other disturbance processes such as cryoturbation), as well as a handful in Strata 3 and 2, at least some of which might represent terminal Pleistocene and/or Holocene visits to the site, although we found no objects that would *specifically* (by their typology) imply a Mesolithic occupation as was suggested by Destexhe for the central sector of the HU ("Dock") area.

Here I will focus on the Gravettian-age materials directly associated with radiocarbon dates in our main (eastern HU) excavation area, together with the undoubtedly Gravettian artifacts from our western (HU road-side) *sondage* and materials from our two pits in the HS ("Smetz") area which, by stratigraphic position at the base of the upper loess deposit and by their technological, typological and raw material similarity, as well as their physical proximity to the IRSNB finds along both faces of the road cut, also pertain to the Gravettian cultural component at Huccorgne-Hermitage. It is worth recalling that the distribution of Gravettian materials in a well-defined stratigraphic position at the base of the LGM loess is continuous across the whole HH site: from east to west it has been found 1.) in Haesaerts' and 2.) Tihon's trenches dug into the western face of the railroad cut, 3.) in our excavation area westward from the railroad cut , 4.) in Destexhe's large central excavation area (all four of which are *physically contiguous* excavations), 5.) in our HU road-side *sondage* (separated from the SW corner of Destexhe's trench by about 5 m.), 6.) in Haesaerts' two long trenches along the eastern face of the road cut (one of which is separated from our *sondage* by only 4 m), 7.) in Froment's three pits along the western face of the road cut (separated from Haesaerts' trenches by the 10 m width of the road), 8.) in our two HS ("Smetz") area pits (the smaller one of which is about 3 m from the southernmost of Froment's trenches and the larger one of which is c. 16 m from the northernmost of Haesaerts' roadside trenches). It *might* also be present in our step trench in the eastern face of the railroad cut. The Gravettian horizon is always at the base of the upper loess, *above* a stony layer. This upper loess is very thin at the eastern edge of the site near the gorgeside cliff; westward it gets increasingly thicker, as we, Haesaerts and Destexhe all found in our respective excavations.

Obviously, the most tenuous inter-area connection is between our larger HS ("Smetz") area pit and the rest of the site. The assemblage from the lower part of the upper loess (Stratum 4--with no

TABLE 1
LITHIC RAW MATERIAL TYPOLOGY USED IN CLASSIFICATION
OF HUCCORGNE COLLECTIONS

10	Fine-grain flint: shiny, smooth surface; opaque to slightly translucent; blue-grey original color, patinates white; chalk cortex; inclusions rare; conchoidal fracture pattern. Source: Cretaceous of Hesbaye. Intergrades with type 12.
11	Fine-grain flint: shiny, smooth surface; opaque to slightly translucent; brown-yellow original color, patinates white; chalk cortex; occasional inclusions; conchoidal fracture pattern. Source: Cretaceous of North Belgium.
12	Medium-grain flint: matte, slightly rough surface; opaque; occasional inclusions; gray original color, patinates white; water-worn cortex; conchoidal fracture. Source: Cretaceous; secondarily in river beds.
13	Fine-grain flint: shiny, smooth surface; opaque; dark brown color with occasional yellow bands; does not patinate; water-worn cortex; inclusions rare; conchoidal fracture pattern. Source: Tertiary of North Belgium.
16	Black flint: very fine-grain; opaque; homogeneous; no inclusions; conchoidal fracture; orangish-yellowish chalk cortex; smooth and shiny. Source: possibly Obourg (Hainaut) or a local (Hesbaye) Cenomanian flint (like "Brandon" flint in England).
18	Grainy, patinated "Hesbaye" flint
20	Chert: fine to medium grain; matte or shiny, smooth surface; opaque to slightly translucent; wide color range; does not patinate; cortex variable (sometimes absent, sometime water-worn, sometimes unworn); inclusions rare; mainly orthagonal fracture pattern. Cretaceous, sources unknown, but sometimes in geological beds, sometimes in river beds.
30	Phtanite: medium-grain; matte or shiny surface; opaque; jet black to grayish black; does not patinate; gray cortex with occasional metal adhesions; no inclusions; conchoidal fracture pattern; Source: Cretaceous. Occurs in geological bed at Ottignies, Central Belgium.
42	Crystallized limestone: fine to medium grain; hard, matte surface; opaque; gray-white, mottled; does not patinate; cortex impossible to distinguish; occasional inclusions; mainly conchoidal fracture pattern; mild reaction with acid ("limey chert"). Source: non-specific Cretaceous.
50	Medium-grain quartzite (includes quartzitic sandstone): matte to shiny surface; opaque; wide color range; does not patinate; water-worn cortex; no inclusions; conchoidal fracture pattern. Source: occurs as cobbles in river beds.
51	Fine-grain quartzite: matte surface; opaque; tan-brown color with occasional bands; does not patinate; water-worn cortex; no inclusions; conchoidal fracture pattern. Source" occurs as cobbles in river beds.
54	Brussels sandstone. Source: Brussels Basin, Central Belgium.
55	Psammite: light brown with manganese oxide stains; medium to coarse grain (resembles quartzite); opaque; a form of sandstone with quartz grains and mica inclusions. Source: occurs as tabular slabs in Lesse River (Ardennes).
90	Ochre/hematite.
99	Other stones.

basal reddish lens here) in the 9 sq.m of the larger "Smetz" pit (J-L/53-55) is composed of 444 lithic debris and only 3 formal tools (2 burins and an endscraper), but there is no hint that these materials are anything other than Gravettian in age or attribution. On the other hand, underlying Stratum 5--which seems to have been separated from 4 by an erosional episode--has 131 lithic debris (including a large Levallois core) and only one "tool" (*sensu* F. Bordes): a Levallois flake. At least one of the three bladelets found in Stratum 5--found at the contact between the two strata--is probably really derived from Stratum 4. Our second (smaller) "Smetz" area pit (JJ-KK/45-46) yielded only 3 artifacts (a blade, a flake and a cortical chunk) from its Stratum 4 (the upper loess). Here there is quite clear evidence of an hiatus between Strata 5 (the stony layer) and 4 (caused probably by water erosion and maybe also cryoturbation). Stratum 5, which yielded numerous water-worn cobbles, lacks any tools or other diagnostic artifacts, and the one bladelet may also be derived from Stratum 4, given the very close and convoluted contact between the two units.

The lithic artifacts (we found *no* osseous or tooth artifacts) were all classified according to an empirical, *ad hoc* typology of raw materials developed for the South Belgium Prehistoric Project by Straus with significant input from J.M.Léotard, Otte, A.E. Martinez and E.Teheux. Only the types represented at HH are presented in Table 1. Further discussion and detailed analysis of raw material use in the Gravettian component at HH and comparisons with Maisières-Canal are presented by R.Miller (this volume; see also Miller 2000).

All the lithic artifacts (retouched and unretouched) were also classified according to a typology of debris/tool blanks (i.e., débitage and cores) developed by Straus over the years in several excavations throughout western Europe. While admittedly far from exhaustive, this system provides information on a number of basic technological aspects of both debris and tool blanks (e.g., general size, morphology, cortex, place within the reduction sequence, type of reduction such as laminar vs. non-laminar). It is also easy to teach to student crew members, who can reliably classify artifacts by this typology in standard fashion. As such, although not definitive, this typology affords preliminary indications as to the nature and relative completeness of the operational chain at the site. Because the blank/debris type list has grown in specificity over time, the types are not listed in fully logical order (Table 2), but rather in partly historical order of their incorporation. However, in the actual tables for each site area, the order of types has been rearranged to reflect technological groups of items (e.g., microdébitage, flakes, blades, bladelets, cores, chunks). Thus they are not presented in type-number order. The same typology for blanks and debris has been used for the Mousterian components at HH. However, the formal, retouched tools of the Gravettian horizon (plus the sole--Mousterian--artifact from Stratum 6 in our roadside pit, a sidescraper) have been classified according to the standard, descriptive Upper Paleolithic typology of D.de Sonneville-Bordes and J.Perrot, whereas the 2 unretouched Levallois flakes (the only "tools" to be found) in the Mousterian levels were classified according to F.Bordes' typology for the Lower and Middle Paleolithic. In addition to classifying all the artifacts according to the raw material, blank/debris and (in the case of tools) tool typologies, all were measured (i.e., length [along flaking axis or maximum dimension in the absence of Hertzian morphology], width [perpendicular to length] and thickness) and weighed. Samples were selected for lithic microwear analysis by K.Akoshima of Tohoku University (Sendai, Japan).

THE MAIN (HU-"DOCK") AREA GRAVETTIAN

The lower part of the pure, beige loess (Stratum B') in the small step trench in the eastern face of the railroad cut (MM-OO/-21-23) yielded 2 atypical endscrapers, plus a secondary decortication flake. Lying above a stony layer (top of C), this upper loess is probably equivalent to

TABLE 2
LITHIC DEBRIS and BLANK TYPOLOGY USED IN CLASSIFICATION
OF HUCCORGNE COLLECTIONS

Type	**Attributes**
1. Non-cortical trimming flake	<lcm; Hertzian morphology, without cortex
2. Non-cortical shatter(small angular debris)	<1 cm; without Hertzian morphology or cortex
3. Plain flake	>1 cm; Hertzian morphology, without cortex
4. Primary decortication flake	Cortex covers whole dorsal surface
5. Secondary decortication flake	Some cortex on dorsal surface
6. Plain, whole or proximal blade	> 2 cm and at least twice as long as wide; whole or proximal f ragment (with definite butt); no dorsal cortex
7. Primary, whole or proximal	> 2 cm and at least twice as long as wide; cortex decortication blade covers dorsal surface
8. Secondary, whole or proximal	>2 cm and at least twice as long as wide; some dorsal decortication blade cortex
9. Plain, whole or proximal bladelet	< 2 cm; at least twice as long as wide; narrow and thin; without cortex
10. Burin spall	Thick, tri- or quadrangular section bladelet
11. Unidirectional crested blade	Blade with crest formed by flake scars perpendicular to long axis in one direction only
12. Bidirectional crested blade	Same as above, but perpendicular flake scars in both directions
13. Flake core	Core with only flake removals; usually globular, but includes Levallois cores in Huccorgne Mousterian
14. Prismatic blade core	Cylindrical shape with only blade removal scars
15. Pyramidal blade core	Pyramidal shape with only blade removal scars
16. Prismatic bladelet core	Cylindrical shape with only bladelet removal scars
17. Pyramidal bladelet core	Pyramidal shape with only bladelet removal scars
18. Mixed core	Both flake and blade/bladelet removal scars; form variable
19. Non-cortical chunk(large angular debris	>1cm., without Hertzian morphology or cortex; includes exhausted core remnants and fragments
20. Platform renewal flake or blade	Has lip of platform with core edge nibbling; served to change angle of extraction
21. Pièce esquillée (splintered piece)	Bipolar flake or core remnant with splintering at both ends
22. Cortical trimming flake	Like No.1, but with cortex on some or all of dorsal surface
23. Cortical shatter	Like No.2, but with some cortex
24. Broken plain blade	Mesial or distal blade fragment without cortex
25. Broken plain bladelet	Mesial or distal bladelet fragment without cortex
26. Cortical chunk	Like No.19, but with some cortex
27. Mesial/distal cortical blade	Like No.24, but with some or full dorsal cortex
28. Mesial/distal cortical bladelet	Like No.25, but with some or full dorsal cortex
29. Whole/proximal cortical bladelet	Like No.9, but with some or full dorsal cortex
30. Fire-cracked rock	
31. Unworked cobble	

TABLE 3

HUCCORGNE "DOCK"
RAILROAD SIDE TRENCH (1991-1992)
LITHIC DEBRIS

Stratum	**4**		**4.1**		**5**	**6**
Type	**No.**	**%**	**No.**	**%**	**No.**	**No.**
1	228	24.1	125	32.8	3	1
22	11	1.2	5	1.3	-	-
2	220	23.3	101	26.5	4	-
23	33	3.5	15	3.9	4	1
3	178	18.8	70	18.4	3	1
4	14	1.5	6	1.6	1	-
5	70	7.4	13	3.4	3	2
6	26	2.7	-	-	-	-
24	28	3.0	2	0.5	-	1
7	2	0.2	-	-	-	-
8	21	2.2	-	-	-	-
27	4	0.4	1	0.3	-	-
9	10	1.1	1	0.3	-	-
25	25	2.6	8	2.1	-	-
28	1	0.1	1	0.3	-	-
29	1	0.1	1	0.3	-	-
10	2	0.2	-	-	-	-
13	-	-	-	-	1	-
14	2	0.2	-	-	-	-
19	40	4.2	15	3.9	5	1
26	30	3.2	17	4.5	4	-
Total	**946**	**100.0**	**381**	**100.0**	**28**	**7**

TABLE 4

HUCCORGNE "DOCK"
RAILROAD SIDE TRENCH (1991-1992)
UPPER PAELOLITHIC TOOL TYPE*

Stratum	**4 & 4.1**
Type	**No.**
10 (Thumbnail Endscraper)	1
17 (Endscraper-Burin)	2
23 (Perforator)	1
30 (Angle on Break Burin)	4
31 (Multiple Dihedral Burin)	2
35 (Burin on Oblique Retouched Truncation)	1
48 (Gravette Point)	1
65 (Piece with Continuous Retouch-1 edge)	5
74 (Notch)	2
75 (Denticulate)	1
Total	**20**

* De Sonneville-Bordes & Perrot Typology

TABLE 5

HUCCORGNE "DOCK"
ROAD SIDE TRENCH (1991)
LITHIC DEBRIS

Stratum	**4**		**4.1**		**5**	**6**
Type	**No.**	**%**	**No.**	**%**	**No.**	**No.**
1	96	10.0	1231.6	1	2	
22	3	0.3	-	-	-	-
2	107	11.1	1026.3	3	1	
23	8	0.8	1	2.6	-	-
3	311	32.4	8	21.1	6	2
4	17	1.8	-	-	-	-
5	108	11.3	2	5.3	2	-
6	42	4.4	-	-	-	4
24	90	9.4	-	-	3	-
7	2	0.2	-	-	-	-
8	13	1.4	-	-	-	-
27	27	2.8	-	-	-	-
9	26	2.7	-	-	-	-
25	35	3.6	-	-	-	-
28	4	0.4	-	-	-	-
29	2	0.2	-	-	-	-
16	1	0.1	-	-	-	-
19	46	4.8	2	5.3	-	1
26	22	2.3	3	7.9	-	1
Total	**960**	**100.0**	**38**	**100.0**	**15**	**11**

TABLE 6

HUCCORGNE "DOCK"
ROAD SIDE TRENCH (1991)
UPPER PALEOLITHIC TOOLS*

Stratum	**4 & 4.1**	**6**
Type	**No.**	**No.**
5 (Endscraper on retouched flake/blade)	1	-
48 (Gravette Point)	1	-
65 (Piece with Continuous Retouch-1 edge)	3	-
77 (Sidescraper)	-	1
Total	**5**	**1**

* De Sonneville-Bordes & Perrot Typology

Stratum 4 in the rest of the site. Hence these tools are probably Gravettian in age. They are clearly located on the easternmost periphery of the main concentration of materials at HH.

Strata 4+4.1 in the railroad-side (17 sq.m) and road-side (9 sq.m) excavations yielded a total of 2325 items of lithic debris plus only 25 formal tools. The density of lithic artifacts is obviously much higher in the road-side *sondage* than in our main block excavation: the former has 998 debris (110.9/sq.m); the latter has 1327 (78.1/sq.m). Most of the tools (20) are in the main (railroad-side) area, many squares of which, however, have very few artifacts, in contrast to those squares where the concentration ("feature") was found (as discussed in Ch.6). The collections of debris and tools from the two "Dock" area excavations are detailed in Tables 3-6 (see Figures 1-4).

The lithic raw materials are discussed elsewhere by Miller (this volume), but a few points are of immediate general interest. The overwhelming proportion of the artifacts from the Gravettian component throughout the whole site is made on the local fine-grain, blue-gray flint (our type 10). The remaining artifacts are almost all on the medium-grain, gray flint (12) with which it intergrades and which is also local. Table 7 shows the dominance of Type 10 flint.

TABLE 7. PERCENTAGES OF FINE-GRAIN (TYPE 10) FLINT

Stratum	**4**		**4.1**	
	By weight	**By count**	**By weight**	**By count**
HU Railroad-side	89.4	87.7	80.6	87.4
HU Road-side	77.8	89.0	76.5	89.5

However there are hints of contacts with central Belgium (Brabant) in the form of a few pieces of Brussels sandstone (n=65), with North Belgium in the form of fine-grain, dark brown, yellow-banded Tertiary flint (n=15) and with the Ardennes in the form of phtanite (n=2), as well with southwestern Belgium (Hainaut) in the form of a few possible pieces of Obourg flint (n=8). (The latter scenario may be less probable, since Hesbaye and Obourg flints--both Upper Cretaceous chalk flints--do seem to intergrade, with true Obourg being jet black and extremely shiny, smooth and homogeneous). Even if people came with or brought to HH a few items from moderate distances, they certainly went to this site knowing that it was a major flint source and with the primary intention of using that resource. None of the tools or weapon tips we found are made on the exotic, non-local raw materials.

The two HU-"Dock" debris collections have the same full gamut of morphological types, basically representing most of the operational chain. Items with at least some cortex make up 14.8% of the railroad-side collection and 16.0% of the road-side one; the former has 26.5% flakes, the latter has 44.6%; the former has 9.9% blades, the latter has 17.4%; the former has 11.2% bladelets, the latter has 6.7%. There is a large difference in terms of microdébitage (trimming flakes and shatter, all < 1 cm in length): 55.6 % of the railroad-side assemblage vs. 23.7% of the road-side assemblage of debris. This may have been caused by the winnowing away of these, the lightest, artifacts from the latter area, which may have been near the edge of a gully, as argued in Chapter 6. The huge percentage of microdébitage in the railroad-side area of course depresses the percentages of all the other types. But there are interesting facts about the collections as presumably representative where flint procurement and knapping were presumably important, even predominant, activities.

Curiously, neither area is rich in cores (0.2% in railroad-side and 0.1% in road-side pit),

TABLE 8

HUCCORGNE "DOCK"
RAILROAD AND ROADSIDE TEST TRENCH
UPPER PALEOLITHIC TOOL TYPE BY BLANK TYPES
STRATUM 4 & 4.1

Blank Type	3	5	6	24	8	9	25	Total
UP Tool Type								
Thumbnail Endscraper	1	-	-	-	-	-	-	1
Endscraper-Burin	-	-	-	-	2	-	-	2
Perforator	-	-	-	-	-	1	-	1
Angle Burin on Break	-	-	2	1	1	-	-	4
Multiple Dihedral Burin	-	1	1	-	-	-	-	2
Burin on Oblique Truncation	-	-	-	1	-	-	-	1
Gravette Point	-	-	1	-	-	-	1	2
Continuously Retouched Piece - 1 edge	1	1	4	2	-	-	-	8
Notch	-	-	-	-	2	-	-	2
Denticulate	-	1	-	-	-	-	-	1
Endscraper on Retouched Blade	-	-	1	-	-	-	-	1

*De Sonneville-Bordes & Perrot Typology

TABLE 9

HUCCORGNE "SMETZ"
J-L/53-55
LITHIC DEBRIS

Stratum	3	4		5		6	7	8	9	11
Type	**No.**	**No.**	**%**	**No.**	**%**	**No.**	**No.**	**No.**	**No.**	**No.**
1	-	4	6.6	16	12.1	-	6	5	-	-
22	-	2	3.3	5+	3.8	-	-	-	-	-
2	1	7	11.5	11	8.3	-	6	-	-	-
23	-	1	1.6	7	5.3	-	4	1	3	13
3	-	11	18.0	40	30.3	1	5	1	-	-
4	-	3	4.9	3	2.3	-	-	-	-	-
5	-	10	16.4	16	12.1	2	3	1	-	4
6	-	2	3.3	4	3.0	1	-	-	-	1
24	-	4	6.6	5	3.8	-	-	-	-	-
27	-	3	4.9	-	-	-	-	-	-	-
7	-	-	-	6	4.5	-	-	-	-	-
8	-	1	1.6	-	-	-	-	-	-	-
9	-	1	1.6	1	0.8	-	-	-	-	-
25	-	-	-	2	1.5	-	-	-	-	-
29	-	1	1.6	-	-	-	-	-	-	-
13	-	3	4.9	-	-	-	-	1	-	-
18	-	1	1.6	1*	0.8	1	-	-	-	-
19	-	2	3.3	2	1.5	-	-	-	-	-
26	-	4	6.6	12	9.1	2	4	-	-	-
20	-	1	1.6	1**	0.8	-	1	1	-	-
Total	**1**	**61**	**100.0**	**132**	**100.0**	**7**	**29**	**10**	**3**	**18**

* Levallois Core ** Levallois Flake + includes one Levallois flake

although the railroad-side excavation yielded a flake core and a prismatic blade core, to the latter of which many blades and flakes could be refitted (see Martinez, this volume; Martinez and Guilbaud 1993), and the road-side pit had one small prismatic bladelet core. On the other hand, both areas yielded large numbers of chunks, many of which are probably exhausted core remnants: 102 (7.6% of the assemblage) in the railroad-side area and 73 (7.3%) in the road-side pit. The same observation is true of the IRSNB collections: relatively few cores but large numbers of chunks that may include many exhausted cores. But definite hammerstones are missing from both of our excavation areas. (Were they using antler billets? Some poorly preserved reindeer antler fragments--including shed antler bases--were found in both Haesaerts' and our excavations [see Gautier, this volume].) And, also curiously, crested blades and platform renewal flakes are missing from our collections, although they are present in decent numbers (1.1% and 0.8% respectively) in the Haesaerts and Froment (IRSNB) collections from the Gravettian horizon ("G"). It is conceivable that the difference might arise from the fact that the latter (IRSNB) collections were classified solely by Straus, while our own (UNM/ULg) collections were classified mainly by student team members under Straus' supervision. The same observation might pertain to the scarcity of identified burin spalls in our collections (0.2%) versus their relative abundance in the IRSNB collections (0.8%) (Straus personally classified all retouched tools in both cases, since students were explicitly instructed to show him all pieces with any hint of retouching or burination. But students classifying the 1991-93 finds may have failed to consistently query him on all objects that might have been crested blades, platform renewal flakes or burin spalls, all of which are somewhat tricky categories to easily and systematically recognize.) Nevertheless, especially when combined with the IRSNB collections, it is clear that the HH Gravettian cultural record mainly consists of a massive set of knapping workshop assemblages. Retouched tools and weapon tips are quite scarce, especially in our excavations, although they (and especially the projectile points) are somewhat more abundant in the central part of the site. It would certainly be interesting to have excavated sites of the same period in the nearby Ardennes to see if artifacts (especially blades) of Hesbaye flint were being imported from sites like HH, which is what I suspect was going on in the Gravettian (as in the later Magdalenian period). Certainly--despite exhaustive searching by Martinez in our collections-- the refitted core from our railroad-side excavation is missing many excellent blades, at least not present in the several squares surrounding the scatter of refits.

The scarcity of retouched tools and the abundance of cortical debris items do suggest that primary reduction, not tool manufacture and use, was the principal activity at HH. Nonetheless the presence of faunal remains (notably including mammoth, horse and reindeer) in Haesaerts, our and Destexhe's excavations) clearly suggest that hunting also took place, probably facilitated by the site's strategic location.

Not surprisingly given the local availability of large nodules of good-quality flint, the abundance of blades and the presence of blade cores at the site, the tools (n=25) are mainly made on blades (types 6,8 and 24=72%), followed by flakes (types 3and5=20%) and bladelets (8%)(Table 8). Only 8 have any cortex (none are on primary decortication blanks). People here could definitely pick and choose their tool blanks!

The tools include only 2 endscrapers, 7 burins (plus 2 endscraper-burins), a perforator, 2 Gravette point fragments, 8 single-edge, continuously retouched pieces, and 3 denticulate/ notches. All but 5 were found in our railroad-side block excavation and several of those were in close association with the concentration of limestone slabs and bones. The number and excellent quality of burins (generally made on blades) are noteworthy, particularly in light of the high percentage of burins from the much larger Haesaerts collection and the prominence of burins in the Destexhe and Tihon collections.

TABLE 10

HUCCORGNE "SMETZ"
J-L/53-55
LITHIC TOOLS

Stratum	**4***	**5****	**7****
Type	**No.**	**No.**	**No.**
31 (Multiple Dihedral Burin)	1	-	-
35 (Burin on Oblique Retouched Truncation)	1	-	-
14 (Thin Nosed Endscraper)	1	-	-
1 Typical Levallois Flake)	-	1	-
2 (Atypical Levallois Flake)	-	-	1
Total	**3**	**1**	**1**

*De Sonneville-Bordes & Perrot Typology
** F. Bordes Typology

TABLE 11

HUCCORGNE "SMETZ"
JJ-KK/45-46
LITHIC DEBRIS

Stratum	**4**	**5**
Type	**No.**	**No.**
1	-	3
22	-	1
2	-	4
3	-	19
5	1	3
6	1	2
24	-	1*
25	-	1
26	1	6
Total	**3**	**40**

* possibly intrusive from stratum 4

THE WESTERN (HS-"SMETZ") AREA GRAVETTIAN

The base of the massive Stratum 4 loess deposit in the J-L/53-55 pit yielded a small lithic assemblage: 61 pieces of débitage and cores plus 3 tools (Tables 9 and 10; Figures 5-7).

Of the debris, 23% are microdébitage (trimming flakes and shatter), 39.3% are flakes, 16.4% are blades, 1.6% are bladelets, 6.5% are cores, 9.9% are chunks and one (1.6%) is a platform renewal flake. There are no crested blades or splintered pieces (bipolar core remnants). These relative frequencies fall within the ranges represented by our two HU ("Dock") area excavations--except in the case of cores, which are relatively much more abundant in the HS ("Smetz") area . Fully 40.9% of the debris have at least some cortex. This is a much higher figure (about 2.7 times more) than in either of our "Dock" area assemblages. Although the assemblage is really too small to make sweeping comparisons, it could be suggested that more decortication took place and more cores were discarded in the western part of the site than in the peripheral parts of the main site area that we were able to excavate. Interestingly, the highest relative frequencies of cortical items and cores among the other complete collections we could classify are precisely from the trenches along the *western* side of the road cut dug by S.Froment (36.5% and 1.3% respectively).

The tools from the larger HS("Smetz") area pit are only three: a multiple dihedral burin, a burin on an oblique retouched truncation and a thin nosed endscraper. All these are very plausible (although not strictly "diagnostic") Gravettian types. Given their great stratigraphic depth and position at the base of the upper loess--identical to that of the main HU site area-- are certainly not of Magdalenian age (which is the only likely alternative in this region).

Stratum 4 in the small southeastern *sondage* of the western HS ("Smetz") area (JJ-KK/45-46) yielded only three definite artifacts: a flake, a blade and a chunk. A mesial blade fragment found at the top of Stratum 5 (with evidence of water and/or frost disturbance at the contact with Stratum 4) may actually be intrusive from 4 (Table 11). This piece has marginal retouch on one dorsal edge and a small notch in one corner. It is on the local, unpatinated Hesbaye flint type (10) that is the same as the few other pieces from Stratum 4 in HS (and Stratum 4 in the rest of the site), whereas virtually all Stratum 5 artifacts are on type 18 (patinated Hesbaye) flint. Stratum 4 also produced a sidescraper on a continuously retouched piece. The tentative Gravettian attribution of these objects is based essentially on their stratigraphic position.

SUMMARY OF THE GRAVETTIAN ARTIFACT ASSEMBLAGES FROM THE 1991-93 EXCAVATIONS

In sum, among the east railroad step trench, the two main HU ("Dock") area trenches and the two western HS ("Smetz") area *sondage*s, the 1991-93 excavations consistently found Gravettian-age artifacts at the base of the upper loess stratum and right atop a stony layer, a position consistent with the Gravettian component in all the earlier excavations at HH. All together, our excavations of this horizon--undoubtedly a palimpsest of several occupations--yielded 2420 lithic artifacts, of which at most 31 are retouched tools. Thus the aggregate ratio of debris to tools is a high 77 to 1. In short, formal tools make up only 1.28% of the total assemblage. My unsystematic, subjective impression of the large débitage (blades, flakes) is that there is generally no obvious evidence of macro-wear or use-damage. Those potential tool blanks that were not exported to other venues, were simply discarded on-site, apparently un- (or very little-) used. Burins were produced and used throughout the site, together with very limited numbers of other tool types, but weapon tips were only relatively

abundant in the central part of the main area--precisely where we could *not* excavate because most of it had already been dug by Tihon and Destexhe. The equally peripheral areas dug by the IRSNB on both sides of the road cut were similarly poor in weapon tips. Our and the IRSNB collections include notably no Font-Robert points, such as had been found, in contrast, by Tihon and Destexhe, and which relate HH culturally to Maisières and other Belgian Gravettian sites (caves of Spy, Magrite, Andrimont and nearby Chena). Fragments of shouldered and leaf (foliate) points are present in the IRSNB collections (see below). The association of Font-Robert points with leaf points, as at HH, is typical of the Belgian Gravettian (Otte 1979). While the limited nature of the faunal collections from our and Haesaerts' excavations may in large part due to poor preservation conditions, it seems likely that hunting was a secondary--albeit important--activity during the Gravettian visits to the quarry-workshop site of HH.

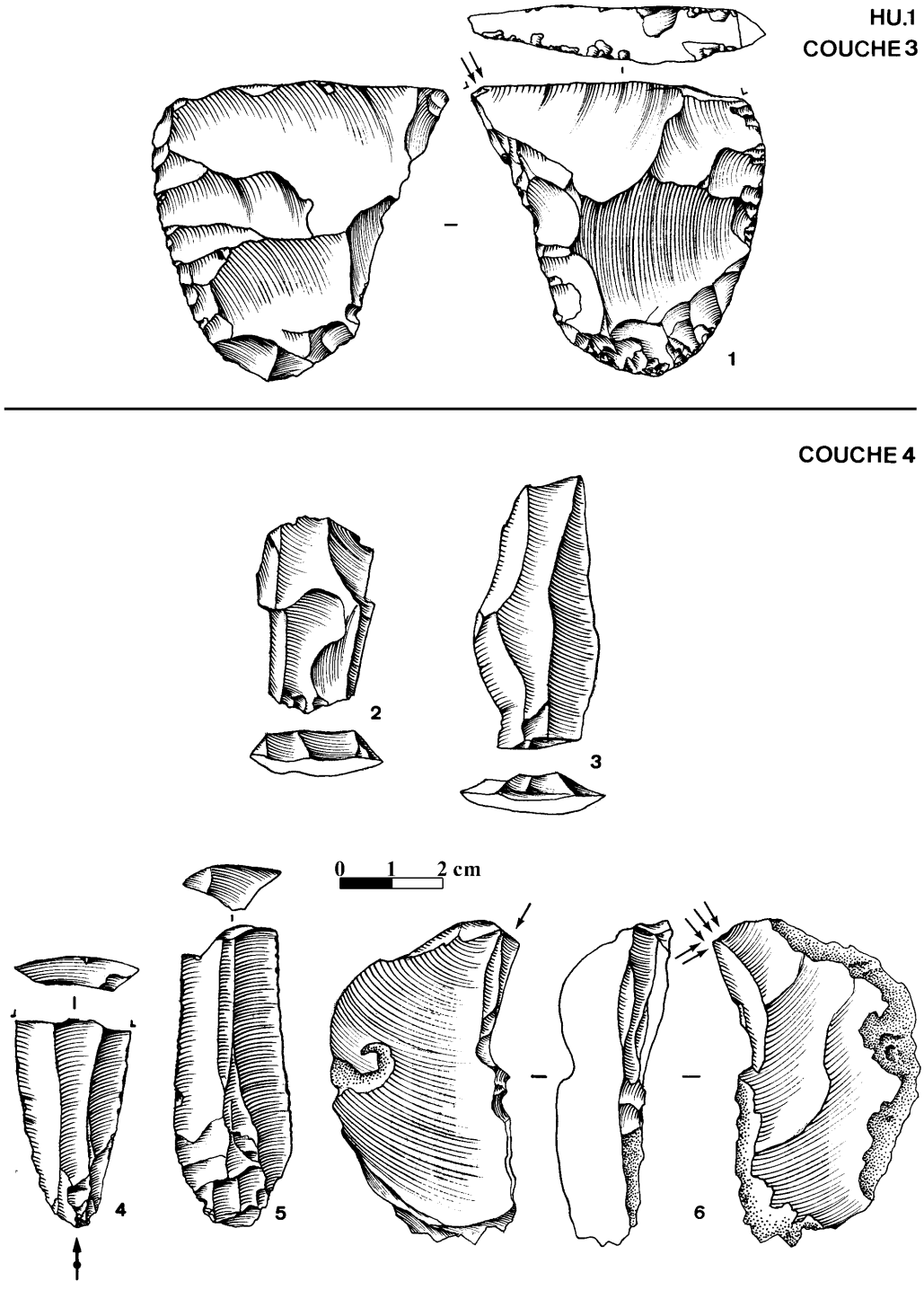

Figure 1. Main: 1. bifacial foliate fragment with burin on break (Stratum 3); 2. angle burin on break; 3. blade; 4. piece with continuous retouch-1 edge; 5. blade; 6. burin on oblique retouched truncation (rest Stratum 4).

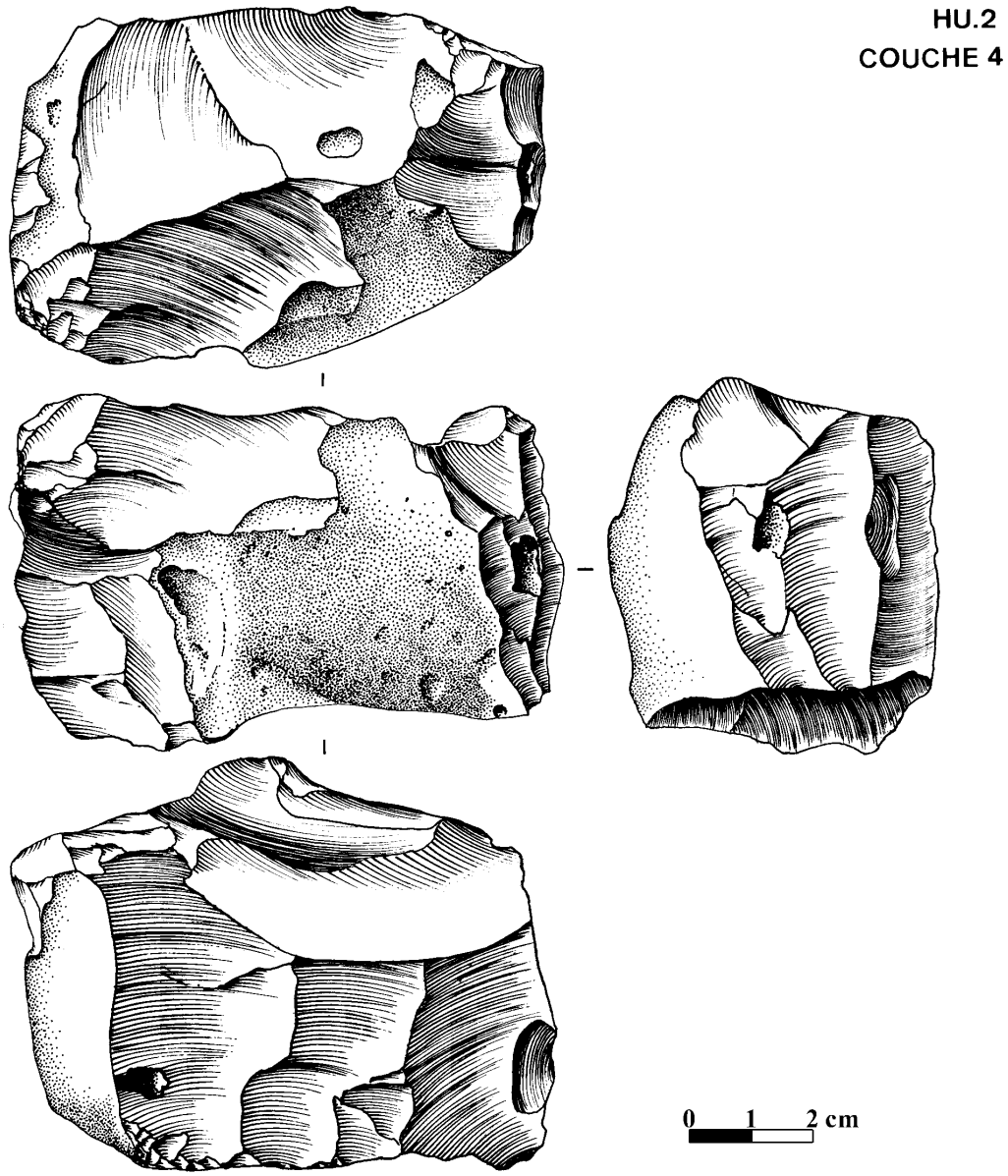

Figure 2. Main: 1. prismatic blade core (Stratum 4).

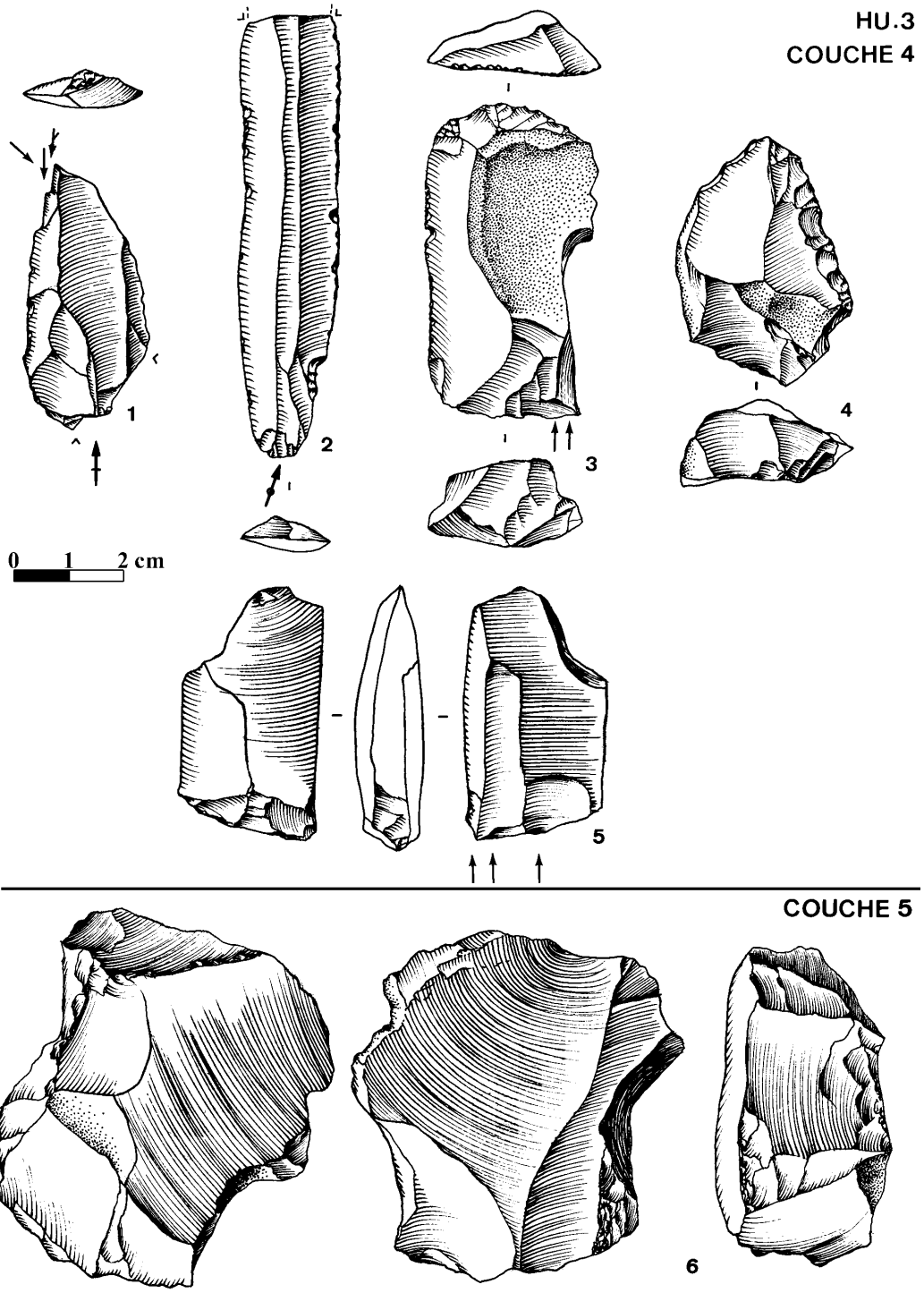

Figure 3. Main: 1. angle bruin on break; 2. flake; 3. endscraper-burin; 4. denticulate; 5. burin on oblique retouched truncation (all Stratum 4); 6. Levallois core (Mousterian, Stratum 5)

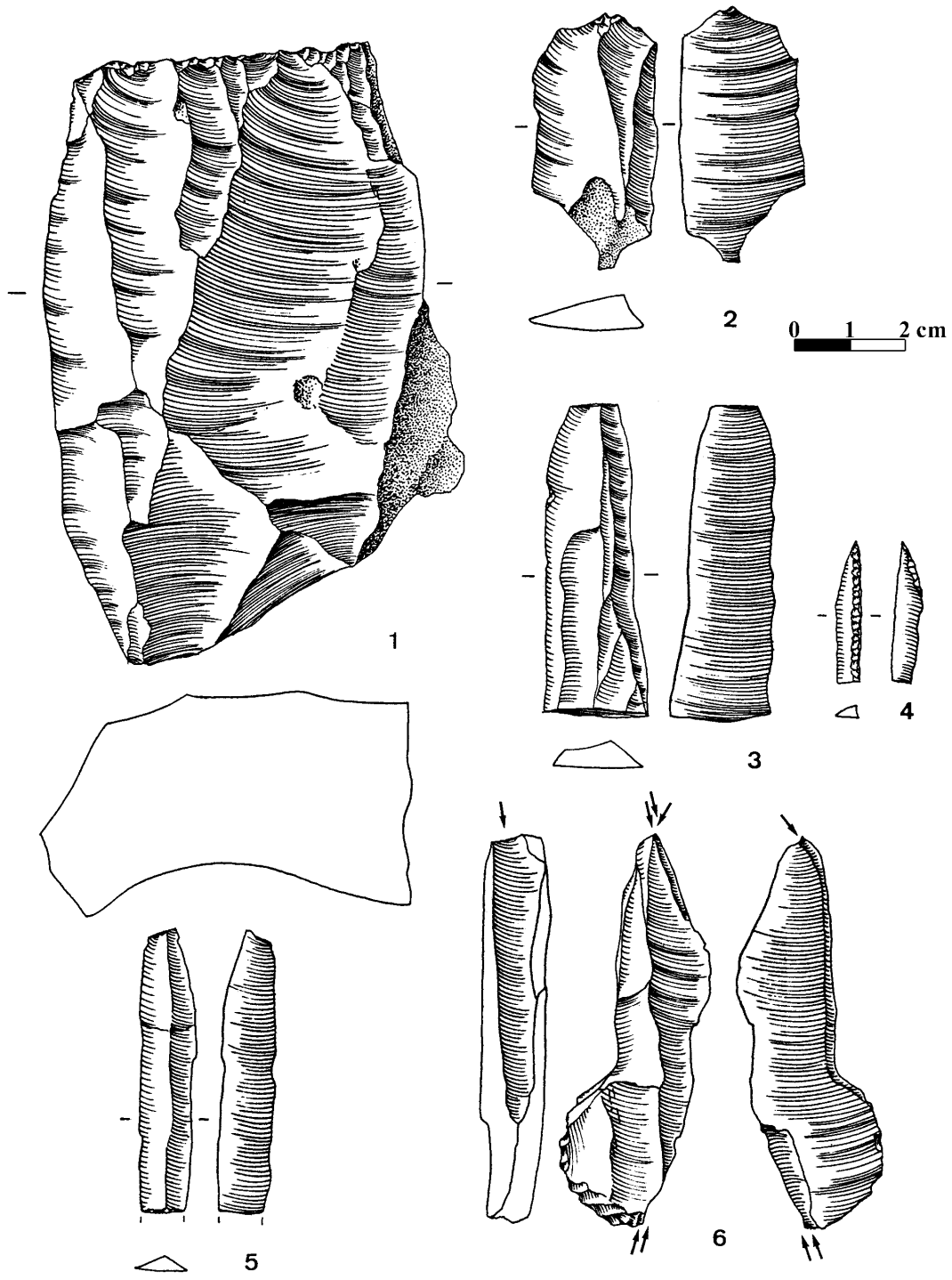

Figure 4. Main: 1. prismatic blade core; 2, 3 and 5. blades; 4. Gravette point fragment; 6. multiple dihedral burin (all Stratum 4).

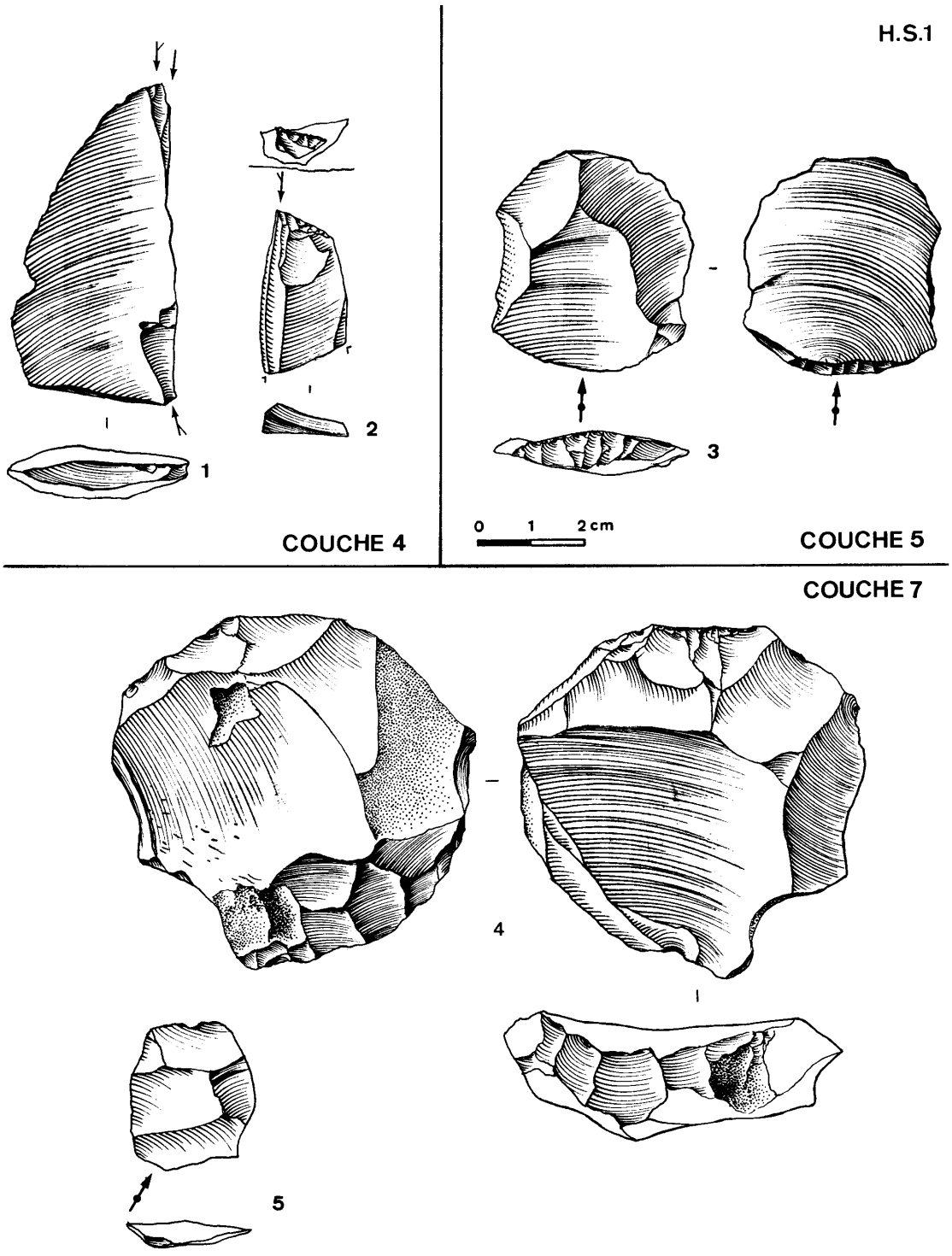

Figure 5. West: 1. multiple dihedral burin; 2. burin on oblique retouched truncation (both Stratum 4); 3. Levallois flake with facetted butt (Mousterian, Stratum 5, refits to core shown in Fig.6); 4. Levallois core; 5. Atypical Levallois flake (both Mousterian, Stratum 7).

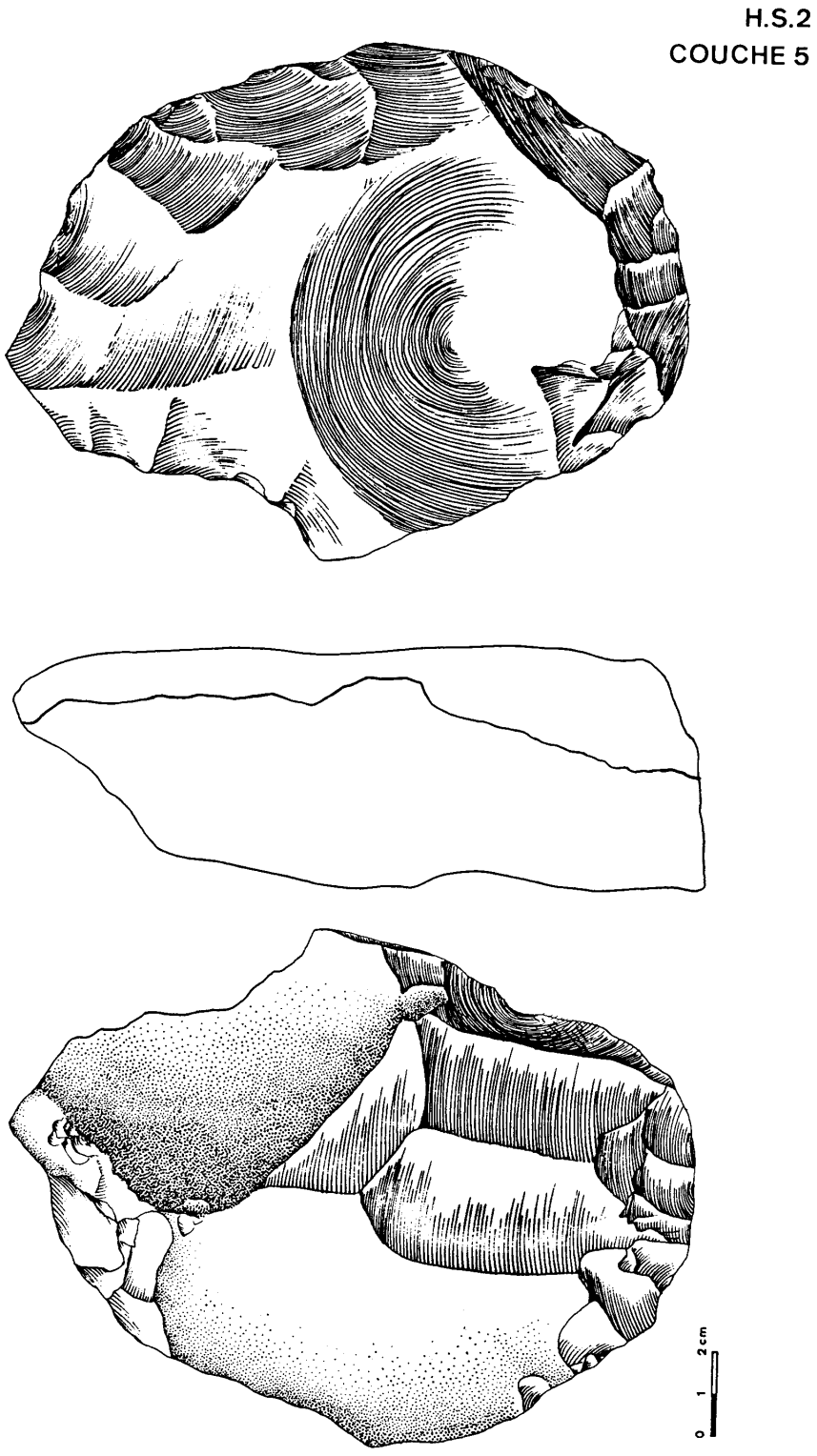

Figure 6. West: 1. Levallois core (Mousterian, Stratum 5).

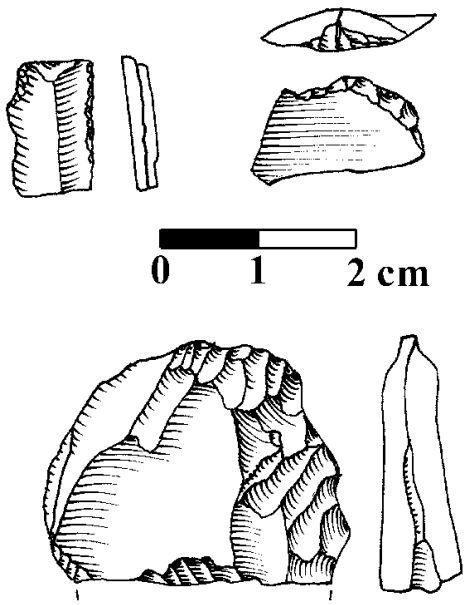

Figure 7. West: 1. Proximal blade fragment (Stratum 5); 2. Nibbled medial blade fragment; 3. Thin nosed endscraper (both Stratum 4).

Straus L.G., Otte M. et Haesaerts P. (éds.), *La Station de l'Hermitage à Huccorgne*. Liège, ERAUL 94, 2000.

CHAPTER 9

THE MOUSTERIAN ARTIFACT ASSEMBLAGES FROM THE 1991-1993 EXCAVATIONS

Lawrence Guy Straus

THE MOUSTERIAN OF THE MAIN HU ("DOCK") AREA EXCAVATION
(see tables and figures in Chapter 8)

Our excavations confirmed the presence of pre-Gravettian components at HH, as earlier found by Tihon, Destexhe, Haesaerts and Froment. In our step trench on the eastern face of the railroad cut (MM-OO/-21-23), at the interface between Strata C-E, we found an exhausted core, as well as a fire-cracked rock. In Stratum E we found a plain flake. In F (a bright orange clayey loess near the base of our trench) we found a plain flake and another fire-cracked rock. Haesaerts had found 3 flakes in his level E on the western face of the road cut; he considers the base of this layer to date to Moershoofd or Hengelo and to be equivalent to our E. He furthermore believes that this layer corresponds to the one in which Tihon had found a biface (Mousterian of Acheulean Tradition?).

Below Strata 4+4.1 in our main block excavation along the western side of the railroad cut, we dug two levels: Strata 5 and 6. The former produced 28 items of debris (see Tables and Figures in Chapter 7). There are no blades or bladelets. Nearly half the items (11) in stony Stratum 5 are microdébitage and 9 are chunks. Stratum 6 (dug in only a very small area) produced only 7 debris items; 1 is a blade fragment. Neither level had any retouched tool.

In our *sondage* near the eastern face of the road cut in the "Dock" lawn, stony Stratum 5 produced only 15 pieces of debris, all flakes or shatter (except for a blade fragment). There are no tools. Stratum 6 yielded 11 pieces of debris, including 2 chunks, 2 flakes, 3 items of micro-débitage and 4 blades. It also has a sidescraper.

MOUSTERIAN OF THE WESTERN HS ("SMETZ") AREA
(see tables and figures in Chapter 8)

The largest artifact assemblage in the 9 sq.m. J-L/53-55 HS ("Smetz") area pit is from stony Stratum 5: 138 debris. These include a Levallois core and a facetted Levallois flake which refits to it. (A plain flake also refits to this Levallois core; these refits are from different squares.) There is a second Levallois flake, plus 59 other flakes and 14 chunks. Microdébitage items total 38 items. As in the small, apparently Mousterian assemblages from the "Dock" site, Stratum 5 in the main "Smetz" pit yielded 15 blades (or fragments thereof) and in addition had 3 bladelets. There of course exists the possibility that the latter (and perhaps some of the other artifacts) could be intrusive from immediately overlying Stratum 4, since the interface has evidence of possible hydraulic disturbance (colluviation according to Haesaerts), as well as frost activity. Stratum 6 yielded 7 artifacts, including another Levallois core, 2 chunks. 3 flakes and a blade. Stratum 7 produced 30 artifacts, including a Levallois flake, a platform renewal flake, 8 other large flakes (one of which is a double-bulb Kombewa flake), 16 items of micro-débitage, and 4 chunks. Stratum 8 produced 10 items of debris (a flake core, a platform renewal flake, 2 flakes, and 6 items of microdébitage). There are 3 items of cortical shatter in Stratum 9. In Stratum 11 there are 13 items cortical shatter, 4 secondary decortication flakes, and a blade.

Most of the artifacts from these levels are made on grainy, patinated "Hesbaye" flint, distinct from the finer, unpatinated variety on which almost all the Gravettian artifacts are made.

Sondage JJ-KK/45-46 in the southeastern corner of the "Smetz" property also had a relatively abundant artifact assemblage in stony Stratum 5. There are 40 artifacts from a very limited area: 8 microdébitage, 22 flakes, 6 chunks, 2 blades and 2 bladelets (at least one of which may be intrusive from Stratum 4). There are no retouched tools.

SUMMARY

There may have been a significant hiatus between the Mousterian and Gravettian deposits throughout the HH site, caused perhaps by a (or a series of) major erosion episode(s). Whatever sediment had existed above the stony layer (Stratum 5) may have been removed under conditions of high humidity during the Last Interglacial or an (or several) interstadial(s). Later, soon after the upper loess of the very early Würm Pleniglacial began to be deposited, the site was again occupied by humans during Gravettian times. Neandertals probably repeatedly used HH mainly as a source of flint, given the relative abundance of cores, chunks and débitage--and scarcity of formal tools--in our various excavations. This is also suggested by the presence of relatively numerous Levallois cores and flakes.

Plate 1. Dense scatter of flint artifacts (mainly larger debris) at base of Stratum 4 in squares Q/25-26 in the *sondage* adjacent to the road cut in the main ("Dock") area.

Plate 2. Closeup of scatter of flint artifacts at base of Stratum 4 in Q/26d in the *sondag*e adjacent to road cut in the ("Dock") area.

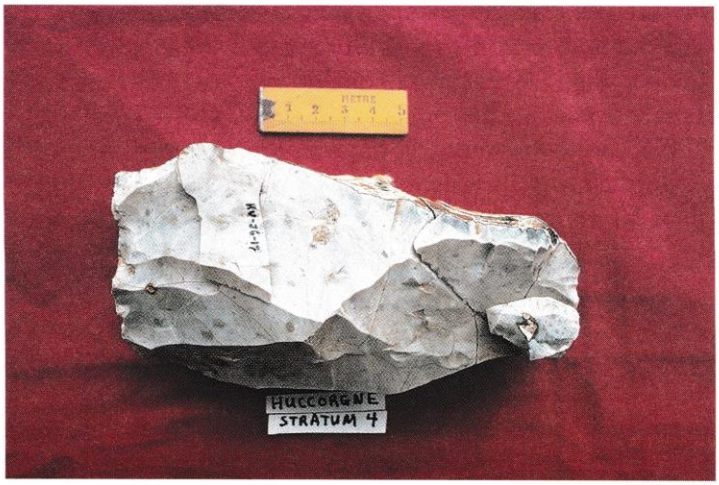

Plate 3. Refitted prismatic blade core from Stratum 4 of the excavation trench adjacent to the railroad cut in the main ("Dock") area.

Straus L.G., Otte M. et Haesaerts P. (éds.), *La Station de l'Hermitage à Huccorgne*. Liège, ERAUL 94, 2000.

CHAPTER 10

HUCCORGNE AND MAISIÈRES-CANAL: A COMPARISON OF THE RAW MATERIAL, TECHNOLOGY AND TYPOLOGY FROM TWO OPEN-AIR GRAVETTIAN SITES IN BELGIUM

Rebecca Miller

INTRODUCTION

The sites of Huccorgne and Maisières-Canal (de Heinzelin 1971, 1973; Haesaerts and de Heinzelin 1979) are the only two open-air Gravettian sites known to date in Belgium (Fig. 1), located on the eastern Hesbaye Plateau and in the western Hainaut Basin, respectively. Other Gravettian sites (Grottes de Goyet, Grotte de Spy, Le Trou Magrite, Fond de Forêt, Grotte Walou) are found in caves along the Meuse river basin and its tributaries (see Otte 1979 for discussion and complete bibliographies; Dewez 1981; Eloy and Otte 1995; Toussaint *et al.* 1998).

In addition to being open-air sites, both have several other features in common. They are located near sources of good quality Cretaceous flint: Hesbaye flint at Huccorgne and Obourg flint at Maisières-Canal. Both are strategically placed for subsistence procurement: Huccorgne on a promontory overlooking the Mehaigne River and Maisières-Canal near a ford of the ancient watercourse of the Haine River; both sites afforded access to a range of resources in the river valleys and on the nearby plateaux. From the archaeological data, both show evidence of hunting and butchery activity, as well as a high degree of lithic reduction activity, and both appear to have served as short-term, perhaps seasonal, camps. It is possible, even probable, that the sites contain accumulations resulting from multiple occupations to take advantage of both subsistence and lithic resources available in the Hainaut and Mehaigne valleys. Lithic refitting studies (see Martinez and Guilbaud 1993; Martinez, this volume) have shown that there were *at least* two separate occupations at Huccorgne, but these may have occurred over the short-term; the duration of time between them cannot be measured.

Detailed analyses of lithic assemblage structure, in terms of raw material, technology and typology, show further similarities which, it is suggested here, reflect the application of similar lithic economic strategies for the procurement of flint during the Gravettian in Belgium. Based on recent research on the structure of the raw material lithic economy during the Early Upper Paleolithic in Belgium (Miller 2000), Huccorgne and Maisières-Canal appear to represent a departure or development from Aurignacian procurement strategies. For the first time, open-air sites are found in proximity to sources of good-quality flint, reflecting a more substantial or sustained effort to procure good quality flint, such that occupation of such lithic procurement sites leaves a substantial material record, rather than being ephemeral.

BACKGROUND AND METHODOLOGY

The lithic analyses take into account three different aspects of the assemblage structure in order to address the organization of lithic raw material economy: 1) the kinds of raw materials used in relation to distances to sources exploited, 2) techniques of core reduction and

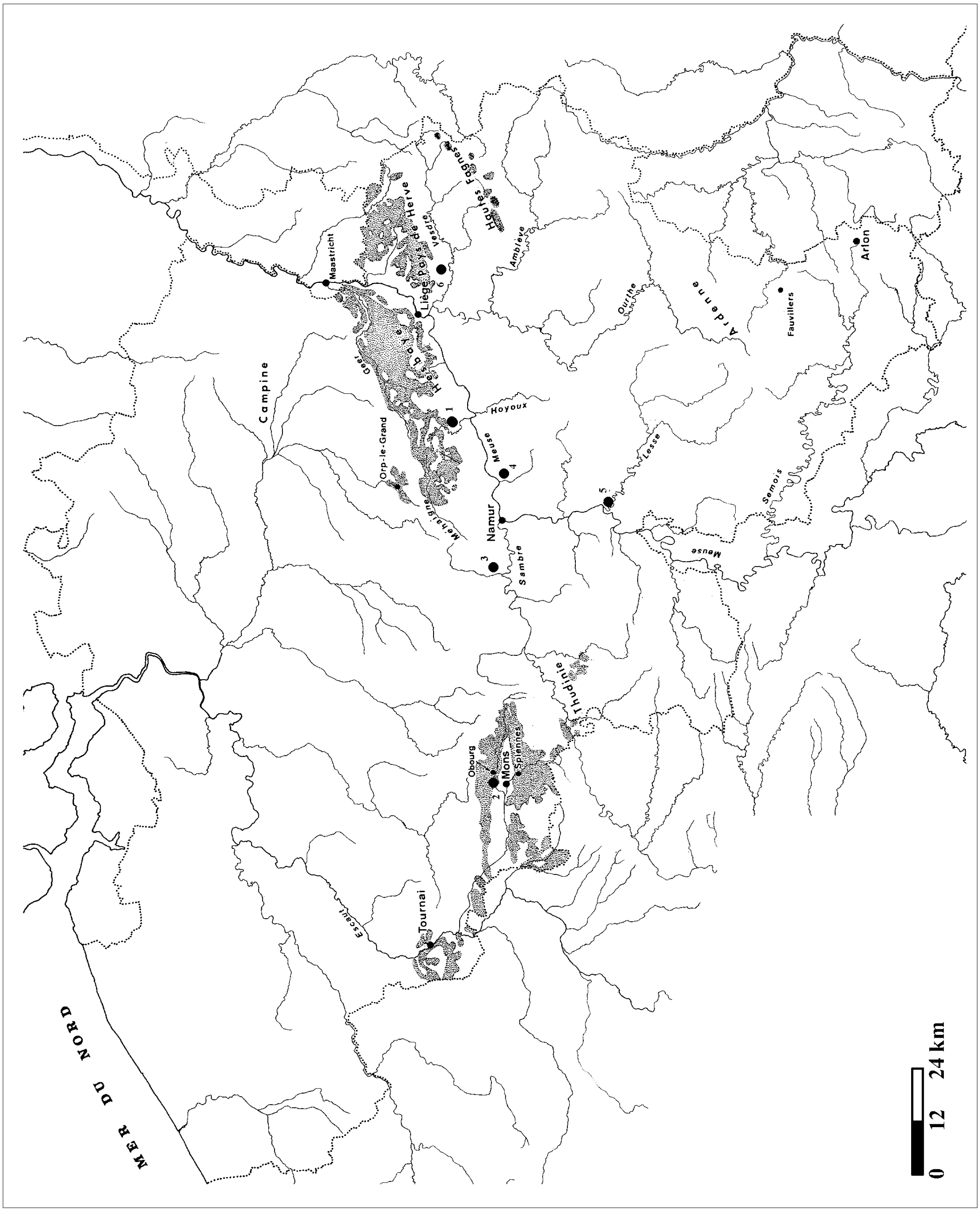

Figure 1. Sites mentioned in the text. 1: Huccorgne; 2: Maisières-Canal; 3: Spy; 4: Grottes de Goyet; 5: Trou Magrite; 6: Fond-de-Forêt.

tool production for each material type present, and 3) the kinds of retouched tools produced on the different materials. (For a more detailed discussion of the methodology, see Miller 2000).

Flint sources in Belgium are found in a broad, but interrupted, band across Middle Belgium, stretching from the Hainaut Basin in the west, across the Brabant and Hesbaye Plateaux to Dutch Limburg in the east, with more significant concentrations in the western and eastern zones. On the Hesbaye Plateau, flint can be found along river valleys, such as the Mehaigne. In both the Ardennes schist uplands region and the sand-covered Flanders lowlands, flint is absent.

Based on the distribution of flints and distances from archaeological sites to flint sources, three raw material zones can be defined:

Zone 1: flint sources found between 5 and 20 km from an archaeological site (western Hainaut basin and eastern Hesbaye Plateau)
Zone 2: flint sources found between 20 and 40 km (Brabant Plateau situated between the Hainaut basin to the west and the Hesbaye Plateau to the east; series of tributary valleys and plateau region fringing the Meuse river from Namur to Liège)
Zone 3: flint sources greater than 40 km (Ardennes region of Upper Belgium to approximately the Meuse-Lesse confluence)

Both Huccorgne and Maisières-Canal are found in Zone 1. The raw material context in Zone 1 is ideal: minimal transport costs in terms of time and energy, flint abundant and of good quality. Under such conditions, there are no constraints on the lithic economy such as to maximize the productivity of the reduction process. Cores need not be reduced to exhaustion (since it would not be necessary to use small blanks), only the most suitable raw blocks need be selected for reduction, and only the most suitable blanks need to be selected for tool retouch.

Raw material types in archaeological context were identified by means of macroscopic characteristics (grain size, color, texture, amounts and kinds of inclusions, cortex, etc.). These types were then compared with samples from lithic reference collections at Katholieke Universiteit (Leuven) and Bonnefanten Museum (Maastricht) to tentatively identify geological sources. This permitted estimation of distances from sites to different sources.

A series of variables was measured on each artifact to address the form in which raw material arrived at the site (i.e., as raw nodules, prepared cores, blanks, or tools), the procurement context in which the material was obtained (primary or secondary geological context), the stages of reduction present, the degree of reduction activity, the reduction techniques employed, the kinds of blanks selected for tool retouch, etc. Tools were identified according to the classic de Sonneville-Bordes and Perrot typology. Statistical analyses of these data were then done to interpret the technological and typological structure for each raw material type present.

DESCRIPTION OF THE SITES

Huccorgne

A description of Huccorgne and history of excavations are presented elsewhere in this volume (see Straus, Otte and Haesaerts chapters) and are omitted here. Two collections were

available for study from different areas of the site, resulting from the 1991-93 Straus/Otte excavations and the 1976/1980 Haesaerts/Froment excavations (Fig. 2), giving a total sample of 8295 artifacts. Data from the Haesaerts excavations was collected by L.G. Straus and kindly made available to me for analysis. Unfortunately, the more extensive 1969/70 Destexhe collection was not available for similar raw material, technological and typological analyses. In the tables below, "Straus/Otte" refers to the material obtained in Stratum 4 of various areas in the Huccorgne-Dock excavation zone (and excludes material from the two Huccorgne-Smetz sondages on the other side of the road). The Haesaerts excavations covered a total of around 55 m², in two long trenches along the road cut and a third along the railroad cut.

Primary sources of good quality flint were available locally in the Mehaigne Valley, from Cretaceous limestone deposits exposed by the Mehaigne River. Today these sources are no longer observable, buried beneath substantial loess deposits. However, worn nodules, heavily patinated and naturally broken, can be found in fields on the plateau and in gardens in the valley, evidencing the effects of erosion of flint from the local Cretaceous limestone with redeposition within the loess.

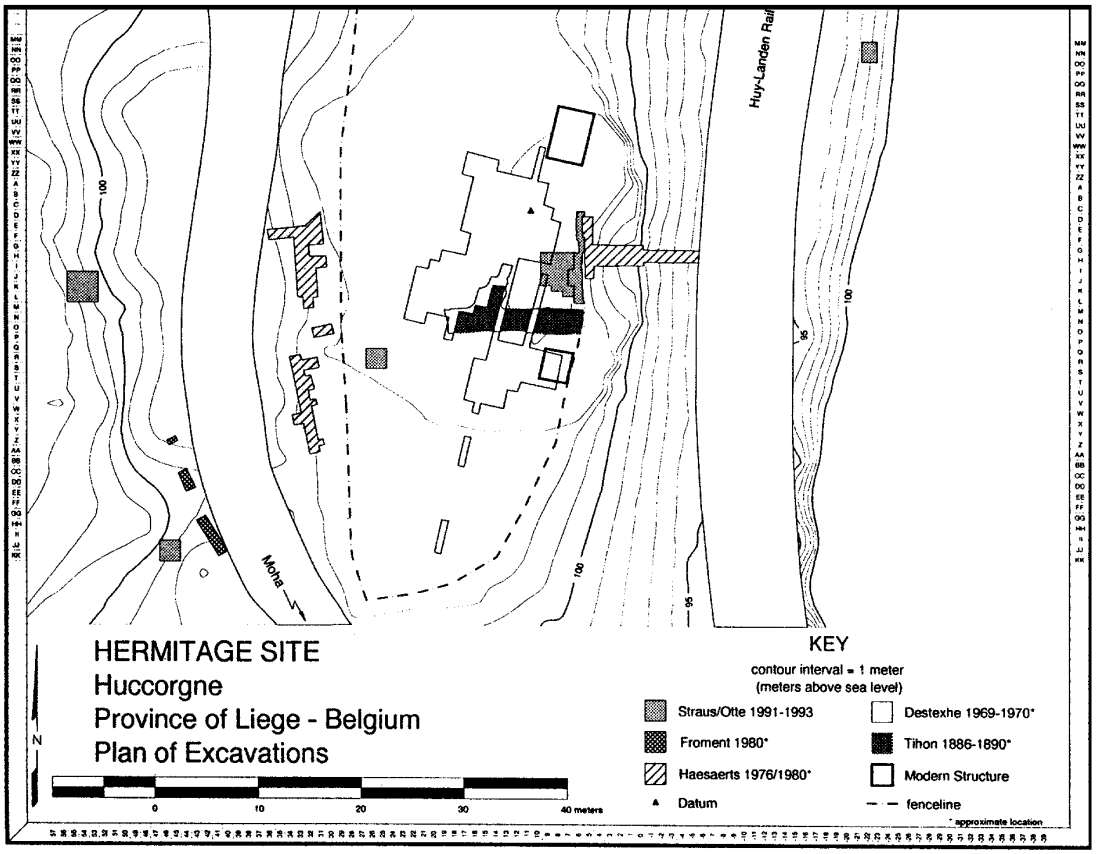

Figure 2. Huccorgne. Plan of excavations.
(after Straus *et al.* 1997:172, Fig. 4, drafted by A.E. Martinez)

Maisières-Canal

Maisières-Canal was first discovered by G. Bois d'Enghien in the 1940s and subsequently excavated by J. de Heinzelin and P. Haesaerts (Institut Royal des Sciences Naturelles de Belgique) in the 1960s when the Canal du Centre underwent modernization. The site consists of two areas separated by approximately 100 meters (Fig. 3). The occupation probably extended over the silty promontory toward the north slope of the Haine Valley but much of this area was destroyed during the canalwork.

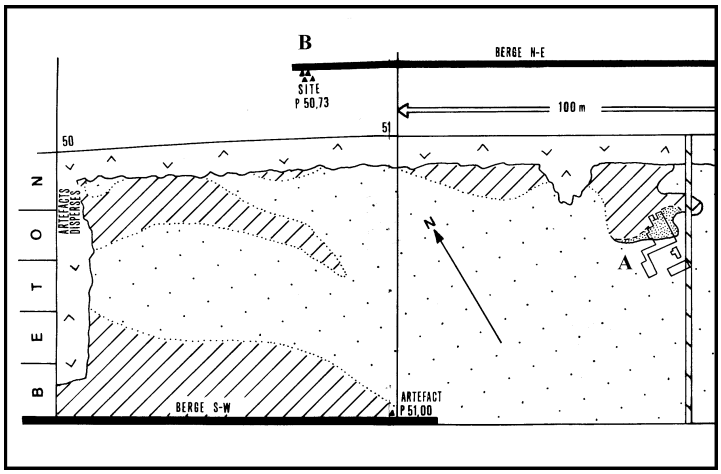

Figure 3. Maisières-Canal. Location of excavation zones. A: Champ de Fouilles. B: Atelier de Taille de la Berge Nord-Est. (after Haesaerts and de Heinzelin 1979: Planche I).

The main area – the Champ de Fouilles – covered an area of 95 m² and is now inaccessible beneath the canal. The occupation horizon (sedimentary units M.G.-M.J.) yielded an abundant *in situ* lithic assemblage of approximately 34,000 artifacts (de Heinzelin 1973:26), as well as well-preserved fauna and objects made of bone, ivory and antler. The majority of the material came from unit M.H., with associated material from units below (M.G.) and above (M.I., M.J.). Above the occupation layer, units M.M.-M.P. were disturbed but also contained some archaeological material. A smaller concentration (630 lithic artifacts) – the Atelier de Taille de la Berge Nord-Est – was found in unit N.D.C., during geological analysis of a more than 300-meter profile parallel to the northeast bank of the canal. Based on pollen analysis and stratigraphic evidence (Haesaerts 1978; Haesaerts and de Heinzelin 1979), the two areas are contemporaneous.

Given the large size of the assemblage, only a sample of the collection was analyzed. Only artifacts found in rows G through K, 6 through 16, of the Champ de Fouilles zone (Fig. 4), and the entire Atelier de Taille assemblage, were analyzed. This yielded a sample size of 6,662 stone artifacts, or 20% of the entire assemblage.

Abundant, very good quality flint is found locally at Maisières-Canal: Obourg flint within 1 km and Spiennes flint within 7 km in Cretaceous formations. In fact, as P. Haesaerts recently mentioned (pers. comm.), a chalk flow containing Obourg flint, eroding from the cliffs to the north, was observable in the profile just a few meters from the Atelier de Taille concentration, and thus the site was literally on top of easily accessible, excellent quality flint.

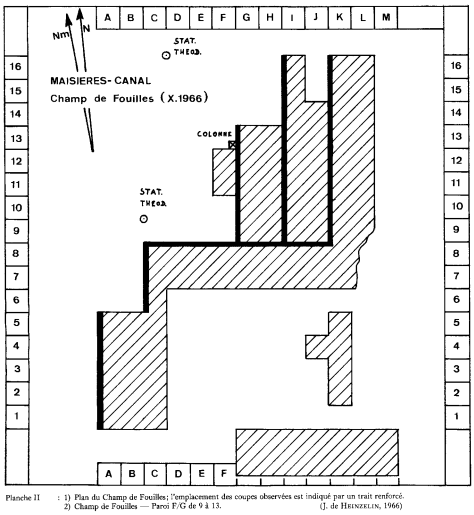

Figure 4. Maisières-Canal, Champ de Fouilles. Plan of excavations.
(after Haesaerts and de Heinzelin 1979, Planche II)

DATES

Table 1 summarizes climatic phases identified by Haesaerts and de Heinzelin at Maisières-Canal (Haesaerts and de Heinzelin 1979) in conjunction with the series of dates obtained at Huccorgne and Maisières-Canal. Rigorous phases (IVa-b, d, f, h-p) are characterized by tundra and/or steppe vegetation with the presence of an active pergelisol. Cold phases are also characterized by tundra and/or steppe, with rare stands of trees and shrubs, but an active pergelisol is absent. Medium cold phases are characterized by tundra or wooded steppe (Haesaerts and de Heinzelin 1979:12) and are the more temperate, humid Denekamp (Arcy); Maisières and Tursac oscillations.

At Maisières-Canal, two dates from the archaeological unit (M.G.-M.H.) and one from the underlying unit M.D. cluster around 30,000 years BP. However, only the Gröningen date of the unit underlying the archaeological level should be considered reliable (Haesaerts, pers. comm.). A younger date (27965±260 BP) was also obtained and was recently supported by new (unpublished) AMS and conventional C-14 dates from Gröningen on mammoth and reindeer bones from the same unit (Haesaerts, pers. comm.). They support an occupation (or occupations) during the relatively warmer Maisières oscillation.

At Huccorgne, two separate, and younger, occupations appear to be attested by a series of three dates clustering around 26-28,000 years BP and a pair of dates at 23-24,000 years BP. Both clusters occur within warmer oscillations – Maisières and Tursac, respectively. The first cluster suggests possible pene-contemporaneity with Maisières-Canal, corresponding to the GrN-5523 date, although stratigraphic data suggest more strongly that the Huccorgne occupation(s) were more recent, around 26,000 years ago in comparison to 28,000 years ago for Maisières (see Haesaerts, this volume).

Other dates obtained have been rejected due to contamination (Huccorgne: 284±52 BP, GX-17016 [Noiret *et al.* 1994:51], 16900±230, CAMS-10365), disturbance of the sediment and the presence of limestone (Maisières-Canal: 35970 +3140/-2250 BP, Lv.305/1, and 24100

Climatic phase		Huccorgne				Maisières-Canal			
		Stratum	Date (BP)	Lab No.	Material	Stratum	Date (BP)	Lab No.	Material
IVh-IVp	rigorous								
IVg	cold-medium cold - Tursac oscillation	4	23160±160	GrN-9234	bone collagen				
		4	24170±250	CAMS-5893	mammoth bone collagen*				
		4	26300±460	OxA-3886	mammoth bone collagen				
	beginning of Tursac oscillation	4	26670±350	CAMS-5895	mammoth bone collagen				
IVf	rigorous								
IVe	medium cold – Maisières-oscillation	4	28390±430	CAMS-5891	mammoth bone gelatin*	Unit M.G.	27965±260	GrN-5523	sediment
IVd	rigorous								
IVc	medium cold – Denekamp (Arcy) oscillation					Unit M.G.-M.H.	31080 +2040/-1620	Lv.304/1†	sediment
						Unit M.G.-M.H.	30150 +1890/-1540	Lv.304/2†	sediment
						Unit M.D.	30780±400	GrN-5690	sediment
IVa-b	rigorous								

Table 1. Comparison of radiometric dates at Huccorgne and Maisières-Canal (references cited in text). * same bone sample † same sediment sample.

+650/-650 BP, Lv.305/2, both from the same sample, and 25280 +1040/-920 BP, Lv.353) (see Gilot 1971, 1984:120; Otte 1976:335, footnote 3).

Interestingly, all of the dates obtained at these open-air sites are found during the warmer oscillations (Table 1). The existence of such sites appear to reflect shifts in land-use in response to climate change, with expansion to the unprotected plateau areas during warmer periods and retraction to occupation in the better protected caves along the Meuse river basin and its tributaries.

RAW MATERIAL STRUCTURE

The following tables summarize the raw material structure and ranking for the assemblages studied.

HUCCORGNE	**Straus/Otte**				**Haesaerts**			
	Count		**Weight**		**Count**		**Weight**	
Type	**n**	**%**	**wt in g**	**%**	**n**	**%**	**wt in g**	**%**
3 - Hesbaye flint	2342	92.2	4459	90.4	5750	99.9	10041	99.6
4 – phtanite	3	0.1	3	0.06				
7 - black flint	49	1.9	47	1.0				
10 – chert	13	0.5	21	0.43				
11 – quartzite	3	0.1	6	0.12	2	0.04	13	0.1
12 - Brussels sandstone	67	2.6	51	1.0	3	0.05	24	0.3
13 – limestone	37	1.5	268	5.4				
100-ochre/other	26	1.0	76	1.5				
Total	**2540**	**100%**	**4931 g (n=1266)**	**99.89**	**5755**	**100.0**	**10077 (n=2172)**	**100.0**

Table 2. Frequencies of raw material types by count and weight (Huccorgne). Note: The category ochre/other was excluded from analysis but was used to calculate the percentage of the entire assemblage for the other raw material types.

MAISIERES-CANAL	**Champ de Fouilles**				**Atelier de Taille**			
	Count		**Weight**		**Count**		**Weight**	
Type	**n**	**%**	**wt in g**	**%**	**n**	**%**	**n**	**%**
1 - Obourg	6113	91.8	57230	79	630	100	4923	100
2 - Spiennes	373	5.6	10723	14.8				
4 - phtanite	9	0.1	104	0.1				
8 - gray flints	104	1.6	849	1.2				
9 - brown flints	11	0.2	28	0.04				
10 - cherts	2	0.0	3	0.004				
17 - olive-green flint	50	0.8	3483	4.8				
Total	**6662**	**100.0**	**72420 (n=2251)**	**100.0**	**630**	**100.0**	**4923**	**100.0**

Table 3. Frequencies of raw material types by count and weight (Maisières-Canal).

Huccorgne				
Rank	**No(s).**	**Type(s)**	**Count %**	**Weight %**
1	3	Hesbaye flint	>90	>90
2	12, 7, 13	Brussels sandstone, black flint, limestone	1-3	1-5
3	10, 11, 4	chert, quartzite, phtanite	< 1	< 1
Maisières-Canal				
Rank	**No(s).**	**Type(s)**	**Count %**	**Weight %**
1	1	Obourg flint	>90	>75
2	2, 8, 17	Spiennes, gray, olive-green flint	1-6	1-15
3	9, 4, 10	brown flint, phtanite, chert	< 1	< 1

Table 4. Collapsed ranking of material types (Maisières-Canal).

The raw materials at both sites can be ranked, by count and weight, in three tiers which are nearly identical in their percentage distribution (Table 4). The local flints – Hesbaye flint at Huccorgne and Obourg flint at Maisières-Canal – are overwhelmingly dominant (greater than 90% of the assemblage). Rank 2 consists of non-local materials is small percentages (1-6%), while Rank 3 consists of only very rare artifacts.

From the structure of the ranking, it can be assumed that only very small active toolkits and curated tools (Ranks 2 and 3) were transported to each site. However, at other sites where flint is not available locally (e.g., Aurignacian levels at Spy, Grottes de Goyet, Trou Magrite [Miller 2000]), Rank 2 materials account for larger percentages of the assemblages (10-30%). It is likely that since the presence of local material at Huccorgne and Maisières-Canal was known, one of the main functions of the sites was to procure lithic raw material, and therefore, it was not necessary to import significant quantities of artifacts for use at these sites.

TECHNOLOGICAL STRUCTURE

General assemblage structure

Technological analyses of the assemblages reveal the use of different strategies according to raw material type (Table 5). Rank 1 material - at both sites local, good quality flint – was transported to the site as partially prepared cores or cortical nodules and all stages of reduction are present. Rank 2 material was transported as nearly exhausted cores and blanks. Rank 3 material was transported as curated blanks and tools.

While the ranking and general assemblage structure is similar for both Huccorgne and Maisières-Canal, there are some important differences in technological structure that suggest differences in intensity of activity (or duration of site occupation) at the two sites. At Huccorgne, cores are much rarer than at Maisières-Canal (13 versus 143), although there are many more chunks (429 versus 19), which appear to be core fragments. This suggests that cores were more intensely used at Huccorgne, resulting in the discard of not readily identifiable core fragments, while cores at Maisières were discarded while still clearly recognizable as cores. The ratio (cores + chunks) / (tools + blanks) for Huccorgne and Maisières-Canal respectively is 0.115 and 0.044, using counts from Table 5.

Two points can be made from the comparison of core and chunk frequencies. First, a much greater degree of reduction activity occurred at Maisières-Canal than at Huccorgne. Second, the greater number of chunks at Huccorgne may reflect a greater intensity of reduction of the cores reduced. This can perhaps be explained by the difference in availability or quantity of the local flint. At Maisières-Canal, the material was found in primary context or on erosion slopes in near primary context. With material readily available, a greater number of cores could be reduced and abandoned before exhaustion. At Huccorgne, local flint may have been less accessible, and the material procured would have been much more intensely reduced, resulting in the discard of exhausted cores and core fragments.

The number of tools present also suggests that the occupation(s) at Maisières-Canal was more substantial or longer-term than those at Huccorgne. Huccorgne contains 176 tools versus 1556 in the entire Champ de Fouilles assemblage (de Heinzelin 1973:23, Table VI). It should be noted, however, that the data for Huccorgne comes from peripheral zones of the site excavated by Straus, Otte and Haesaerts. The lack of assemblage data from the Destexhe excavations in the central zone of Huccorgne, apart from the fact that the assemblage totals around 4000 artifacts, limits interpretation of Huccorgne as a whole.

HUCCORGNE						
Rank 1 material						
Material type	**Cores**	**Chunks**	**Tools**	**Unretouched removals**	**Reduction debris**	**Total**
3-Hesbaye flint (Straus/Otte)	4	198	32	1154	953	**2341**
3-Hesbaye flint (Haesaerts)	8	219	142	2428	2953	**5750**
Rank 2 material						
12-sandstone (Straus/Otte)		4		36	27	**67**
7-black flint	1			17	31	**49**
13-limestone		4		29	4	**37**
Rank 3 material						
10-chert		3	1	6	3	**13**
11-quartzite (Straus/Otte)				1	2	**3**
11-quartzite (Haesaerts)				2		**2**
4-phtanite		1		2		**3**
12-sandstone (Haesaerts)			1	2		**3**
Total	**13**	**429**	**176**	**3677**	**3973**	**8268**

Table 5a. Huccorgne: general assemblage structure.

MAISIERES-CANAL						
Rank 1 material						
Material type	**Cores**	**Chunks**	**Tools**	**Unretouched removals**	**Reduction debris**	**Total**
1-Obourg flint (CDF)	102	7	444	2357	3203	**6113**
1-Obourg flint (ATD)	6	9	13	495	107	**630**
Rank 2 material						
2-Spiennes flint	22	2	7	238	104	**373**
8-gray flint	1	1		67	35	**104**
17-olive-green flint	12		2	27	9	**50**
Rank 3 material						
9-brown flint			1	6	4	**11**
4-phtanite			6	1		**7**
10-chert					2	**2**
Total	**143**	**19**	**473**	**3191**	**3464**	**7290**

Table 5b. Maisières-Canal, general assemblage structure.

Blank production by material type

The set of tools and unretouched knapping removals includes all reduction products which could have potentially been retouched into tools, i.e., the *blank pool*. Table 6 shows the kinds of blanks (flakes, blades and bladelets; reduction debris excluded) produced for each material type, for Ranks 1 and 2, for the assemblages at Huccorgne. Many of these products, however, may have been unsuitable for tools, in terms of shape and size, or were produced during core preparation stages, and were not selected for tool retouch (Table 7).

In the Haesaerts collection, flakes and blades exist in similar quantities (n=1120 versus 1007), with significant bladelet production as well (n=432). 60 crested blades and 47 platform renewal flakes are present in the Haesaerts collection, indicating core preparation and renewal during secondary reduction. In contrast, only one crested blade and one platform renewal flake were found in the Straus and Otte excavations. This may be a result of the relative sizes of the areas excavated or intra-site activity differences. The Straus and Otte collection also shows the dominance of flakes produced on all material types.

Material	**blank pool**	**flakes**		**blades**		**bladelets**	
		n	**%***	**n**	**%**	**n**	**%**
Straus and Otte							
3 – Hesbaye flint	1184	821	69.3	256	21.6	107	9.0
12 – Brussels sandstone	36	18	50.0	10	28.0	8	22.0
7 – black flint	17	9	52.9	6	35.3	2	11.8
13 – limestone	29	19	65.5	8	27.6	2	6.9
10 – chert	7	4	57	3	43	0	0
Haesaerts							
3 – Hesbaye flint	2559	1120	44	1007	39	432	17

Table 6. Blank production by material type (Huccorgne). *Percent of blank pool.

Material	n tools	flakes	blades	bladelets	chunks	PRF*	debris
Straus and Otte							
3 – Hesbaye flint	32	6	22	2			1
12 - Brussels sandstone	0						
7 – black flint	0						
13 – limestone	0						
10 – chert	1		1				
11 – quartzite	0						
4 – phtanite	0						
Haesaerts							
3 - Hesbaye flint	142	41	74	16	7	3	1
12 – sandstone	1	1					

Table 7. Blank selection for tool production by material type (Huccorgne). *Platform renewal flake.

At Maisières-Canal (Champ de Fouilles), a similar pattern of flake-dominant production is observed (Table 8), with the majority of tools made on blades (Table 9). Blades are fairly common for Obourg and Spiennes flint, but only Obourg flint was used to produce a series of bladelets.

Material	blank pool	flakes		blades		crested blade		bladelets	
		n	%*	n	%	n	%	n	%
1 – Obourg flint	2791	2063	74	635	23	56	2	37	1
2 – Spiennes flint	245	167	68	73	30	5	2	0	0
8 – gray flint	67	65	97	2	3	0	0	0	0
17 – olive-green flint	29	11	38	13	45	5	17	0	0

Table 8. Blank production by material type (Maisières-Canal, Champ de Fouilles).
*Percent of blank pool.

Material	Total n tools	Tools on flakes	Tools on blades	Tools on crested blades	Tools on bladelets	Tools on cores/ chunks	Tools on debris
1 – Obourg flint	444	141	283	8	3	3	5
2 – Spiennes flint	7	4	3				
8 – gray flint	0						
17 - olive-green flint	2	2					

Table 9. Blank selection for tool production by material type (Maisières-Canal, Champ de Fouilles).

Briefly then, at both sites, the assemblages are flake-dominated, but tools were preferentially made on blades. The majority of flakes, although considered *potential* blanks, are probably just reduction by-products. The relative lack of blades in the assemblages may also be related to the possible export of blades to other sites (such as the caves of the Ardennes). At both sites as well, nearly all tools were produced on local flint (Hesbaye or Obourg).

Tool size

A comparison of tool sizes between Huccorgne and Maisières-Canal reveals an importance similarity between the two sites (Table 10). While tools at Maisières-Canal are larger than unretouched blanks in all dimensions (length, width, thickness), and tools at Huccorgne are similar in size to blanks, tools at both sites are of similar dimensions (average length ~64 mm, width 25-28 mm, thickness 9-11 mm). This suggests that a minimum size threshold was in effect, that blanks falling below this threshold were rejected as being too small. Considering that both sites are at sources of good quality flint, where it would be expected that there are no constraints on the lithic economy, and that there is no pressure to maximize the number of blanks produced per core, this size minimum can be considered as the preferred size for tool production during the Gravettian. At other sites, more distant from flint sources, this size minimum would be expected to be lower, as intensity of core reduction and tool production increases to maximize the number of blanks produced per core.

In other words, when the raw material context is ideal, as at Huccorgne and Maisières-Canal, only the larger blanks are selected for tool retouch and smaller blanks are rejected. When it is not ideal, when there are constraints on the lithic economy, smaller blanks become more important and are selected for retouch.

a) Huccorgne, Hesbaye flint, Straus/Otte collection.

Variable	Number of Cases	Mean	SD	SE of Mean
LENGTH Length			**p=.098**	
Blanks (unretouch	18	49.7778	20.724	4.885
Tools (retouched)	7	64.5714	14.397	5.442
WIDTH Width			**p=.061**	
Blanks (unretouch	18	22.6667	6.903	1.627
Tools (retouched)	7	28.8571	7.426	2.807
THICK Thickness			**p=.173**	
Blanks (unretouch	18	7.4444	3.899	.919
Tools (retouched)	7	11.4286	6.579	2.487

b) Maisières-Canal, Obourg flint, Champ de Fouilles.

Variable	Number of Cases	Mean	SD	SE of Mean
LENGTH Length (mm)			**p=.000**	
Blanks (unretouch	326	55.2331	21.093	1.168
Tools (retouched)	283	63.6254	25.183	1.497
WIDTH Width (mm)			**p=.000**	
Blanks (unretouch	326	18.5307	9.681	.536
Tools (retouched)	283	25.4523	9.722	.578
THICK Thickness (mm)			**p=.000**	
Blanks (unretouch	326	6.6933	4.275	.237
Tools (retouched)	282	9.0674	4.456	.265

Table 10. Size comparisons of whole blade and whole blade tools.

TYPOLOGICAL STRUCTURE

The differences in frequency of tools present in the different assemblages prevents statistical comparison, but some general comments can be made about differences in typological structure of the assemblages. Such differences may be related to the presence of activity areas in different zones of Huccorgne (excavated separately by Straus/Otte and Haesaerts), differences in duration of occupation at Huccorgne and Maisières-Canal and therefore the quantity and range of tools discarded onsite, or to changes occurring during the Gravettian.

Table 11 (following the bibliography) summarizes the classification for the toolkits for each assemblages. This data is summarized in Table 12, which groups tool types into general classes and is represented graphically in Figure 5. The various zones excavated by Straus/Otte and Haesaerts at Huccorgne show some important similarities and differences. Burins are the most common tool class in both zones, and account for about 25% of each toolkit. However, bladelet tools and backed blades, both absent in the zones excavated by Straus and Otte, account, respectively, for 14.0 and 18.9% of the toolkit in the zones excavated by Haesaerts. Continuously retouched pieces are more common in the Straus/Otte toolkit (28.1 vs. 16.1%). These differences suggest the possibility of the presence of different activity areas. Other tool classes are rare or absent in both zones.

When Huccorgne is compared with the Champ de Fouilles toolkit at Maisières-Canal, it is obvious that there is a significantly greater quantity of tools at Maisières-Canal, eight times as many as at Huccorgne. This clearly suggests greater intensity of occupation, resulting either from a longer occupation than at Huccorgne or from the accumulation from multiple occupations. Burins remain the most common tool class (24.1%, similar to the percentage at Huccorgne). The presence of 143 Font-Robert points at Maisières-Canal makes this site exceptional in northwest Europe. None were found in the Straus/Otte or Haesaerts excavations at Huccorgne, but several were found during the 1970 Destexhe excavations as well as in the 1880s Tihon excavations. In contrast to Huccorgne, bladelets, backed blades and continuously retouched pieces are rare at Maisières-Canal. Perhaps some of these were alternate weapon tips, functionally replacing the Font-Robert points.

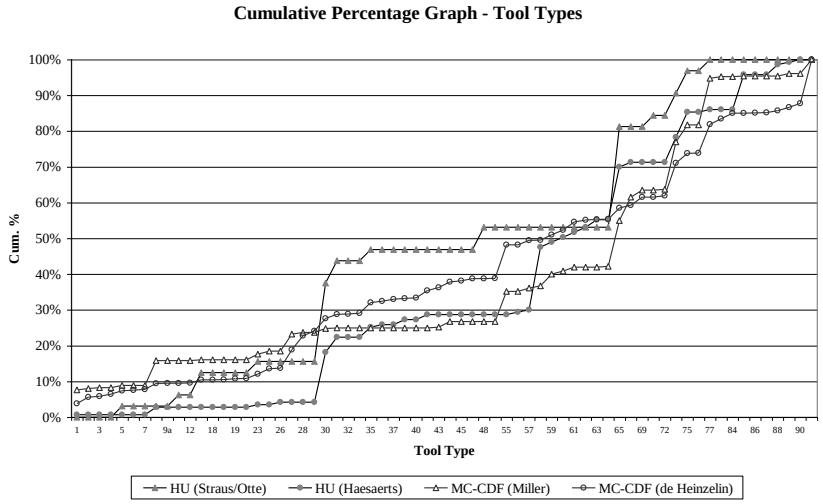

Figure 5. Cumulative percentage graph comparing the toolkits from the different collections. Huccorgne: HU Straus/Otte, HU Haesaerts. Maisières-Canal: MC-CDF (Miller 2000), MC-CDF (de Heinzelin 1973).

Grouped tool classes	HU (Straus/Otte)		HU (Haesaerts classified by Straus)		MC-CDF (de Heinzelin classified by Miller)		MC-CDF (de Heinzelin)	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Endscrapers (1-18)	4	12,5%	4	2,8%	74	16,1%	159	10,4%
Composite on truncation	0	0,0%	0	0,0%	0	0,0%	4	0,3%
Perçoirs/becs	1	3,1%	2	1,4%	11	2,4%	45	3,0%
Burins	10	31,3%	35	24,5%	38	8,3%	368	24,1%
Knives and backed points	2	6,3%	0	0,0%	0	0,0%	16	1,0%
Font Robert points	0	0,0%	0	0,0%	39	8,5%	143	9,4%
Shouldered points and pieces	0	0,0%	2	1,4%	5	1,1%	25	1,6%
Backed blades	0	0,0%	27	18,9%	18	3,9%	24	1,6%
Truncated pieces	0	0,0%	9	6,3%	10	2,2%	66	4,3%
Continuous retouch	9	28,1%	23	16,1%	89	19,3%	60	3,9%
Solutrean points	1	3,1%	0	0,0%	9	2,0%	34	2,2%
Notches/denticulates	4	12,5%	20	14,0%	83	18,0%	181	11,9%
Splintered pieces	0	0,0%	0	0,0%	0	0,0%	1	0,1%
Sidescrapers/raclettes	1	3,1%	1	0,7%	62	13,5%	147	9,6%
Bladelets	0	0,0%	20	14,0%	4	0,9%	65	4,3%
Diverse	0	0,0%	0	0,0%	18	3,9%	187	12,3%
Total	**32**	**100,0%**	**143**	**100,0%**	**460**	**100,0%**	**1525**	**100,0%**

Table 12. Comparison of toolkits by grouped tool class.

CONCLUSIONS

In sum, the following comments can be made concerning Gravettian lithic raw material procurement and the nature of open-air sites such as Huccorgne and Maisières-Canal.

Early Upper Paleolithic open-air sites are rare - absent during the Aurignacian in Belgium, apart from surface finds near Braine-le-Comte some 20 km from Maisières-Canal (Fourny and Van Assche 1992), - and only Huccorgne and Maisières-Canal are known for the Gravettian. Both sites are found near local, good quality, source of flint and both evidence a high degree of reduction activity. The occupations at Huccorgne and Maisières-Canal occur only during relatively warmer oscillations of the Early Upper Paleolithic, at 30,000 years, 26-28,000 years, and 23-24,000 years BP.

This suggests, first, that climate played a role in restricting occupation to caves in the protected river valleys of the Ardenne region, with perhaps ephemeral, short-term camps to obtain flint. Estimation of distances from Maisières-Canal and Huccorgne to the known Gravettian-age cave site are summarized in Table 13. Second, phases of ameliorating climate

permitted longer-term occupation of open-air sites, at least for flint procurement, as evidenced by Huccorgne and Maisières-Canal, but possibly also for subsistence procurement. During the Gravettian then, during such oscillations, longer-term occupation led to the accumulation of material, making such sites visible today in the archaeological record. During rigorous phases, lithic procurement strategies reverted to those practiced during the Aurignacian, with short-term occupations that left no permanent trace for us to observe. Alternatively, Belgium was abandoned during such periods.

	Huccorgne	**Maisières-Canal**
Grotte de Spy	40 km	50 km
Grottes de Goyet	20	75
Trou Magrite	80	75
Fond de Fôret	40	130
Grotte Walou	40	130

Table 13. Estimated distances between open-air sites of Huccorgne and Maisières-Canal and Gravettian-age cave sites.

Both sites are located in places where both lithic and varied subsistence resources were available. Huccorgne is on a butte overlooking a river valley and Maisières-Canal is located near a ford, both locations which would attract game. Subsistence resources would have been found in varied ecological contexts, in river valleys and on the plateaux. Flint is local, abundant and readily accessible. The combined benefits found at each site suggest that these sites would likely have been re-used, perhaps on a seasonal basis, over a period of time. While separate occupations are not clearly discernible via radiometric dating, lithic refitting has demonstrated at least two occupations at Huccorgne.

ACKNOWLEDGMENTS

I would like to thank Prof. L.G. Straus and Prof. Marcel Otte for permission to analyze the Huccorgne collection, as well as access to data collected by Dr. Straus for the Haesaerts collection, and Dr. Daniel Cahen (Institut Royal des Sciences Naturelles de Belgique) for the Maisières-Canal collection, Prof. Pierre Vermeersch (Katholieke Universiteit, Leuven) and Dr. Marjorie De Grooth (Bonnefanten Museum, Maastricht) for access to lithic reference collections. Thanks are also due to Prof. Jean de Heinzelin (in memoriam) and to Dr. Paul Haesaerts, for discussions about the Maisières-Canal excavations, especially recently.

TOOL CLASSIFICATION		Huccorgne		Maisières-Canal	
	Tool type	**Straus/Otte**	**Haesaerts**	**Champ de Fouilles (20% sample)**	**Champ de Fouilles (complete)**
1	single endscraper		1	35	58
2	atypical endscraper			2	28
3	double endscraper			1	3
4	ogival endscraper				10
5	endscraper on retouched blade	1		3	14
6a	Solutrean-type endscraper				3
7	fan endscraper				3
8	endscraper on flake		3	32	25
9a	pedonculated circular endscraper				1
10	thumbnail endscraper	1			
12	atypical carinated endscraper				1
17	endscraper-burin	2		1	13
18	endscraper-truncated piece				1
18a	denticulate-truncated piece				1
19	burin-truncated piece				3
22	perçoir-burin				2
23	perçoir	1	1	7	19
24	bec			4	22
26	microperçoir		1		2
27	straight dihedral burin			22	79
28	déjeté dihedral burin			2	60
29	angle dihedral burin				20
30	angle burin on break	7	20	5	53
31	multiple dihedral burin	2	6	1	18
32	busked burin				1
34	burin on straight retouched truncation				4
35	burin on oblique retouched truncation	1	4		45
36	burin on concave truncation		1		6
37	burin on convex truncation				9
38	transverse burin on lateral truncation		2		3
40	multiple burin on truncation				3
41	multiple mixed burin		2		31
43	core burin			1	13

Table 11. Classification of toolkits. (Huccorgne: Straus/Otte and Haesaerts collections – classified by L.G. Straus. Maisières-Canal, Champ de Fouilles: 20% sample – classified by R. Miller, entire toolkit – classified by J. de Heinzelin [1973])

44	plan burin			7	23
45	audi knife				5
47	atypical Chatelperron point				9
48	gravette point	2			
54	flechette				2
55	Font Robert point			39	143
56	atypical Perigordian shouldered point		1		
57	shouldered piece		1	4	19
58	completely backed blade		25	3	1
59	partially backed blade		2	15	23
60	straight truncated piece		2	4	20
61	oblique truncated piece		2	5	34
62	concave truncated piece		2		9
63	convex truncated piece		3		2
64	bitruncated piece			1	1
65	piece with continuous retouch – 1 edge	9	21	59	48
66	piece with continuous retouch –2 edges		2	30	12
69	pointes à face plane			9	34
70	Solutrean foliate point (laurel leaf or willow)	1			
72	Solutrean type pieces (shouldered point)			1	6
74	notch	2	10	61	139
75	denticulate	2	10	22	42
76	splintered piece				1
77	sidescraper	1	1	60	123
78	raclette			2	24
84	truncated bladelet				23
85	backed bladelet		14	1	1
86	truncated backed bladelet				1
87	denticulated backed bladelet				1
88	denticulate bladelet		4		8
89	notched bladelet		1	3	14
90	retouched (Dufour) bladelet		1		17
92	diverse			18	187
	TOTAL	**32**	**143**	**460**	**1526**

Table 11 (continued). Classification of toolkits. (Huccorgne: Straus/Otte and Haesaerts collections – classified by L.G. Straus. Maisières-Canal, Champ de Fouilles: 20% sample – classified by R. Miller, entire toolkit – classified by J. de Heinzelin [1973])

Straus L.G., Otte M. et Haesaerts P. (éds.), *La Station de l'Hermitage à Huccorgne*. Liège, ERAUL 94, 2000.

CHAPTER 11

THE FAUNAL REMAINS FROM THE GRAVETTIAN OPEN-AIR SITE AT HUCCORGNE-L'HERMITAGE (LIÈGE PROVINCE, BELGIUM)

Achilles Gautier

Huccorgne-L'Hermitage, or HH for short, is one of the many Paleolithic sites in the valley of the Mehaigne. These occurrences are all situated in caves, with the exception of HH, which is an open-air site in an ancient oxbow formation of the Mehaigne, situated about 6 km upstream of the confluence of this river with the Meuse at Huy. The deposits of the oxbow consists essentially of sands and gravels overlain by primary and redeposited loess. The site came to light in 1870 when these deposits were cut into by trenches for the railroad and for a road. The earliest excavations date from 1886-1890 (Dormal and Tihon 1890-91). Major excavations followed almost a century later in 1969 by J. Destexhe. Excavations to unravel the precise stratigraphy of the deposits and the site were carried out by Haesaerts from 1976 to 1980 (Haesaerts 1978, 1981). Archeological excavations by the Universities of Liège and New Mexico followed in 1991-93; some results of these campaigns, including notes on the faunal remains have already been published (Otte *et al.* 1992; Straus *et al.* 1992, 1993a, b, c, 1997). The site was occupied by Gravettian people during the period 28-26.000 bp but a second, more restricted period of occupation may have followed around 24.000 bp. The main occupation would therefore date from the so-called Maisières-oscillation said to be characterized by a medium cold climate. During the presumed younger occupation the climate would have been characterized by recurrent cold to very cold conditions and might correlate with the Tursac oscillation (Haesaerts and Laville, 1988). HH can be compared with the open-air site left by Gravettian people along the paleo-Haine near Mons, known as Maisières-Canal. This site dates from c. 28.000 bp, and may contain a slightly more archaic Gravettian than that of HH. For more detailed information on HH and its context the reader is referred to the publications cited and the other contributions in this volume.

During the excavations in 1991 and 1992 some 200 dental and osseous fragments were collected, mostly from the main Gravettian stratum 4; 35 fragments or specimens, i.e., finds which belong together, were identified with varying degree of confidence mostly to the specific level in according to the procedures used in the Ghent laboratory (see for example: Gautier 1997). In the report on the Paleolithic fauna from the Trou Magrite (Gautier 1995) I still used the label *Elephas primigenius* for the mammoth, although the proposal to reintroduce the generic name *Mammuthus* (Grant *et al.* 1990) had been adopted already in 1991 (BZN 1991). This small report provides me with the occasion to relabel the mammoth. As to the identification ratio or relative frequency of the identified material, it is quite high (17.5%), reflecting no doubt my effort to extract as much information as possible from the poorly preserved and restricted assemblage.

The identifiable material is recorded in the following list by excavation square and stratum and by number, if plotted during the excavation. The list provides an idea of the very degraded and poor state of the taphocenosis in the considerable volume of deposits excavated.

E6b, stratum 4, no. 6: horse (*Equus* cf. *germanicus*), fragmentary incisor.
H9, stratum 4, no. 22: reindeer (*Rangifer tarandus*), antler fragment (tine).
I6, stratum 4, no. 34: horse, incisor.
I6, stratum 4, spit 7,no. ?: horse, three fragments lower premolar or molar.
I9, stratum 4, no. 31: horse, lower premolar or molar.
J6, stratum 4, no. 21 and 22: mammoth (*Mammuthus primigenius*), two fragments of one rib.
J7B, stratum 4, no. 3: horse, much worn third lower molar.
J7, stratum 4, no. 31: horse, one fragmentary upper premolar or molar.
J7, stratum 4, no. 54: horse, fragment lower premolar or molar.
J7, stratum 4, no. 60: reindeer, fragment first phalanx.
J7c, stratum 4, no. 39 etc.: mammoth, rib fragments (C14 sample listed as Nos. 31-42).
J7c, stratum 4, no. 55, 56, 67, 68, 70: mammoth, fragments rib(s) (C14).
J7, stratum 4, no. ?: horse, canine.
J7d, stratum 4.2: bird, first phalanx (?).
J8, stratum 4, no. 16 to 22: reindeer, co-articulating carpals and distal radius fragment.
J8, stratum 4, no. 25: reindeer, shaft femur (?).
J8d, stratum 4, no. 43 and 52: mammoth (?), one rib
J8, stratum 4, no. 45: reindeer, fragment innominate bone.
K6, stratum 4: reindeer, fragment shaft radius.
K7, stratum 4, no. 5: horse, lower P2
K7, stratum 4, no. 33: reindeer, fragment one first phalanx
K8, stratum 4, no. 28: reindeer, shaft tibia (?).
K8, stratum 4, no. 35 and 37: reindeer, two fragments shaft tibia(?)
K8, stratum 4, no. 48: reindeer, fragment shaft tibia.
K8, stratum 4, no. 54: reindeer, fragment base shed antler.
K8, stratum 4, no. 55: horse, canonbone fragment.
K8, stratum 4, no. 59: horse, lower molar/premolar.
K8, stratum 4, no. 65: reindeer, fragment metatarsus.
K8, stratum 4, no. 70: reindeer, shaft humerus.
K8, stratum 4, no. 95 and 112: reindeer, fragment metatarsus.
K8, stratum 4, no. 99 and 101: reindeer, two medium worn upper premolars, same individual.
K8, stratum 4, no. 115: reindeer, much worn lower molar.
M5-6, stratum 3: horse, fragmentary much corroded astragalus.
M5-6, stratum 3: reindeer, antler fragment.
S25B, stratum 4: mammoth, fragment molar.

The two finds from M5-6 are no doubt reworked from the underlying stratum 4 in stratum 3, a locally occurring gravelly silt. Table 1 presents the identified remains listed in another and quantified way, including separate counts for cranial, dental and postcranial remains. Not included in the list are two finds of the upper strata 1 and 2 which consists of a subadult humerus of a domestic fowl (*Gallus gallus* f. domestica) and a scapula of a large lagomorph, most likely hare (*Lepus capensis*). The position of these finds, their preservation and the domestic status of the bird find, indicate clearly that the finds are late.

Table 1. Gravettian faunal remains from HH (excavations 1991-93).

	n	n		
		antler	teeth	postcranial
bird(?)	1	-	-	-
mammoth	5	not	1	4
horse	12	not	10	2
reindeer	17	3	2	12
totals	**35**	**3**	**13**	**18**

During the 1856-1890 excavations at Huccorgne, "some teeth of horse and cattle (*boeuf*) and some unidentifiable fragments of antlers of red deer, roe deer or another animal" (my translation) were encountered as well as many very poorly preserved bone fragments, in part derived from very large animals (Dormal and Tihon, 1890-91: 9). In the light of the assemblage described above the antler finds can no doubt be ascribed to reindeer. As to the cattle teeth, these could pertain to steppe bison (*Bison priscus*), but I find it more likely these finds derive from reindeer, positively identified in the site. The larger unidentified bone fragments might be derived from mammoth. As to the Destexhe excavations, although they cover quite an area, they yielded but a few unidentifiable bone fragments and some poorly preserved fragments of mammoth molars (Destexhe, *in litt.* March 23th 1999).

Faunal remains were also collected in the profiles studied by P. Haesaerts or under his supervision. Unfortunately details on their precise provenance were not available at the time this contribution was finalized. The finds were identified by the author and by M. Germonpré (Institut royal des Sciences Naturelles de Belgique, Brussels, pers. comm.). They include unidentifiable bone fragments, but also two milkmolars and remnants of another molar of mammoth, ten fragments of molariform teeth of horse and a shed antler attributable to red deer (*Cervus elaphus*). An interesting find derives from the west trench facing the site, where at the contact between the lithostratigraphic units G3 and H1, recognized by Haesaerts (see for example Haesaerts 1978: 127, fig. 6), an incomplete skeleton of an Alpine marmot (*Marmotta marmotta*) was excavated. The animal probably died in its burrow; marmots are clear indicators of cold, open conditions (Gautier, n.d.).

The few faunal data from the older excavations and the stratigraphic trenches corroborate the less restricted faunal evidence from the 1991-93 excavations. The HH assemblage seems to be dominated by horse, reindeer and mammoth. Finds of smaller animals are absent, except for a small find attributed tentatively to a bird. Immunological analysis of a burin/endscraper from stratum 4 gave a positive reaction to anti-rabbit serum (see Newman, this volume), suggesting hare (*Lepus* sp.) was included in the small-gamebag of the HH people. The foregoing and the poor preservation of most of the finds confirm that we are dealing with a much impoverished taphocenosis. The depositional context points in the same direction. Dental and osseous remains have little chance to survive in open-air sites, as their collagen degrades very rapidly on the surface or in shallow subsurface conditions, that is when sedimentation is slow and erratic, as in the case of primary and well redeposited loess. Boldly spoken and given the taphonomic conditions, the fact that faunal remains are preserved at HH, militates for a long period of recurrent and intensive occupation and the creation of many thanatocoenoses of which only a small attritional sample survived.

That we are dealing with a much impoverished assemblage, is clearly illustrated by the comparison of the faunal assemblage with that of Maisières-Canal, the Gravettian open-air site mentioned in the introduction. This site yielded a rich mammalian fauna (Gautier, 1973, 1979)

and even some bird remains (Ballmann, 1973). Only a small part of the site was excavated in a complex of colluvial deposits near a channel of the Haine. Rapid burial and trampling apparently created favourable conditions for preservation, as indicated by quite a few remains which appear to co-articulate, the presence of intrusive small, water-loving rodents, a small weasel (*Mustela nivalis*), small game including birds, snow hare (*Lepus timidus*) and polar fox (*Alopex lagopus*). The larger game is clearly dominated by reindeer, while horse, red deer (*Cervus elaphus*) and steppe wisent (*Bison priscus*) are very poorly represented. According to Haesaerts and de Heinzelin (1979: 48-49), the site represents a single occupation of a few weeks, in some colder period of the year; in summer people would have suffered too much from the insects near the river. In my opinion, the excavated fauna represents a very generous meat supply per day, if the occupation lasted but a few weeks. I find it more likely that several periods of occupation are represented with rapid burial at the edge of the area where the Gravettian used to set up camp. Since fur bearing animals such as polar fox or bear are best killed or trapped in fall or winter because their pelts are then in optimal condition, occupation in the colder seasons seems indicated.

The possible difference in time depth and the real difference in taphonomy of HH and Maisières-Canal make it difficult to compare the larger game fauna of both sites. The short time occupation and the limited area of the site excavated at Maisières-Canal may be responsible for sample bias making horse practically invisible in the assemblage obtained. At HH differential preservation and identification bias may have seriously affected the relative frequencies of the game found (Table 1). In the case of mammoth, the size of the teeth and the fact that ribs were not fragmented for marrow extraction may have led to their survival in identifiable form. The relative size and compactness of the molariform teeth of horse appear to have favored their preservation, while fragmentation probably rendered postcranial elements unrecognizable. The reverse may be true for reindeer, of which the teeth are more vulnerable than those of horse, while the smaller size of the postcranial skeleton allows more readily identification of postcranial fragments. As to the reindeer antlers, the evidence suggests that people collected shed antlers for tool making; the few finds of these excrescences may be what is left of large hoards. The two shed antlers, attributed respectively to reindeer and red deer, provide a tenuous clue to seasonality. Cervids shed their antlers in the colder period of the year and the Gravettians may have collected shed antlers still suitable for toolmaking in the following warm period. Anyhow, if we assume that the mentioned biasing factors and others such as differences in seasonality played but a minor role, climatic differences may be invoked. The occupation at HH, dated 28.-26.000 bp may correspond mainly to the maximum of the Maisières oscillation, while Maisières-Canal would correspond to the beginning of this oscillation. A shift from colder, tundra-like to more steppic conditions may have favored the establishment of horse as a major game species for the Huccorgne people.

Both at HH and Maisières-Canal, mammoth is present. Finds of this pachyderm which probably did not belong to the game regularly hunted (Haynes, 1991), are difficult to interpret. People may have come across dead animals or have finished off ailing individuals. They may also have collected mammoth bones for building purposes or as combustible as the Maisières-Canal finds suggest. Finally some mammoth remains may be part of the so called background fauna, the carpet of animal remains due to attritional or catastrophic mortality spread out over most terrestrial surfaces, with its occasional concentrations, e.g., near places where animals come to drink.

Summing up, the seriously degraded HH assemblage provides but limited information. It would however appear that the site was occupied for a long period. The Gravettian hunters included mainly reindeer and horse in their game bag. Smaller game is virtually invisible but

includes probably birds as well as hare. As to the mammoth, people may have added it to their meat supply in an opportunistic way. Antlers, both of reindeer and red deer, were apparently collected for toolmaking; this activity most likely took place in the warmer period of the year. In comparison with Maisières-Canal, which has been called the virtual twin site of HH, horses are definitely more frequent at HH. Sampling, taphonomic or other bias may account for the marked difference in the game bags of HH and Maisières-Canal. If not, climatic differences and hence chronological differences can be adduced. HH may have been occupied at a later and less cold and more steppic stage of the so-called Maisières oscillation. Horses would have been more available at that time than at the Maisières site, where people had access mainly to reindeer.

Straus L.G., Otte M. et Haesaerts P. (éds.), *La Station de l'Hermitage à Huccorgne*. Liège, ERAUL 94, 2000.

CHAPTER 12

A REFITTED GRAVETTIAN BLADE CORE FROM HUCCORGNE: ASPECTS OF A LITHIC OPERATORY CHAIN

Anthony E. Martinez and Michel Guilbaud

INTRODUCTION

Huccorgne is an open-air site located in the Méhaigne river valley of central Belgium. Situated near sources of Maastrichtian Hesbaye flint, this loess deposit was excavated initially in the late 1800's and periodically thereafter through the mid 1970's by a series of amateur and professional researchers. Under the co-direction of Lawrence Straus of the University of New Mexico and Marcel Otte of the Université de Liège, this site was re-excavated in 1991-1993 (see chapter 1, Fig. 3). These recent excavations have revealed a series of deposits of Gravettian affiliation which date preliminarily to 23,170 +/- 160 BP (a conventional date on a bulk sample from the Destexhe dig) and several dates in the 26,000-28,000 kya range. Initial excavations in an area extending westward from the railroad cut in 1991 revealed a thin scatter of chipped stone artifacts located in a beige, compact loess associated with poorly preserved faunal remains including reindeer, horse, and mammoth. From this assemblage, a blade core of Hesbaye flint was recovered to which 12 broken blades, flakes and pieces of debris were found to conjoin (Photo 1). These artifacts (Photo 2) were found in association with wooly mammoth ribs and a series of limestone slabs in a "hearth-like" configuration suggesting the possible presence of ephemeral structures. Continued excavations in 1992 yielded 17 additional lithic conjoins to this blade core, as well as one additional blade core of a slightly more granular flint and one bladelet core. Analysis of the lithic refits to the first core of Hesbaye flint have yielded a number of insights in the patterns of site usage at the Huccorgne site during the Gravettian period. This paper reports upon these findings.

MATERIALS AND METHODS

The methodology used in the analysis of the blade core involved the systematic observation of all chipped stone implements of Hesbaye flint that possessed morphological characteristics that matched the color, patination, cortical surface, grain size, and inclusions of the core. Then, pieces were conjoined to the core on the basis of any attributes of Hertzian morphology that might indicate a direct correspondence. Those artifacts that directly refit were set aside until a sub-assemblage was formed containing only artifact refits (see Table 1).

Maps detailing the spatial position of the artifacts as recovered during excavation were then prepared as a means of gaining insight into patterns of site formation and disturbance processes that might be present (see Figure 1). Finally, a detailed technological analysis of the core was performed that examined the operatory chain involved in the reduction of the core.

RESULTS

Technological aspects of core reduction

Though some flakes are missing, the original nodule was reconstituted (Figure 4). Its initial dimensions were evaluated to be 153 x 75 x 65 mm. It is a thick elongated block of flint as shown by the minimal prism that contains it (Figure 2, Stage 0).

The orientation of a block or core by the minimal prism method (Guilbaud 1985) derives from the orientation of unmodified and retouched flakes by using the minimal rectangle (Laplace 1977), and for pebble tools, by using a prism, the *prisme directeur* (Thomas 1973). This method lets us follow the evolution of core reduction in three dimensions in relation to the prism and its three categories of planes: horizontal (H), transverse (T), and sagittal (S). Apart from some slight variations, the minimal prism, in this case, conserved the same or a similar position throughout the core reduction process. The prism became progressively flatter in the course of knapping.

From the beginning, once the core had been prepared prismatically, with a lateral crest (Figures 2 and 3, Stage I), the knapper tried to detach a series of blades longitudinally across face 'H' of the prism from a minimally prepared transversal striking platform (Figure 4, Stage II). This attempt seems to have failed. Perhaps partly for this reason, the knapper decided to prepare a crest at the other end of the core (Figure 4, Stage III) so as to detach blades from a striking platform opposite the first (Figure 5, stage Iv). This second attempt wasn't productive either, as the flakes detached were not very elongated. Finally, traces of a third attempt was noted on the first striking platform (Figure 5, Stage V.12), which caused the block to shatter (Figure 5, Stage V.13) following preexisting thermal fracture planes.

The near absence of removals from any striking platform in the transversal plane shows clearly that the intention of the stoneworker was to conserve as much as possible of the core's original elongation without wasting raw material. This probably shows a desire to make long blades as efficiently as possible. From this perspective, analysis of the conjoins indicates a manufacturing failure because, apart from two crested ridge blades (Nos. 7 and 10), no other elongated blades were found to refit onto this core. Furthermore, core reduction was halted when the core broke accidentally.

Implications for contemporaneity of lithic conjoins

Pieces from the latest stages of lithic reduction (Phases IV & V) are weathered in a manner that is consistent with severe dehydration of the internal crystalline structure. This weathering is manifested in; (1) cracking and fissuring of the core, its associated chipped stone flakes, and various pieces of core debris, (2) surface patination of later removals unlike that for material removed in earlier stages of reduction, and (3) 'blue' color of artifacts that were later removals which, upon excavation, turned white when exposed to air.

When compared to earlier removals from the core, this evidence for dehydration of the late removals is puzzling in that earlier removals contain a different surface patination, with no examples of internal crack propagation, and were found not to have a deep blue color which patinated white. Rather, these artifacts came out of the ground grey and remained so.

We suspect that this different color could be a product of rehydration of silica by water such that a new hydration layer was rapidly formed by the core and its refits following excavation.

This has implications, however, for site formation process in that this implies that these artifacts, though found in close proximity to one another in both vertical and horizontal space (see Figure 6) were subjected to different micro-environments. The relative difference in the presence of internal cracks and fissures (Photos 3 and 4) in artifacts that were removed during earlier and later stages of lithic reduction confirms the time differential in core reduction since fissures in some late stage removals were found to extend across the surface of the core, but *not* across surface planes of earlier removals. Finally, it is important to reiterate that pieces from earlier stages of reduction (Phases I-IV.10) are flake and blade removals, while later stages (Phases IV.11 & V) are represented mainly by angular debris that are the products of unintentional breakage as a function of material stress. This two-episode sequence of core reduction is also shown by discontinuity in the location of early and late stage artifacts (see Figure 6), in that early and late stage reduction seems to be spatially discrete.

DISCUSSION

From the perspective of a prehistoric occupant of Huccorgne, the reduction of the core analyzed was largely a failure. Early removals produced few blades, while later ones initiated sufficient stress within the core to result in material failure. From the perspective of the archaeologist, this core is interesting as it provides evidence for site reoccupation and raw material reuse at different time periods within the site. Later removals in the sequence of the lithic operatory chain of this core posses attributes that are consistent with severe dehydration of internal moisture. We posit that this may be the product of exposure to severe cold certain to have occurred especially in winter at the beginning of the Upper Pleniglacial.

It is curious, however, that earlier removals, though spatially proximate, do not possess similar evidence for internal structure dehydration. This has implications for overall site integrity in that, though the site seemed during excavation to be the product of a single, limited occupation, this core provides evidence for site reuse. Despite rapid loess deposition at the site, the core, because of its size, must have been exposed for some unknown time (probably at least one winter) between successive human occupations of the site.

The question that must now be asked is how long was the period between visits? Was it during a single lifetime? Was it by a different social unit? Methodologically, this issue may not be resolvable, in that in order to address it, a scale must be found to compare the relative hydration rates of Hesbaye flint under glacial conditions in North Central Europe.

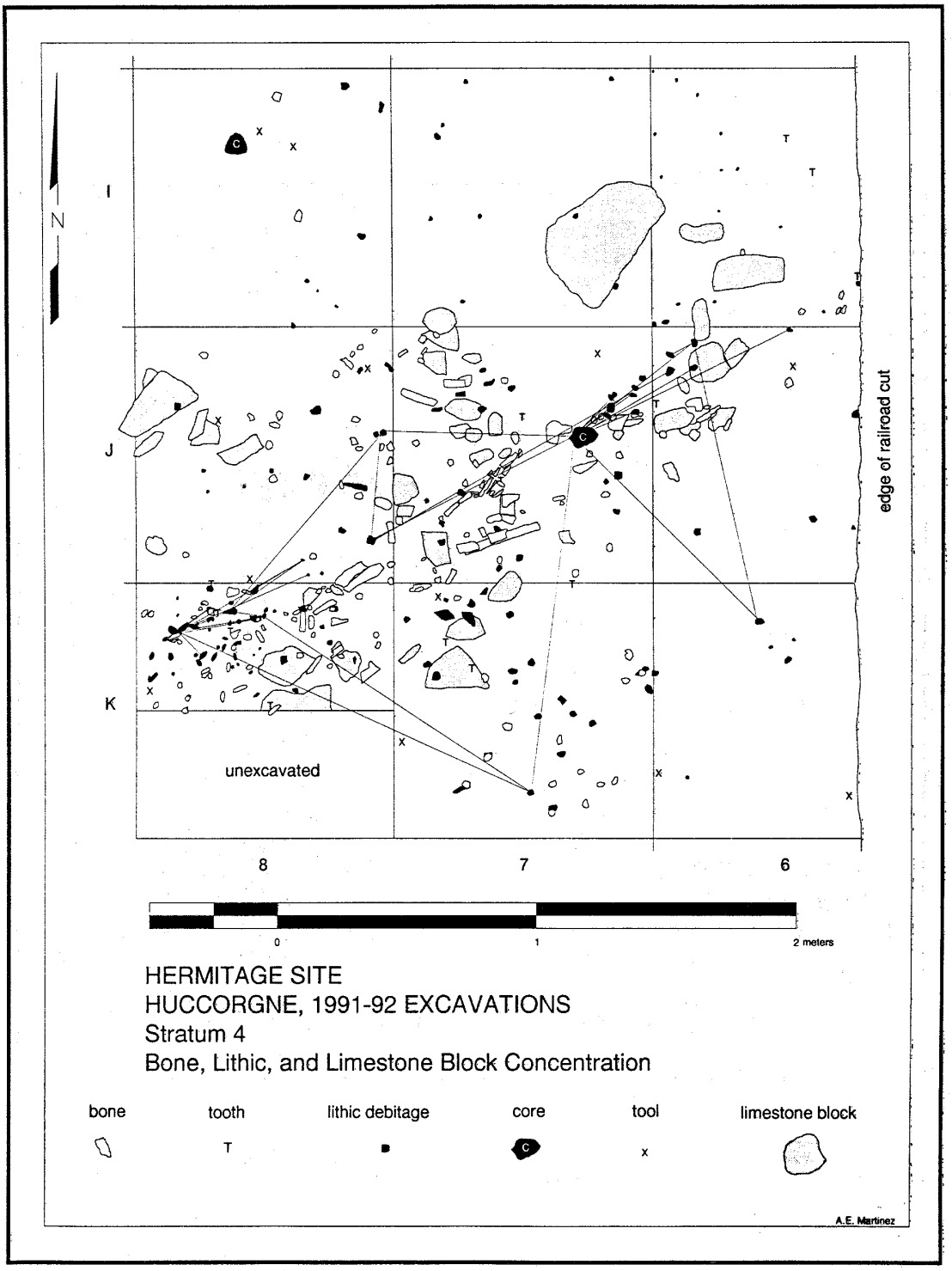

Figure 1. General map of feature containing refits.

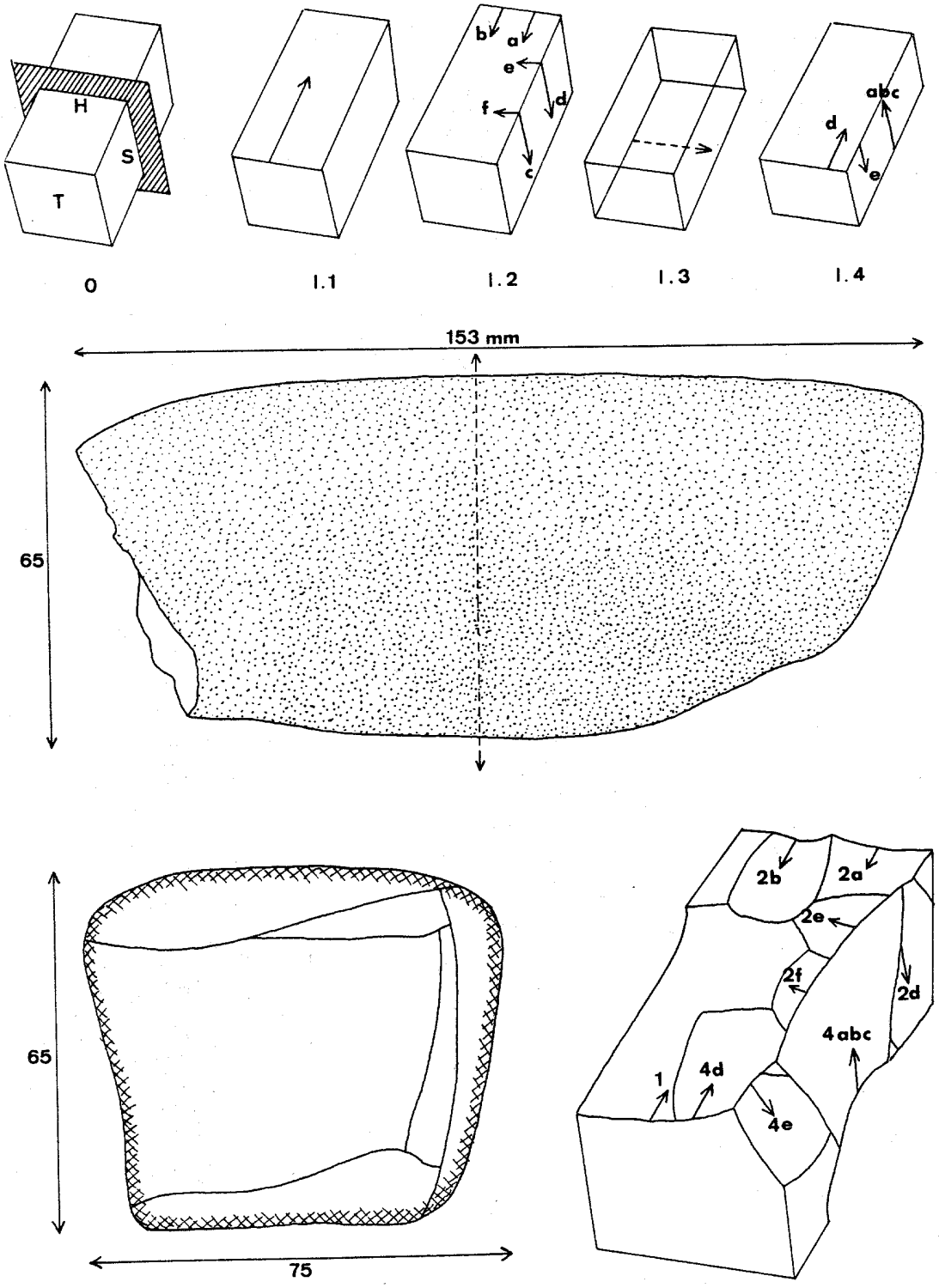

Figure 2. Detail of technological analysis.

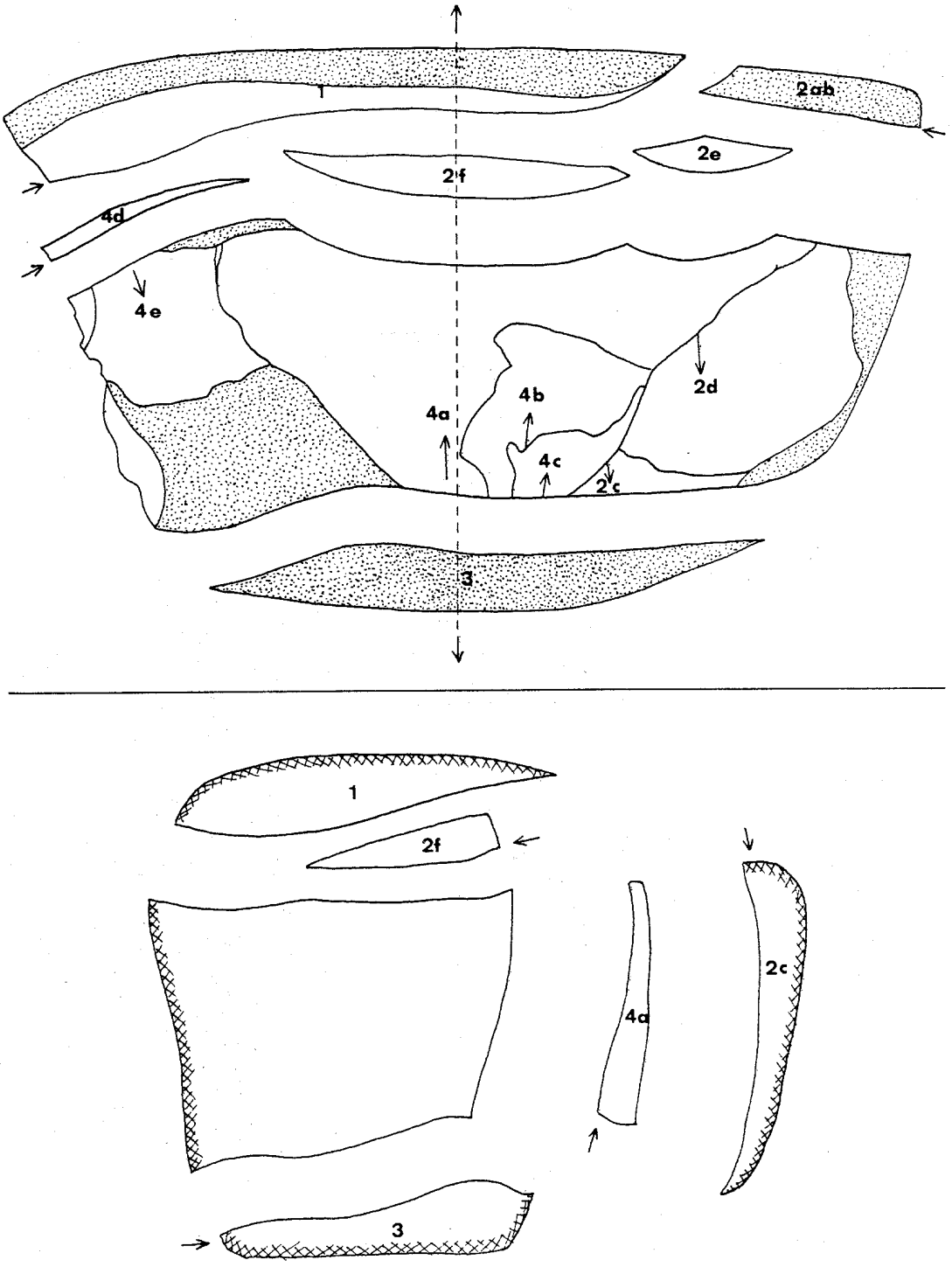

Figure 3. Detail of technological analysis.

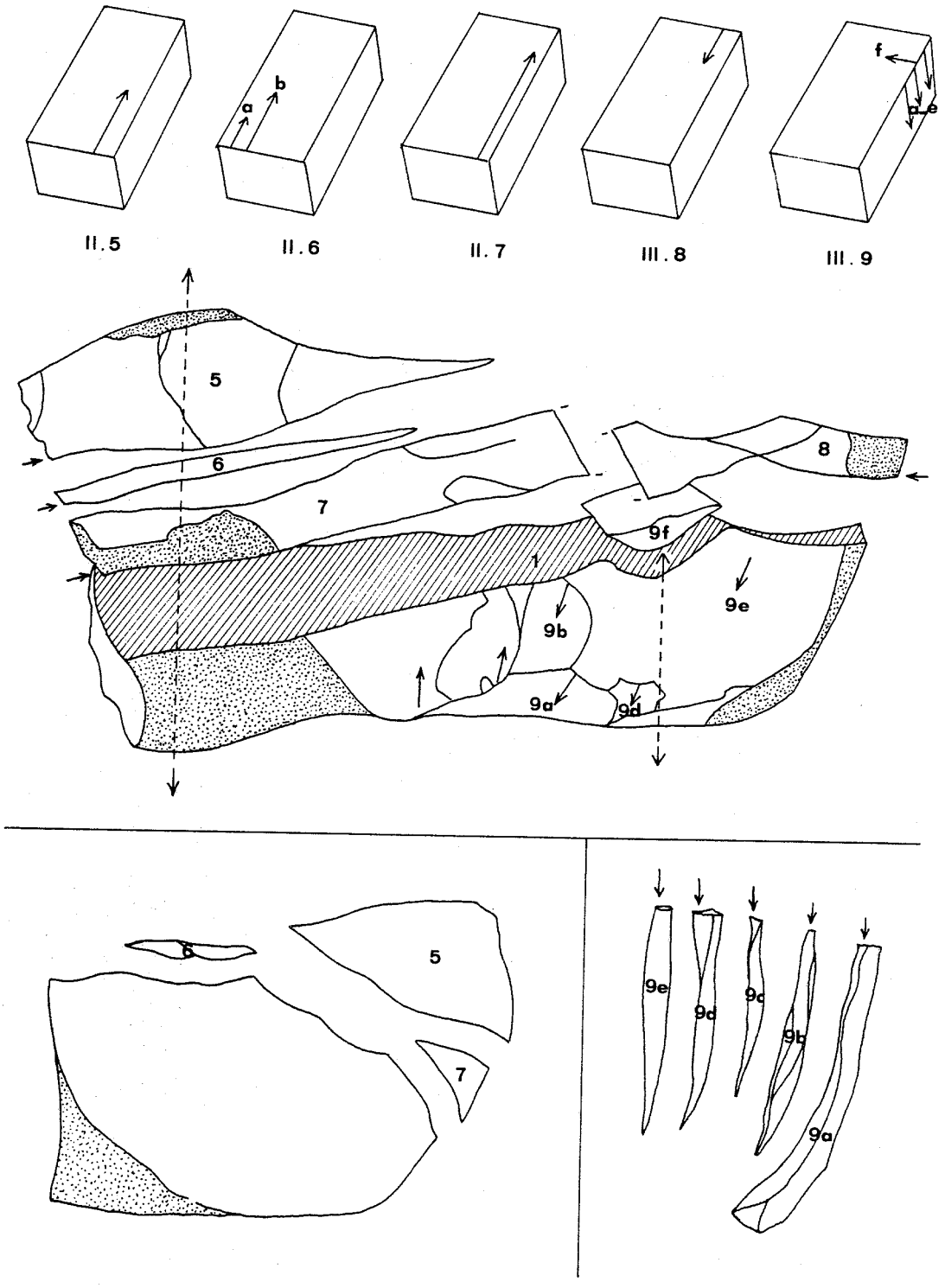

Figure 4. Detail of technological analysis.

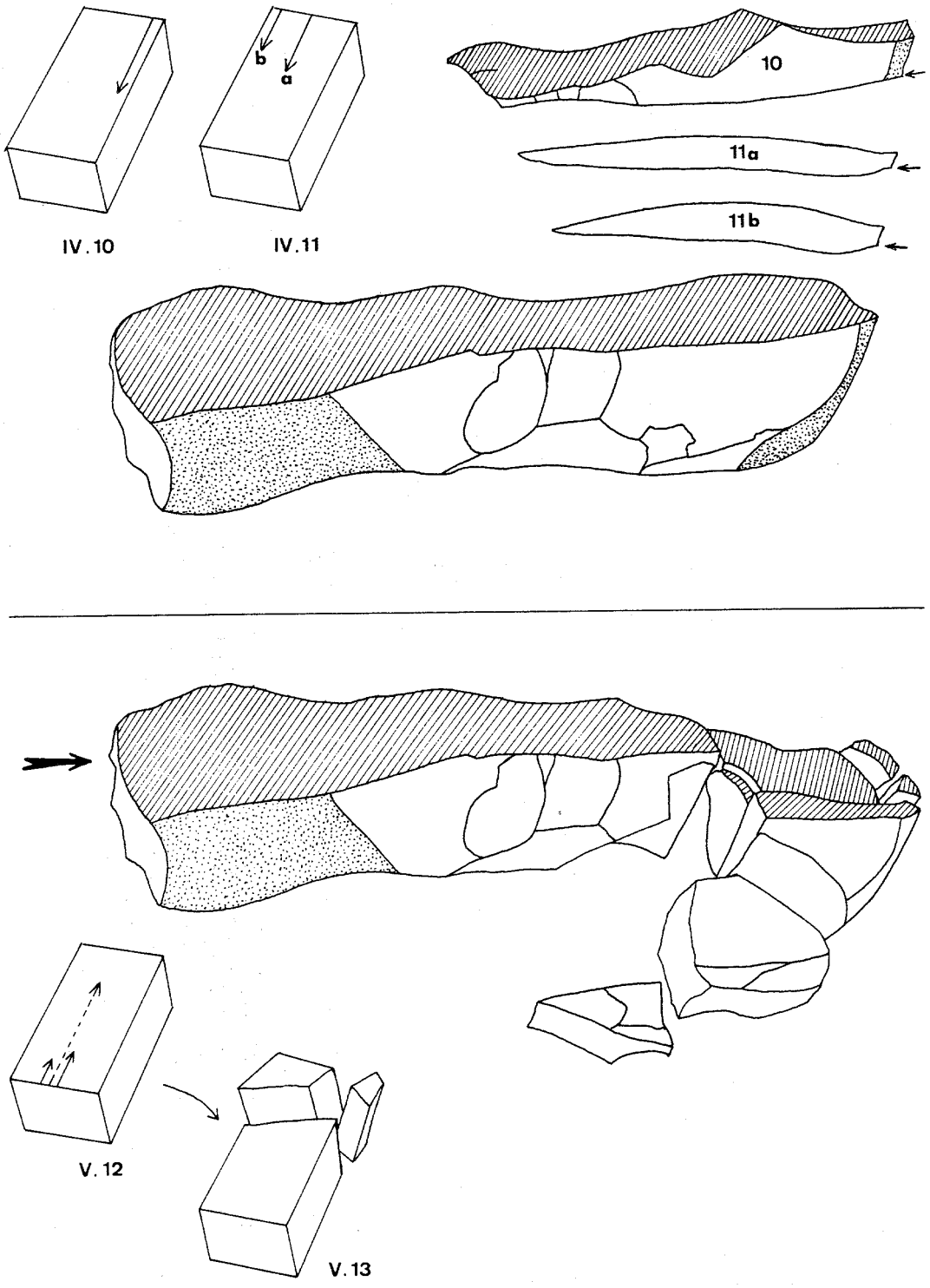

Figure 5. Detail of technological analysis.

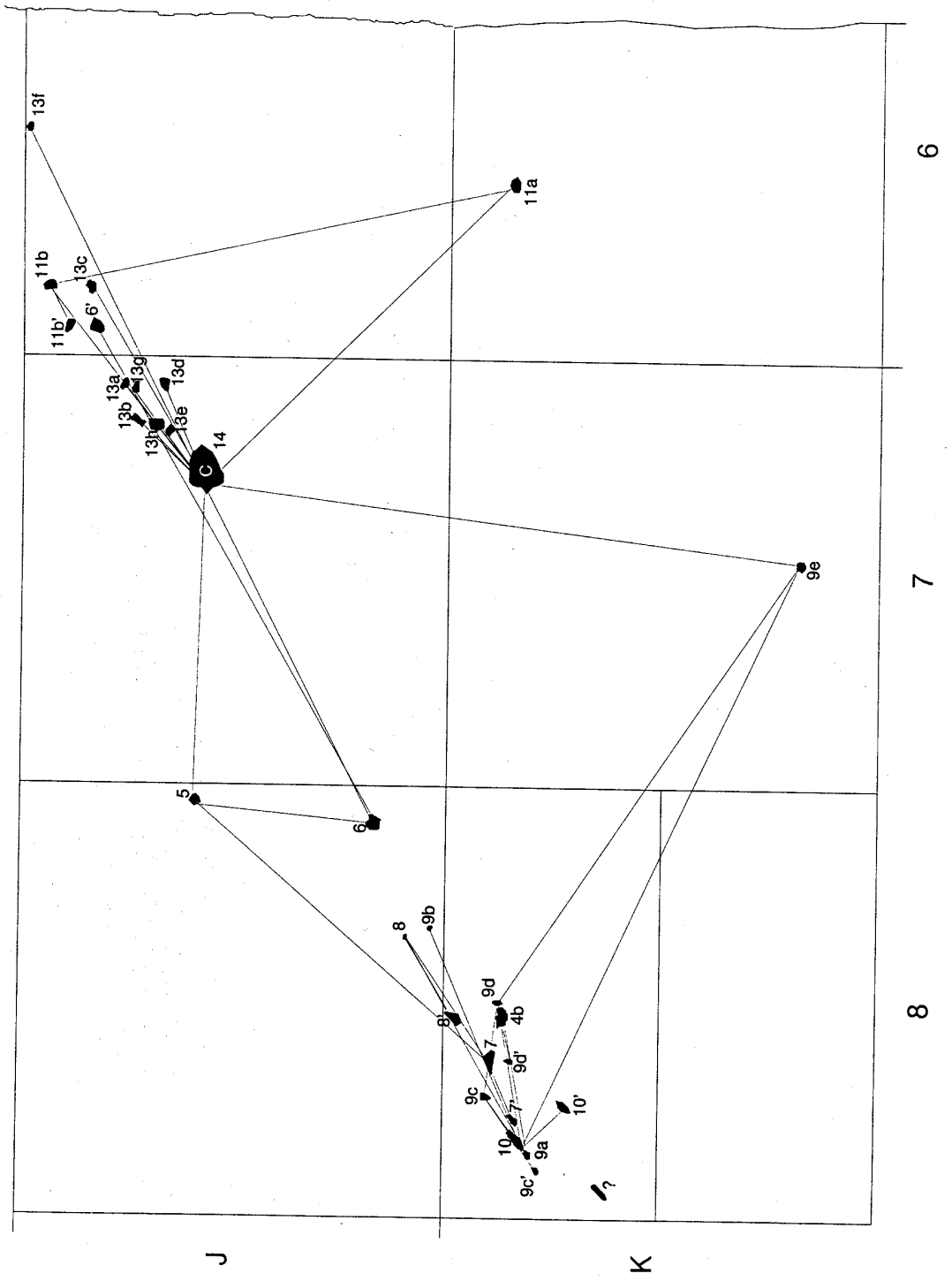

Figure 6. Distribution of refitted artifacts.

Photo 1. Close-up of refitted core.

Photo 2. Refitted artifacts constituting the core.

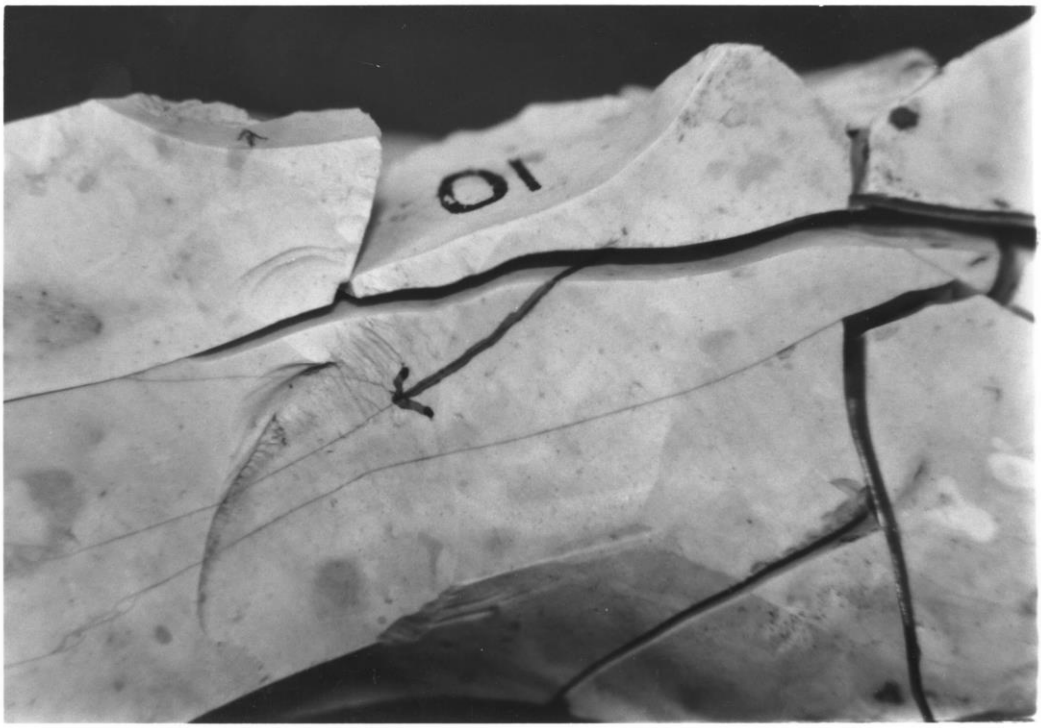

Photo 3. 15x magnification of core fissure.

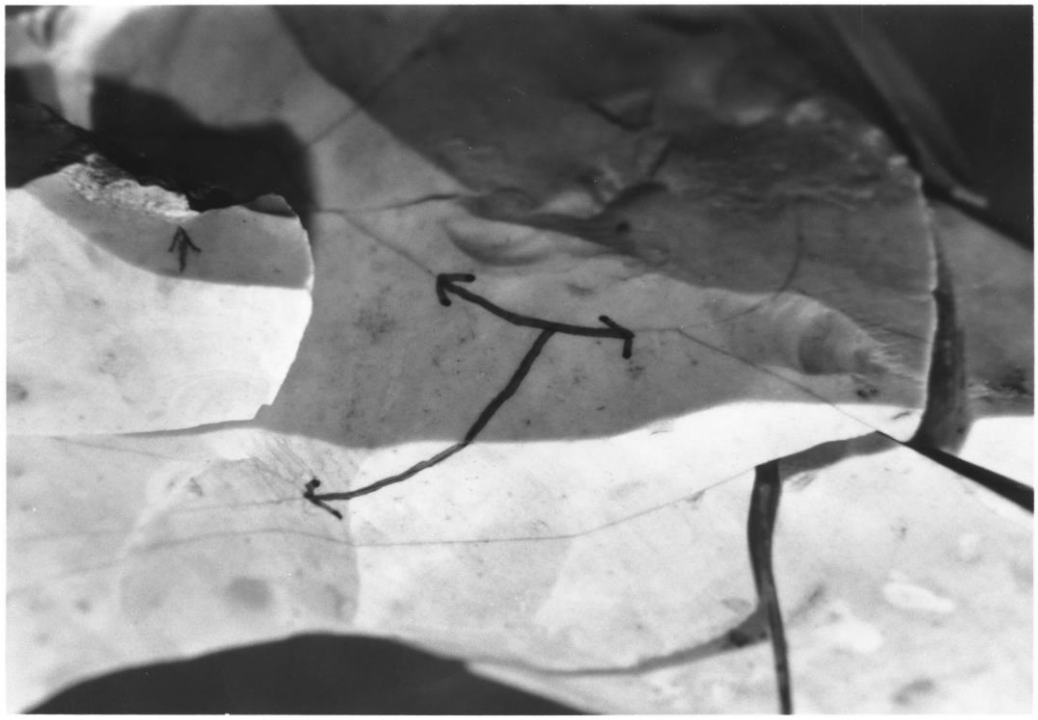

Photo 4. 15x magnification of core fissure.

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CHAPTER 13

LITHIC REFITTING IN THE IRSNB GRAVETTIAN COLLECTIONS

Lawrence G. Straus and Anthony E. Martinez

INTRODUCTION

Both Straus (during his 1993 classification of the IRSNB collections from HH) and Martinez (during his stay at the IRSNB in 1994) systematically attempted to refit lithic artifacts from the Gravettian component of Haesaerts' trenches. This was done as a consequence of Martinez's success in refitting a prismatic core from our excavation area at the eastern edge of the main ("Dock") site in 1992-3 (Martinez and Guilbaud 1993). That refit ensemble demonstrated the intactness of the activity area around the limestone slab and mammoth bone feature and it showed the existence of at least two shortly spaced occupations, since the core was knapped during two episodes that were separated by a freeze that crazed the flint. Searches for evidence of knapping activity areas and of mechanical reworking of the deposits along the western edge of the main site in Haesaerts' trenches were the goals of our refitting efforts at the IRSNB. In addition, this work provided further insights into the technology of lithic reduction and blank manufacture during the Gravettian occupations of the HH site. Most (but not all) the refitted items had point-provenience data, but some only had "northings" (distances from Haesaerts' origin point).

THE REFITS

Table 1 details all the refit sets obtained among the artifacts of the Haesaerts collection. There are 17 sets involving 43 artifacts. Two sets are not composed of physical refits, but are items that are very likely to have come from the same distinctive, frost-crazed flint nodules.

Several of the refits are pairs of snapped blade fragments. Seven refit groups involve a core or chunk and one or more flakes/blades. These can be considered as indicative of individual knapping episodes. In addition, although they lack cores or chunks (which are often exhausted cores), there are two groups that involve platform renewal flakes to which 2-3 flakes refit. Nine of the groups are pairs; 3 groups involve 3 refitted items each; 2 involve 4; 1 involves 5.

Interestingly, most refit groups involve flakes *or* blades, but never both. More than half the sets (9) are of blades, clearly showing the laminar character of the flint reduction practiced during the Gravettian at HH. Five of the blade refit sets involve all or some decortication blades. Presumably many of the interior (non-cortical) blades were removed from the site for use elsewhere, either unmodified, or retouched into tools or weapons.

Most of the refitted materials are of the local, fine-grain, bluish-gray Hesbaye flint. But some are on the also local, yellowish patinated variety of Hesbaye flint. And there are 3 sets whose items are of a very fine grain, jet black flint that resembles Oboug flint from Hainault. It is likely, however, that this too is a local, very high-quality, Upper Cretaceous chalk flint from the Hesbaye region.

There is one snapped blade of non-local Brussels sandstone.

DISPLACEMENT OF REFITTED ARTIFACTS

Among those sets with full or partial Cartesian coordinate information, the maximum distance of separation along the north-south axis (more or less corresponding to the hypothesized direction of possible water flow along the Gravettian landsurface) is 80 cm, but the average is only 29.7 cm (n=11 sets) (see Fig. 1). The maximum east-west separation is 51 cm, with an average of 30.6 cm (n=8). The maximum vertical separation is 15.5 cm, with an average of 6.9 cm (n=8). This rather unspectacular vertical separation evidence is, however, paired with the fact that at least 7 sets have refitting items that cross-cut Haesaerts' geological subdivisions of Stratum G. This may be less meaningful than it first appears, however, as part of the variation he monitored clearly involves facies differences of the same loess unit. There is possibly some evidence of water flow, especially as concerns localized unit G4, which might be the fill or a depression, channel or rill (?). In that case, some materials from G2 or G3 may have been redeposited a short distance downstream in G4. Yet this idea is contradicted by one of the two cases we have of refits of items from G4 and G2 or G3. In that case, the G4 item is further *north* (upslope) than the G2 item. Items from 6 of the refit sets are all from only one stratigraphic unit and data are unfortunately absent for 4 other sets. It is also worth noting that if there had been a lot of north-south flow, the average refit separation distance along that axis should have been much greater than the average east-west separation distance, but that is not the case as the two averages are identical at 30 cm. Nevertheless, it is clear that some items did move up and down very short distances in the stratigraphy, as well as short (and occasionally moderate) distances along horizontal axes. The former movements could have been caused by freeze-thaw, loess wetting-drying worms, rodents, etc. The latter could have been caused by human action (scuffling, trampling, transport, tossing, etc.) or, in some cases, by water flow (rilling) and soil creep. Evidence for major movement is absent in the Haesaerts eastern road-side trenches, in strong contrast to the Froment western road-side pits, where there are geological and artifact size-sorting indicators of running water (in incipient channels?), and--tellingly--no refits.

The materials from the Haesaerts thus tend to corroborate the evidence for *in situ* knapping areas and minimal displacement in our railroad-side excavation area. The also point to the distinct emphasis on blade production (from prismatic blade cores) at HH during the Gravettian.

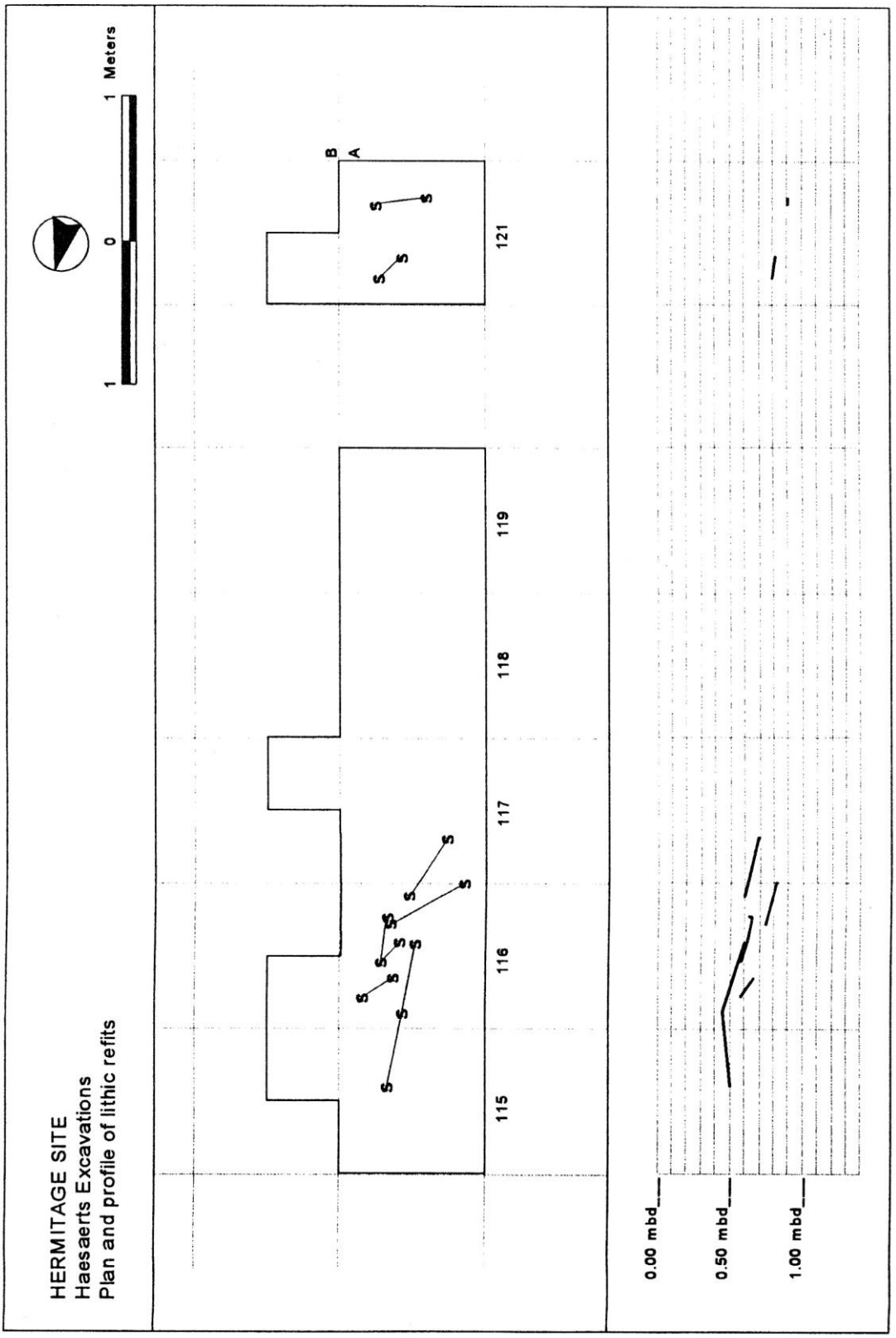


Figure 1. Plan and profile of lithic refits (prepared by A. Martinez).

Straus L.G., Otte M. et Haesaerts P. (éds.), *La Station de l'Hermitage à Huccorgne*. Liège, ERAUL 94, 2000.

CHAPTER 14

SPATIAL ANALYSIS OF THE GRAVETTIAN LEVELS AT HUCCORGNE

Anthony E. Martinez

INTRODUCTION

Huccorgne is an open-air site located in the Méhaigne river valley of Belgium. Situated near sources of Maastrichtian Hesbaye flint, this loess deposit was excavated initially in the late 1800's and periodically thereafter through the mid 1970's by a series of amateur and professional researchers. Under the co-direction of Lawrence Straus of the University of New Mexico and Marcel Otte of the Université de Liège, this site was re-excavated in 1991-1993 (see Chapter 1, Figure 3). These excavations have revealed a series of deposits of Gravettian affiliation which date preliminarily to 23,170 +/- 160 BP via conventional radiocarbon and several AMS dates in the range between 26-28 kya (this volume). Artifacts encountered in these excavations included a thin scatter of chipped stone artifacts located in a beige, compact loess associated with poorly preserved faunal remains including reindeer, horse, and mammoth.

This study considered only Gravettian materials from this site, as the Mousterian occupation was significantly removed spatially from the Gravettian materials. This resulted in the analysis of materials from edge of the main ("Dock") Gravettian site area and a four square meter area on the western edge of the Gravettian occupation near the road right-of-way. Additional excavation material was also evaluated in this study in the form of collections from the INRSB Haesaerts 1976 and 1980 excavations along the roadcut on the western edge of the major area of the Gravettian occupation. Though an attempt was made to gain access to the substantial amateur Destexhe collections from excavations in 1969-1970, these materials unfortunately remained unavailable for consideration.

This study presents the analysis of spatial patterning of the Gravettian levels at Huccorgne and addresses issues of:

-What evidence is there for the presence of 'structures' or activity areas on the site?
-Can areas where artifact refits were found be isolated mathematically?
-Can an occupational link be made between the Gravettian materials recovered from the UNM/ULG excavations and those recovered by Haesaerts in 1976 and 1980, and studied by Straus in 1992 and Martinez in 1993.
-What evidence can be discerned for distinct occupational episodes or horizons at the site?
-What evidence is there for disturbance or re-working of archaeological materials?

MATERIALS AND METHODS

The methodology used for examining the site structure at Huccorgne involved using both quantitative analysis techniques as well as examination of the lithic assemblage for the

presence of direct refits. Data analyzed included all piece-plotted artifacts from the easternmost excavation areas of the 1991-1992 University of New Mexico / Université de Liège excavations and the area excavated by the Institut Royal des Sciences Naturelles de Belgique excavations in 1976 and 1980. These areas were chosen as they represent collections from the main ("Dock") site, and internally contain the widest horizontal spatial extent.

DATA COLLECTION AND DATABASE CONSTRUCTION

1991-1992 excavations

Data in this set were collected by the University of New Mexico and the Université de Liège during 1991-1992. Field provenience data used in this study are of two types. Artifacts and teeth >= 1 cm and bones >= 5 cm in length were plotted relative to Cartesian space, while smaller finds were collected in arbitrary 5-8 cm levels (spits) and 50 x 50 cm sub-squares. Stratum, excavation square, sub-square, and spit data were recorded for all artifacts. For those elongated items which were piece-plotted, orientation relative to magnetic north and inclination of primary and (sometimes) secondary axes relative to the horizontal level were also recorded.

Following construction of a database containing field provenience and laboratory analysis information, data were re-coded into new variables using several criteria. First, lithic raw material types were collapsed into a new dataset containing general probable source and material information in such a fashion that the full analytical list (see Straus, chapter 8, Table 1, this volume) was condensed into:

flints and cherts (implies local Hesbaye nodules)
limestone (implies local outcrops)
sandstone and siltstone (“Brussels” sandstone and possible Paris basin source)

Next, due to small sample sizes for some categories, a similar process (see Straus, chapter 8, Table 2, this volume) was used to lump debris categories into:

cores and platform renewal flakes
blades
flakes
debris (items less than 1 cm, equivalent to Straus's microdébitage)
cortical lithics
noncortical lithics
tools

Poor faunal preservation prevented identification of all but a few bones and teeth. Identified bones were also plotted in Cartesian space by faunal type as was the general assemblage of all identified and unidentified bones and teeth.

1976 and 1980 Excavations

The 1976 and 1980 excavation data were collected under the direction of Paul Haesaerts of the Intitut Royal des Sciences Naturelles de Belgique (IRSNB). These excavation areas are primarily along the modern roadcut through the oxbow ridge. Most items in this series were piece-plotted and mapped during excavation. Lawrence Straus of the University of New Mexico

analyzed all collections during 1992 using the laboratory methodology developed for the South Belgium Paleolithic Project for lithic debitage and refit analysis. Anthony Martinez of the University of New Mexico, Kilian Melloy of St. John's College, and James Noone of the University of Michigan conducted further refit analysis of these collections in 1993.

Artifact locations were reconstructed from field maps provided by Haesaerts, and integrated into the database developed for the South Belgium Paleolithic Project. Due to difficulties in relocating the exact location of the IRSNB site datum and changes in site topography between 1976 and 1980 and 1991-1992, artifact locations relative to the UNM/ULG excavations cannot be considered to be exact. The IRSNB collections do, however, make an important contribution to the overall understanding of Huccorgne in that site taphonomy over a larger physical area can be inferred based upon these curated resources. It should be noted, however, that a significant gap in the spatial data exists in that it was not possible to gain access to or analyze the considerable collections made by J. Destexhe in 1969-1970 in the area between the Haesaerts and Straus/Otte excavations.

REFIT ANALYSIS

For the purposes of general integration of the methodology and results of this analysis with respect to the analysis of archaeological site structure, a brief summary of the refit methodology is presented here. This methodology involved the systematic observation of all chipped stone implements that possessed morphological characteristics that matched the color, patination, cortical surface, grain size, and inclusions of the core. Then, pieces were conjoined to the core on the basis of any attributes of Hertzian morphology that might indicate a direct correspondence. Maps detailing refit sets were then prepared and compared to the quantitative distribution maps prepared using the method described below.

Quantitative analysis

The discontinuity between and relatively limited area excavated in each of the data recovery location presented a significant challenge to the quantitative study of the Gravettian materials at Huccorgne. In a broader context, however, the goals of study were quite straightforward – namely gaining insight into the human uses of Huccorgne during the Gravettian period. In addressing this goal, the application of highest density regions (HDR's) was chosen in conjunction with the graphical display of artifact distributions using a kernel-based spatial intensity function.

Highest density regions (HDR's) have been demonstrated by Hyndman (1994) to be useful in the analysis and display of multimodal distributions. Also used in Bayesian analysis, HDR's have also been called credible sets, plausible sets, and Bayesian confidence sets (Box and Tiao; 1973). In practice, they are defined by the assumption that every point inside a region should have a probability density at least as large as every point outside a region. Defined formulaically, HDR's can be calculated using the following function (Hyndman 1994).

Let $f(x)$ be the density function of a random variable X. Then the 100(1-α)% *HDR* is the subset $R(f_\alpha)$ of the sample space of X such that:

$$R(f_\alpha) = \{x : f(x) \geq f_\alpha\}$$

where f_α is the largest constant such that $\Pr(X \in R(f_\alpha)) \geq 1 - \alpha$.

The HDR derived from this function covers the smallest possible volume in the sample space of *X* and the mode is contained in every HDR.

As applied to the analysis of Gravettian materials at Huccorgne, HDR's were calculated for a series of major artifact classes or combination of classes representing 25%, 50%, and 75% of the artifact distribution for each class. In other words, class membership was defined on the basis of percent membership within the HDR as opposed to percent contribution to the overall assemblage. This was intentionally done to assist in the comparison of vastly different sample sizes within certain artifact classes. The goal in doing this was directed at better understanding the human use of space at Huccorgne and to evaluate overall patterns and test for concentrations of similar materials that could be remnants of activity areas on the site.

The representation of this data was done graphically through the use of spatial intensity maps detailing HDR's for each artifact class studied. To help prevent the introduction of "noise" in the data as a function of irregularly sized grid collection units (especially in the eastern excavations along the railroad cut) a kernel-based approach was used in the preparation of spatial intensity maps. The kernel method uses a weighted function of the points in the surrounding region of influence (here applied as other artifacts of like type within 0.25m of the item being evaluated. Within this region of influence, a quartic kernel estimator is applied that estimates of the intensity of a spatial point pattern (Kaluzny *et. al*; p160).

In practice, this means that the maps produced have a "smoother" appearance at the expense of a loss of resolution in picking up small-scale variations in the data distribution. This loss, however, also results in greater ease in detecting overall trends that may be better suited to answering questions about site integrity, site structure, and the human use of space at Huccorgne during the Gravettian period.

RESULTS

1976 and 1980 excavations

Distinct clustering in horizontal and vertical space is evident with the Haesaerts collections. There is, however, also evidence for some potential mixing of materials in vertical space.

The HDR of the flake distribution (Fig. 1) indicates strong clustering in P115-117 with high frequencies also being present in P121. Moderate clustering is also present in portions of P118 and P119. The vertical distribution of flakes in the Haesaerts excavations indicates that artifacts appear to be scattered along a low slope trending from the north to the south. Clustering in vertical space is of note in that the HDR suggests the presence of potential occupation surfaces in P115 and P118-P119. In addition, two separate occupation surfaces are possibly present in P121.

The blade distribution (Fig. 2) in the Haesaerts collection is similar to that seen in the flake distribution, with strong clustering being seen in P116-P117 and P121. Moderate clustering is again present in P118. As with the flakes, potential occupation surfaces are suggested in vertical space, with one surface being seen in P115-P119 and two surfaces being suggested in P121.

The debris distribution (Fig. 3) in the 1976 and 1980 excavations is of note in that strong clustering is seen at the top (P116) and bottom (P118-P119) of the low, north-south trending slope, as well as in P121. Moderate clustering is present in P117. The vertical profile of this area again suggests a possible surface within P118-P119, and two possible occupation surfaces in P121.

Cores and tools (Fig. 4) in the Haesaerts collections are largely confined to P115-P116, with additional items being present in P121. Again, artifacts are scattered along a low, north-south trending slope, with one potential surface crossing P117-P118. In contrast, artifacts in P121 are distributed between what appear to be two separate lenses.

Mapped lithic refits (Fig. 5) in the Haesaerts collection are present in P115-P117 and P121. Those present in P115-P116 are located near the top of the low, north-south trending slope, and direction of refit is essentially down along the slope from north to south. The four refits in P121 essentially follow the same general trend as the artifacts in the northern portion of the excavation area, but at a reduced slope angle.

1991-1992 excavations

Excavation of Gravettian materials at Huccorgne during 1991-1992 was concentrated in two separate areas. The first was along the east side of the main ("Dock") site and the second was on the western side of the site between the 1969-1970 Destexhe excavations and the 1976 and 1980 Haesaerts excavations described above.

East side excavations

Unlike the Haesaerts excavations, vertical separation of the majority of artifacts in the UNM/ULG excavations is very minimal: 25 cm at most. Horizontally, however, clear concentrations of materials are present that likely represent multiple activities and/or occupations of this portion of the site during the Gravettian period.

The flake distribution (Fig. 6) in this portion of the site is characterized by two distinct, high-density concentrations of materials, as well as a third cluster of lower density. Squares K8 and J6/7 both have “bullseyes” of flakes that are spatially distinct from one another.

The blade concentration (Fig. 7) here, by contrast, is largely restricted to J/K8 with a secondary concentration in K7. In fact, there are virtually no blades to be found in the J6/7 flake concentration.

The debris concentration (Fig. 8) in the eastern UNM/ULG excavations contrast with the blade distribution, but closely mirror the flake distribution, although debris concentrations are more spatially restricted into tighter concentrations than flakes (suggesting that they are the locations of actual knapping loci, where tiny chips and shatter would fall directly to the ground without being further transported).

Cortical lithics (Fig. 9) closely parallel the flake and debris concentration. Non-cortical lithics (Fig. 10) generally follow the flake and debris concentration, but highly HDR’s seem to match the blade distribution.

Refits (Fig. 11; see also chapter 13, this volume) generally follow the overall pattern of distinction between blades and flakes/debris. In fact, the concentration of flakes and angular debris that seem to characterize later occupation and reuse of the core are also associated with the by-products of general core reduction while blades appear to be associated with other evidence of spatially restricted general blade production.

Tools (Fig. 12) in the eastern excavations have a distribution that is somewhat different than that seen in either blade or flake/debris concentrations. Not surprisingly, many of the blades found in the general blade concentration appear to have been used as tools. Squares I/H 8, however, also have a concentration of tools that is not seen in any of the other HDR distributions.

Faunal elements (Fig. 13 and 14) were poorly preserved at Huccorgne and it is likely that those recorded are not representative of the original distribution of materials during the Gravettian period. Those present are found in essentially the same area as the concentrations of both blades and flakes/debris. Teeth (Fig. 15) generally follow the same pattern as overall bone, though a concentration was also found in I6 that matches none of the other HDR distributions and likely represents the poorly preserved elements from a single animal. Very little bone was identified due to poor preservation conditions and the creation of HDR's was not warranted due to low sample sizes. On a visual basis alone, however, reindeer and mammoth bones seem to be spatially discrete from one another with reindeer being co-associated with the blade distribution and mammoth being co-associated with the flake/debris concentration.

In addition to specific HDR's being constructed for lithic and faunal materials, a general inquiry was made on all burned items (lithic and faunal). Three concentrations of burned items (Fig. 16) appear in the HDR that appear to represent four potential hearths in H8/9, H6, J6/7 and K8. The tightness of these distributions should be particularly emphasized as it likely speaks to the issue of general intactness in this flatter area of the site.

Western Sondages on the Main Site Area

As in the Haesaerts trenches along the eastern face of the road cut, the artifacts from the UNM/ULG western *sondage* (Q-S/25-26) near the road cut are not as restricted in vertical space as those artifacts found in the eastern portion of the site. Though only a few centimeters separates them, two distinct concentrations of artifacts are present in vertical space (Fig. 17). Furthermore, the assemblage in this portion of the site appears to be on a low slope trending away from the artifacts on the eastern portion of the site and toward the Haesaerts excavations. Clear concentrations of lithic type and raw materials are present that may be indicative of separate occupations and/or activity areas. It should be emphasized, however, that excavations in this portion of the site represent only about four square meters and that inferences drawn from such a small sample may not be representative of the overall pattern of the human usage of space in this portion of the site.

The flake distribution (Fig. 18) in the UNM/ULG western Gravettian *sondage* is divided into two areas of high HDR's and one moderate HDR area (Q25/26, R26, and R25 respectively).

The blade distribution (Fig. 19) in this part of the site is virtually identical to the flake distribution, but is concentrated in the same areas.

The debris concentration (Fig. 20) also parallels the general blade and flake distribution but appears to be more spatially restricted than either of the previous HDR's and has somewhat high HDR values in R25.

Cortical (Fig. 21) and non-cortical (Fig. 22) lithic distributions also parallel preceding HDR's in this portion of the site, though cortical lithics are fairly restricted spatially while non-cortical lithics are not.

The western UNM/ULG Gravettian *sondage* is different from either the eastern UNM/ULG excavations or the Haesaerts excavations, in that a greater diversity in raw material types was present. The three primary material types recovered were flints, limestones, and sandstones. Significant spatial separation of each of these material types is observed. Flints (Fig. 23) are largely concentrated in the same location as blades, flakes and debris, while limestone (Fig. 24) is virtually a mirror image of this distribution with higher HDR values being seen in the "S" row, as well as in R25/26. Sandstone (primarily "Brussels" sandstone) (Fig. 25) somewhat parallels the flint distribution, but is much more restricted spatially. While flints dominate the overall raw material sample size, limestone and sandstone artifacts are highly restricted to this *sondage* and, of particular note, are spatially distinct within this *sondage*.

DISCUSSION

The plan and profile views of all artifact classes in the 1976 and 1980 collections paints a somewhat confusing picture. On the one hand, clear distinctions are present in flake and blade distributions in contrast to general debris. Seen in profile, real surfaces also appear to be present upon which artifact are concentrated in essentially one layer in P115-P119, but two layers in P121. Focusing on debris, the presence of concentrations of debris on top of and at the bottom of a slope with virtually no debris along the slope would be consistent with an interpretation of possible alluvial and/or colluvial (i.e., slop wash) transport. The presence of nearly all refits in the 1976 and 1980 excavations along the top of and side of this low grade further suggests the movement of artifacts along a north-south axis. Artifacts in P121 uniformly appear to be more scattered in the vertical plan with "clouding" of artifact HDR's between two potentially distinct occupation surfaces. Given that just over a single square meter describes this phenomenon, it is really impossible to do more than suggest that a potentially different depositional environment may be present in this portion of the site even though it is only a single meter away from the other artifacts found in the P115-119 series.

The western Gravettian UNM/ULg *sondage* suggests an interesting picture. On the one hand, little diversity in technological types is present in HDR distributions. On the other hand, real differences are present in raw material concentrations that may indicate genuine spatial diversity and real site structure that is the product of human behavior. Such differences in raw material type, combined with apparent separation in vertical space in lithic concentrations could easily represent the occupation of this portion of the site by different groups of individuals at different times. Should this have occurred, however, it would also suggest that the Gravattian occupants were essentially practicing the same technological tasks (core reduction and blade manufacture) in the same portion of the site using different raw materials at different times. Again, it should be emphasized that with only four square meters to consider, such extrapolations are somewhat tenuous.

By contrast, the eastern UNM/ULG excavations are characterized by virtually no separation in vertical space and major differences in the use of space horizontally. The separation of core reduction and blade production activities make a strong case for the reoccupation of this portion of the site at different times; with the temporal separation being during a period of intense cold during which severe dehydration of some core refits occurred. Similarly, distinct, "tight" concentrations of burned items are present which suggests minimal horizontal movement of materials in this portion of the site. Interestingly, faunal elements essentially fall just outside of the burned HDR's and may represent the interior of a "toss-zone" as described by Binford (1978). Tool HDR's also fall along the edge of and between multiple hearths, along the edge of a potential seating area and associated with concentrations of limestone slabs that may represent "site furniture."

CONCLUSIONS

In summary, the main questions to be addressed in this study were:

1) What evidence is there for the presence of 'structures' or activity areas on the site?

Clear distinctions are present in the UNM/ULG excavations that are likely the product of human behavior and are associated with real differences in the production of flaked-stone implements and in the reduction of lithic raw materials. The tight concentration of burned items is consistent with remnants of Gravettian hearths, and the distribution of tools and faunal remains with respect to these burned concentrations is consistent with a model of individuals sitting around a fire producing tools and processing game.

2) Can areas where artifact refits were found be isolated mathematically?

The application of highest density region analysis in conjunction with spatial intensity mapping clearly mirrors real distinctions in general blade production and core reduction activities – even among other artifacts that did not directly refit to the core and were likely not even from the same core.

3) Can an occupational link be made between the Gravettian materials recovered from the UNM/ULG excavations and those recovered by Haesaerts in 1976 and 1980, and studied by Straus in 1992 and Martinez in 1993.

A potential occupational link is not necessarily demonstrated by this analysis. Given that the western Gravettian UNM/ULG excavations comprised a very limited spatial area, and that the Haesaerts excavations have a gap between the P115-119 and P121 excavations, it is difficult to determine how materials in each of these areas is associated with the other except in a general sense.

4) What evidence can be discerned for distinct occupational episodes or horizons at the site?

Distinct occupation episodes are suggested in each of the three areas examined. In the Haesaerts excavations, P121 hints that separate occupational horizons are present. The western Gravettian UNM/ULG *sondage* similarly suggests the possible presence of two vertical lenses of artifacts within the lithic concentration. The dramatic distinction in the location of raw material types may also be indicative of separate occupational events related to lithic reduction

episodes. Most clearly, the eastern UNM/ULG excavations show through the refitting of a Gravettian core, the distinction of primary core reduction and blade production activities, the spatial isolation of burned items, and the spatial separation of tool and faunal elements with respect to possible hearth locations that this portion of Huccorgne was repeatedly occupied during the Gravettian.

5) What evidence is there for disturbance or re-working of archaeological materials?

Evidence is suggested for the disturbance and reworking of materials in the Haesaerts excavations. While tenuous, the clear separation of debris from other artifact categories along the very top and very bottom of a low slope is consistent with an interpretation of smaller items being carried downslope through colluvial and alluvial processes. Similarly, the presence of lithic refits trending from the top of to the sides of this low slope suggest the downward movement of artifacts. Should this interpretation bear out, however, it is indicative of limited movement but not major redeposition of materials in this portion of the site.

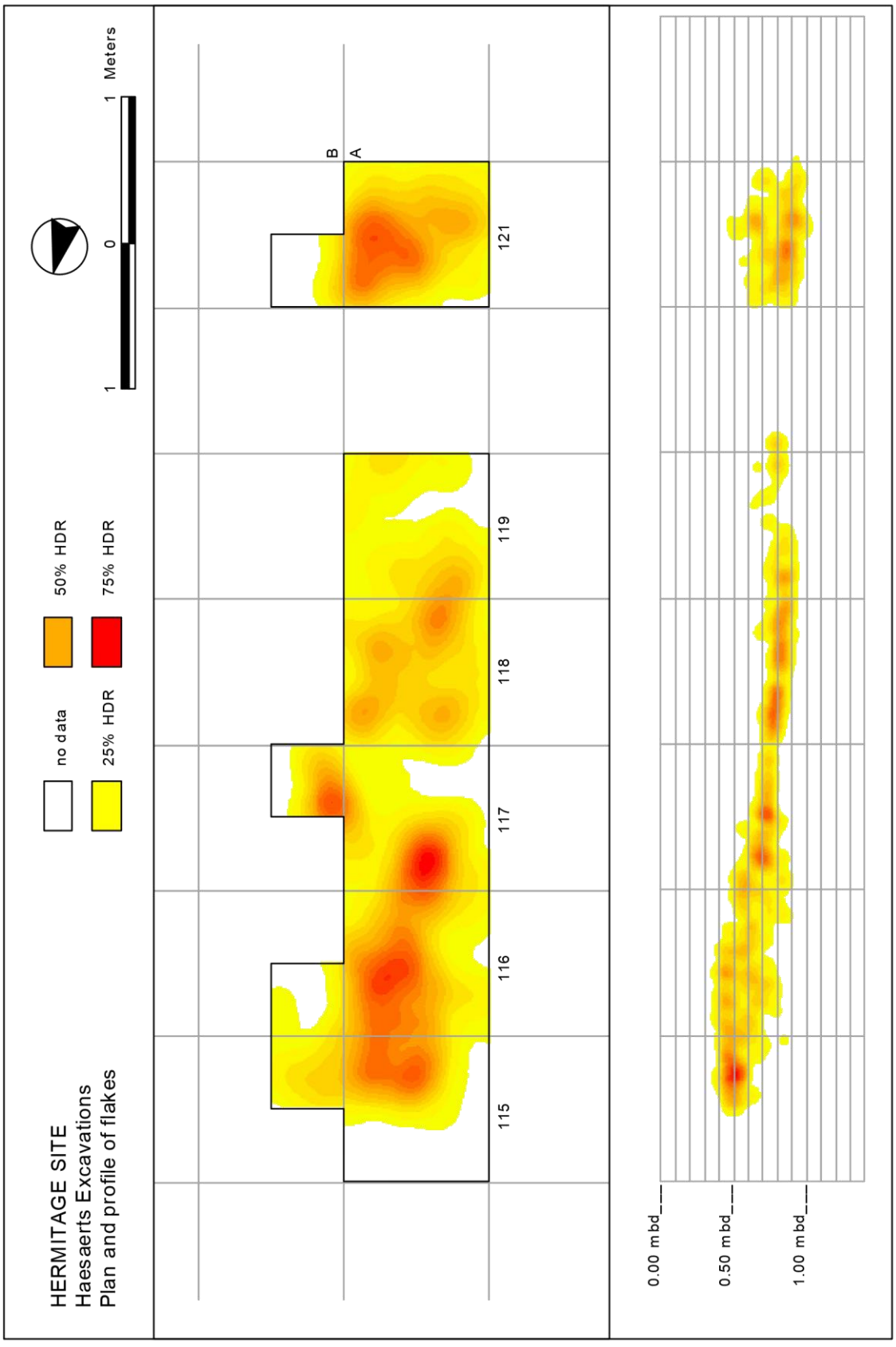

HERMITAGE SITE
Haesaerts Excavations
Plan and profile of flakes
no data
25% HDR
50% HDR
75% HDR
1
0
1 Meters
A
B
121
119
118
117
116
115
0.00 mbd
0.50 mbd
1.00 mbd

Figure 1.

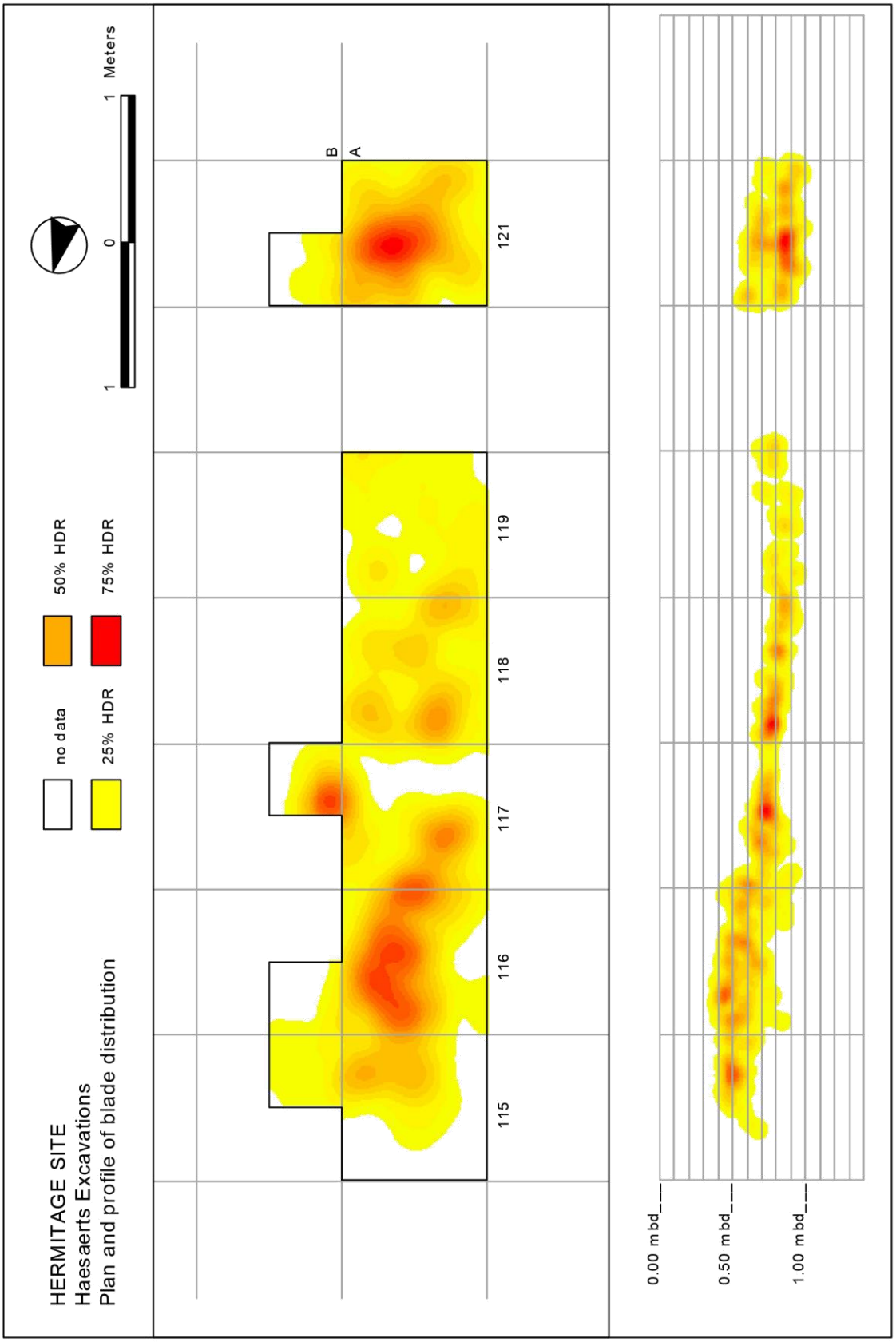

HERMITAGE SITE
Haesaerts Excavations
Plan and profile of blade distribution
no data
25% HDR
50% HDR
75% HDR
1
0
1 Meters
A
B
121
119
118
117
116
115
0.00 m bd
0.50 m bd
1.00 m bd

Figure 2.

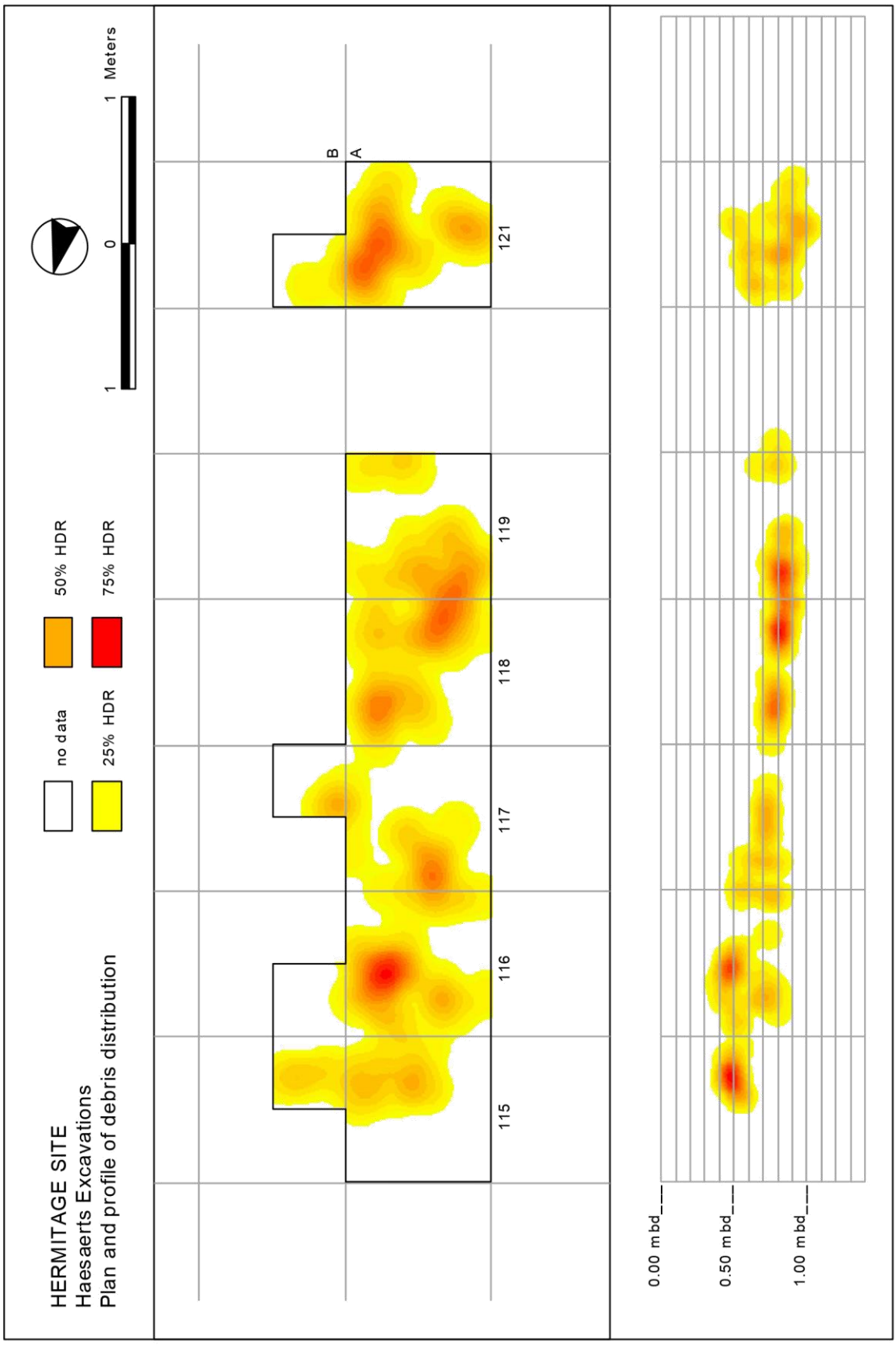

HERMITAGE SITE
Haesaerts Excavations
Plan and profile of debris distribution
no data
25% HDR
50% HDR
75% HDR
1
0
1 Meters
B
A
121
119
118
117
116
115
0.00 m bd
0.50 m bd
1.00 m bd

Figure 3.

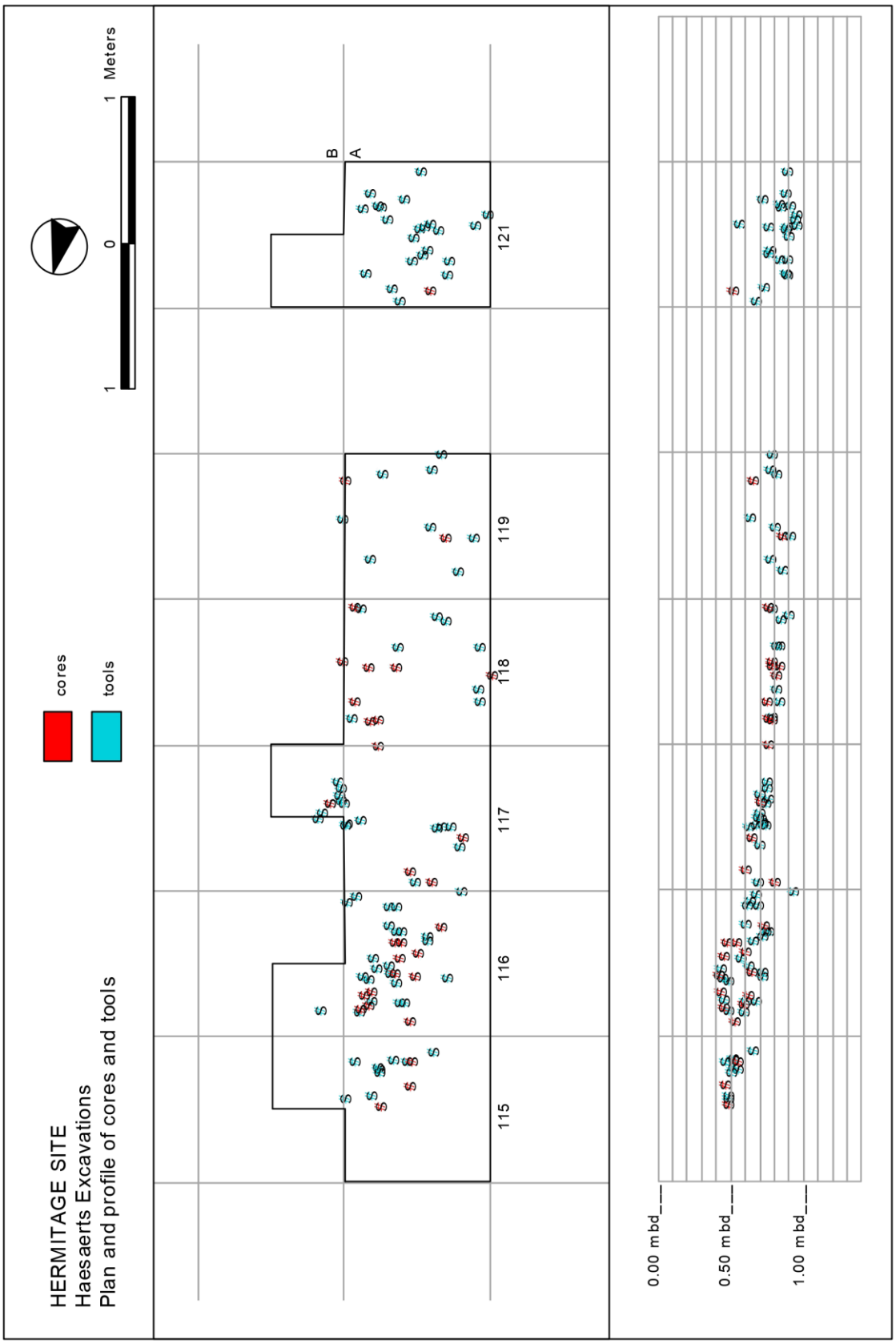

HERMITAGE SITE
Haesaerts Excavations
Plan and profile of cores and tools
cores
tools
1 Meters
1
0
1
A
B
115
116
117
118
119
121
0.00 mbd
0.50 mbd
1.00 mbd

Figure 4.

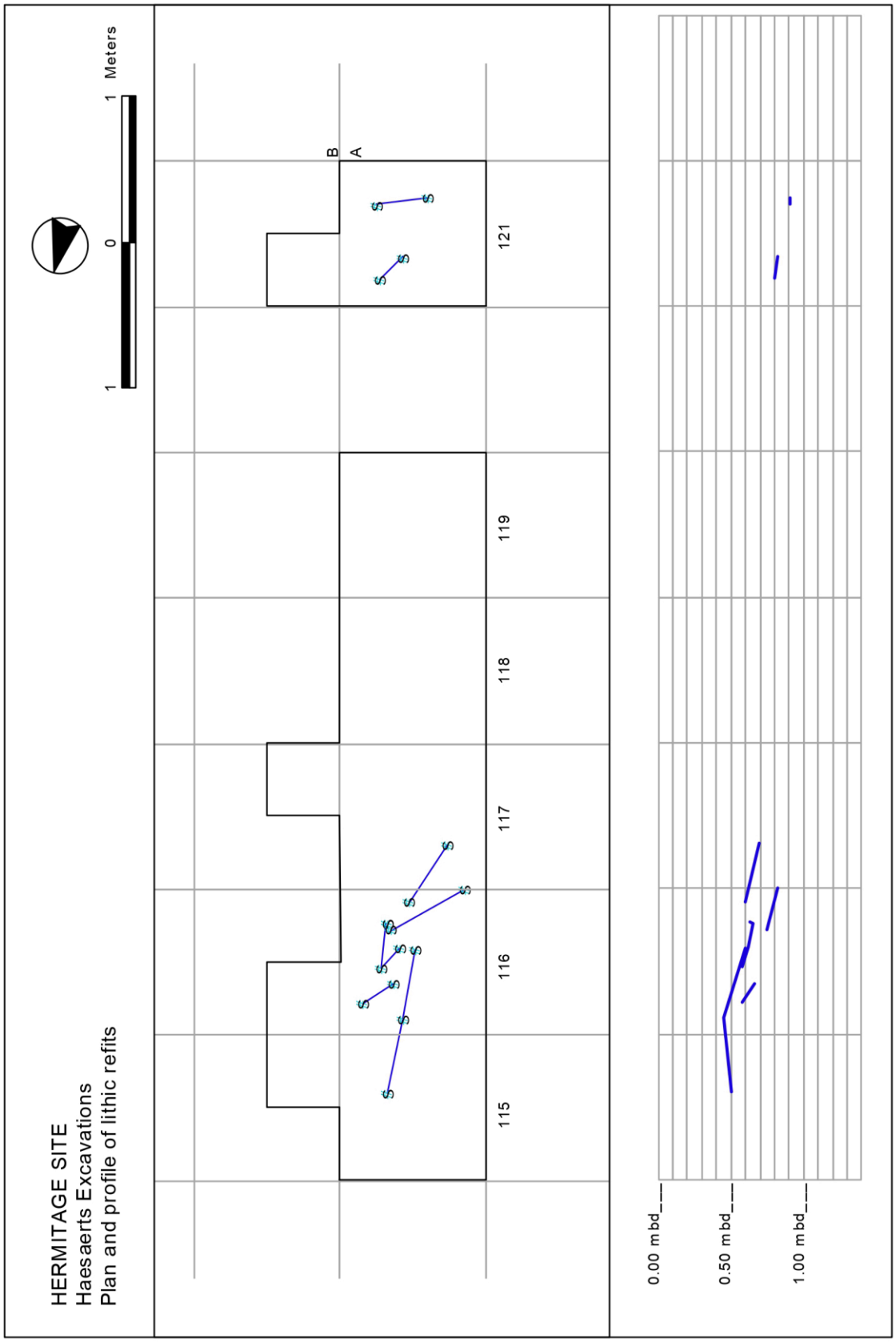

HERMITAGE SITE
Haesaerts Excavations
Plan and profile of lithic refits
1 Meters
1
0
1
B
A
121
119
118
117
116
115
0.00 m bd
0.50 m bd
1.00 m bd

Figure 5.

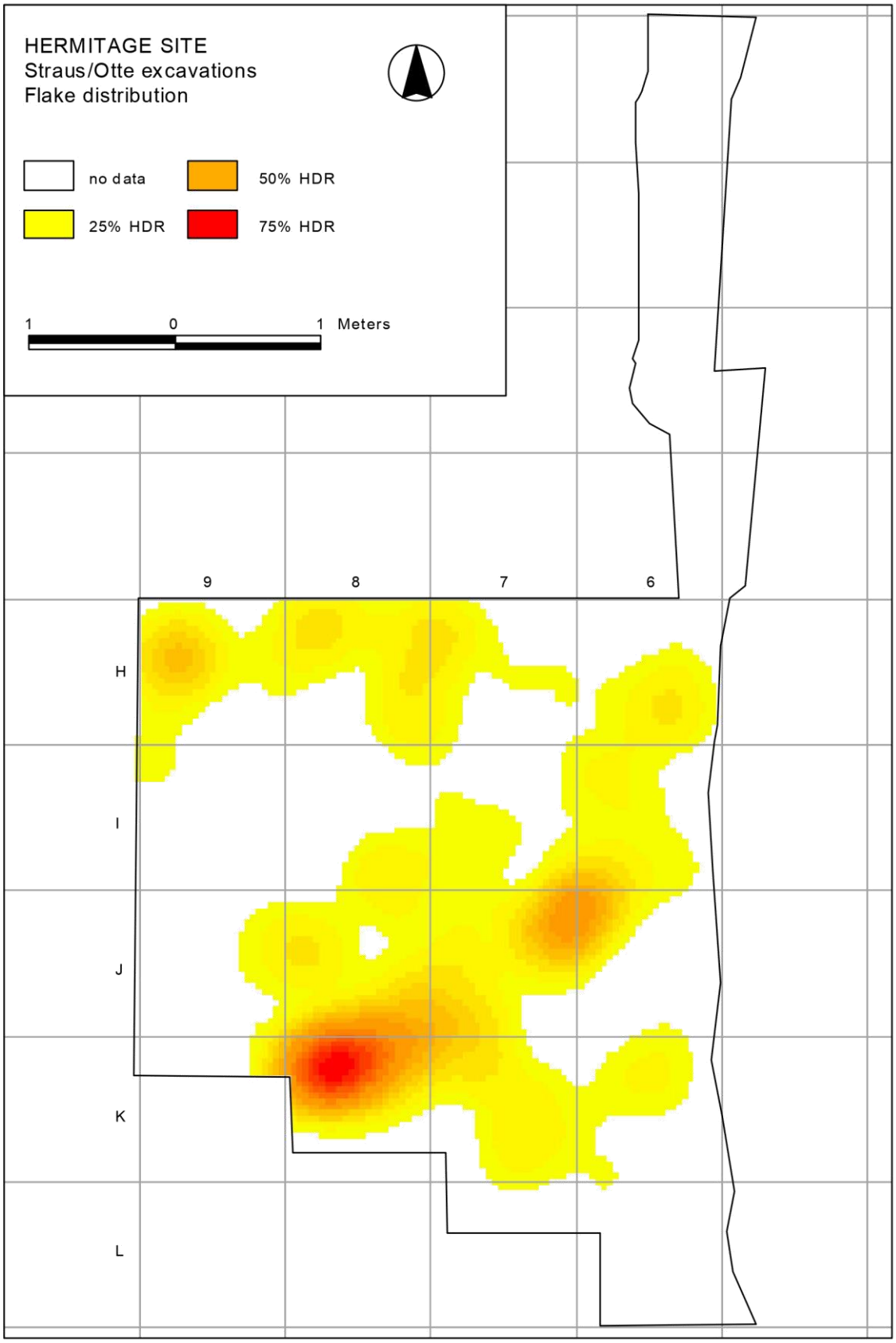

HERMITAGE SITE
Straus/Otte excavations
Flake distribution
no data
50% HDR
25% HDR
75% HDR
1 0 1 Meters
9
8
7
6
H
I
J
K
L

Figure 6.

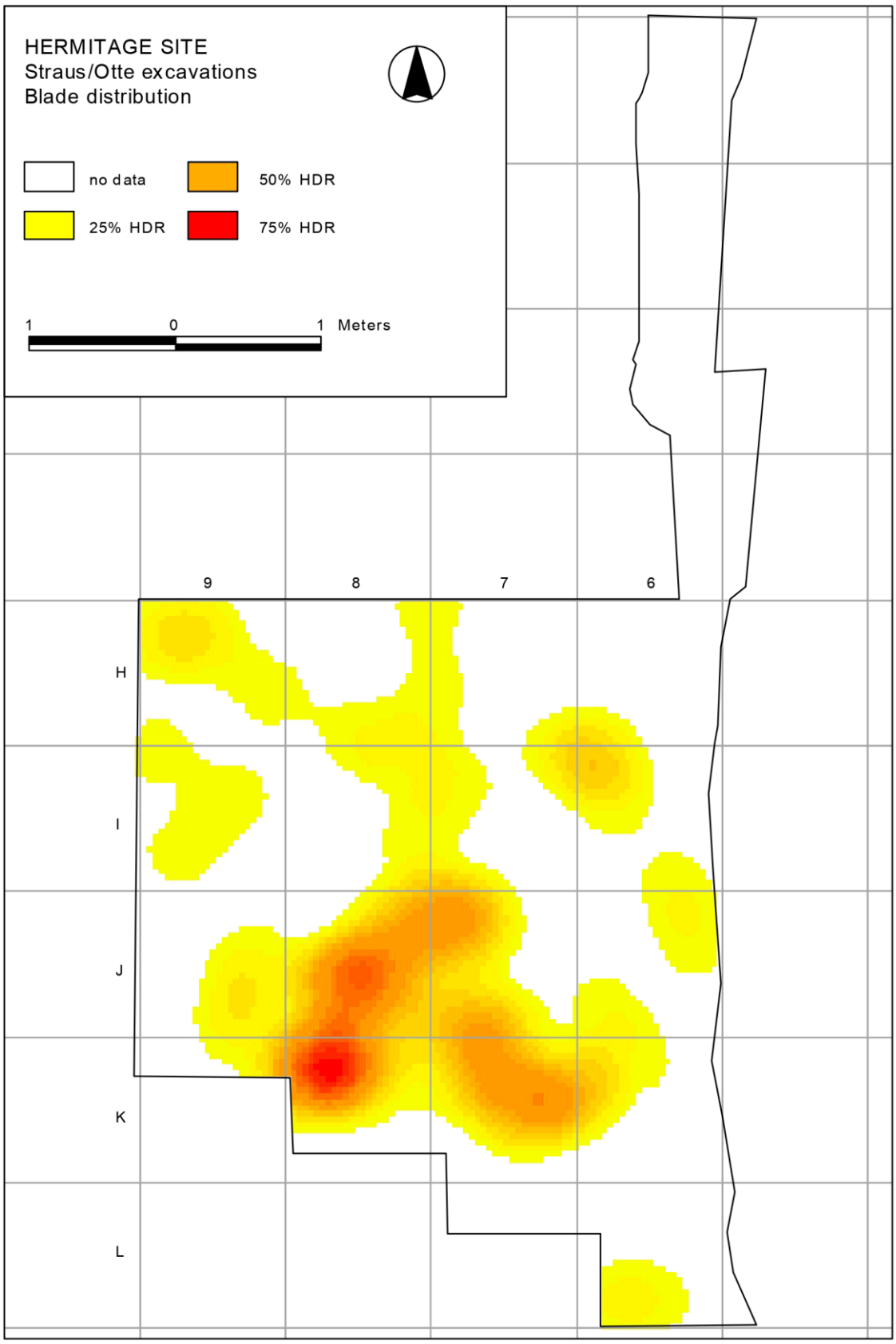

HERMITAGE SITE
Straus/Otte excavations
Blade distribution
no data
50% HDR
25% HDR
75% HDR
1 0 1 Meters
9
8
7
6
H
I
J
K
L

Figure 7.

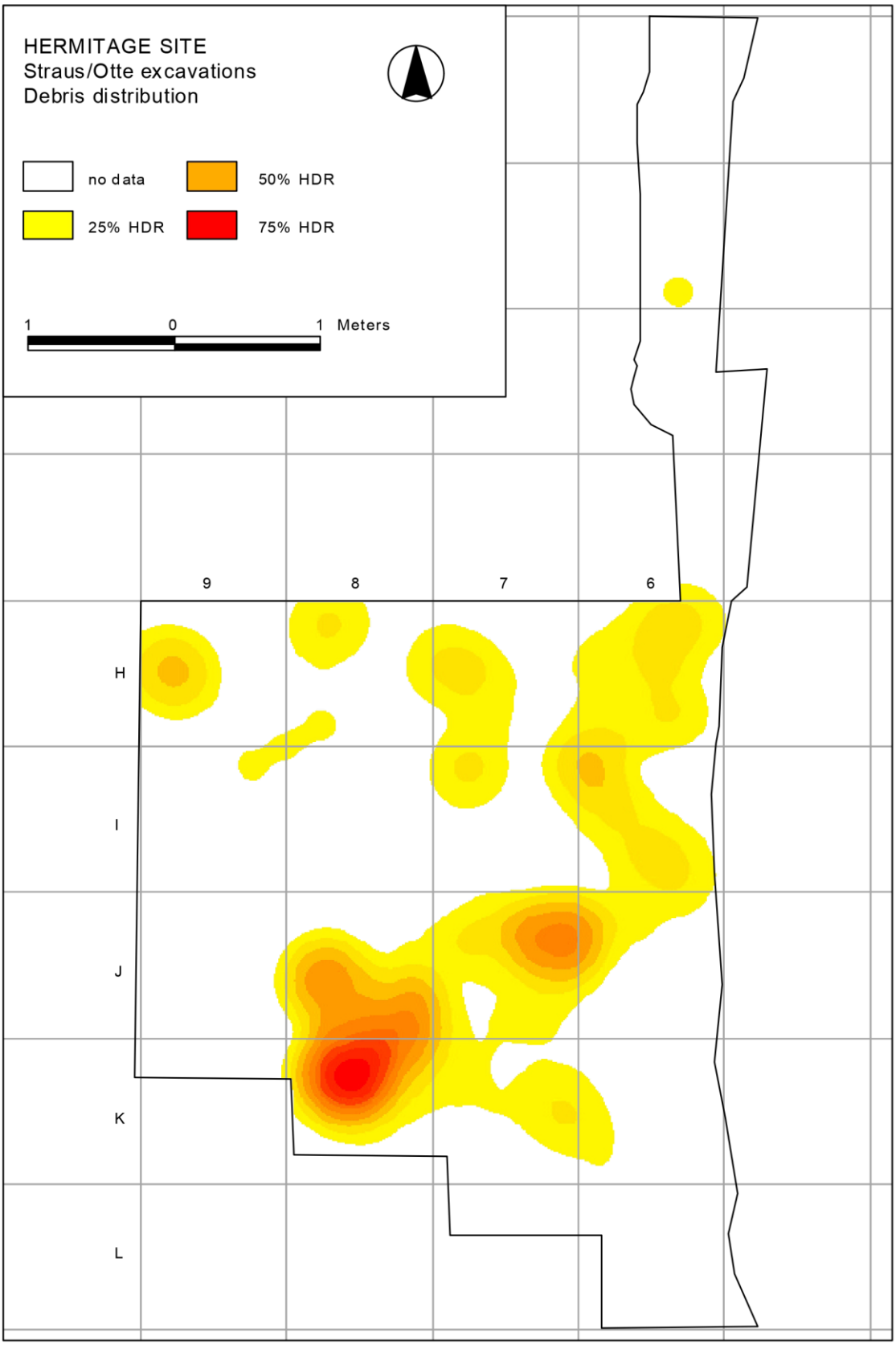
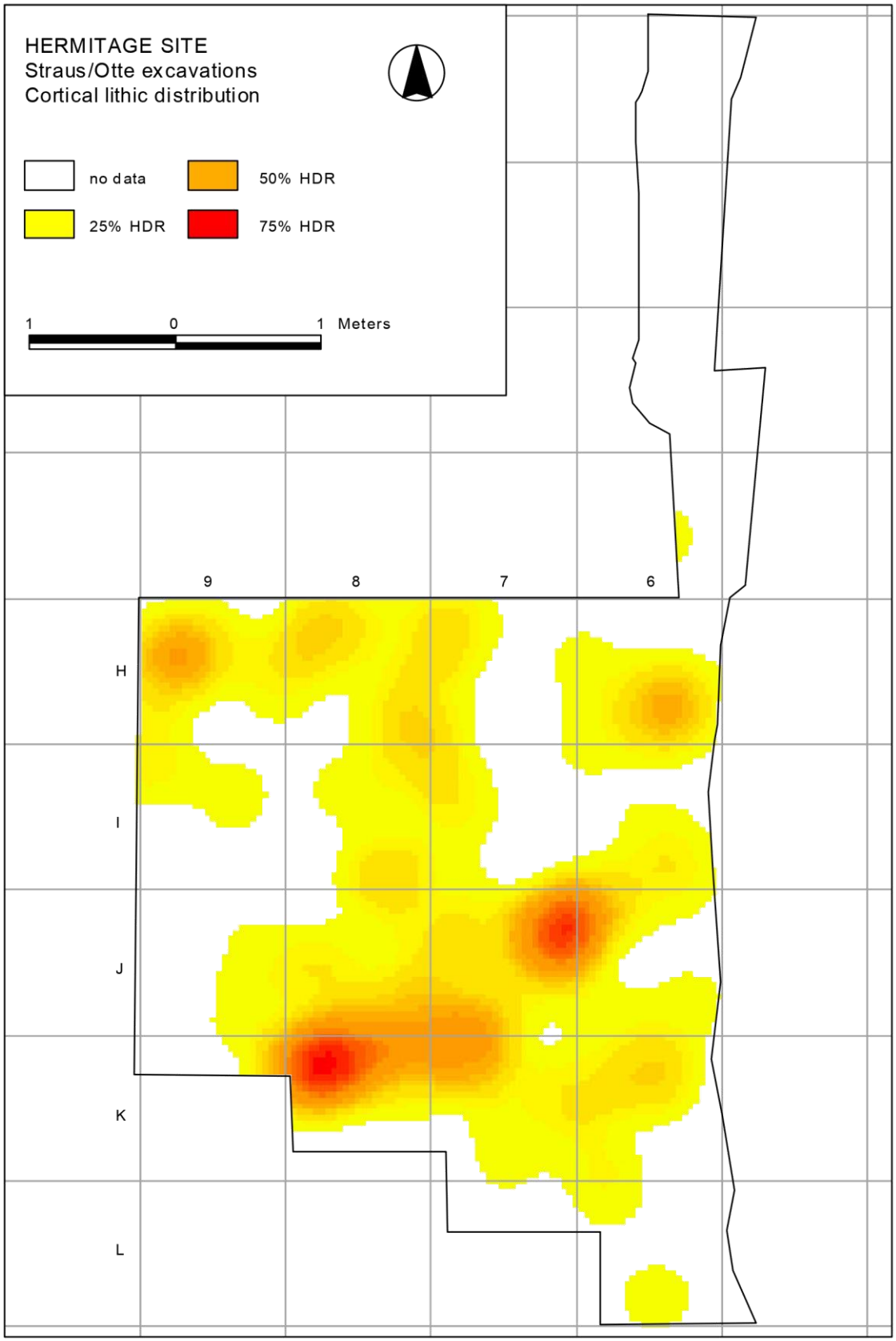

HERMITAGE SITE
Straus/Otte excavations
Debris distribution
no data
50% HDR
25% HDR
75% HDR
1
0
1 Meters
9
8
7
6
H
I
J
K
L

Figure 8.


HERMITAGE SITE
Straus/Otte excavations
Cortical lithic distribution
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50% HDR
25% HDR
75% HDR
1 0 1 Meters
9
8
7
6
H
I
J
K
L

Figure 9.

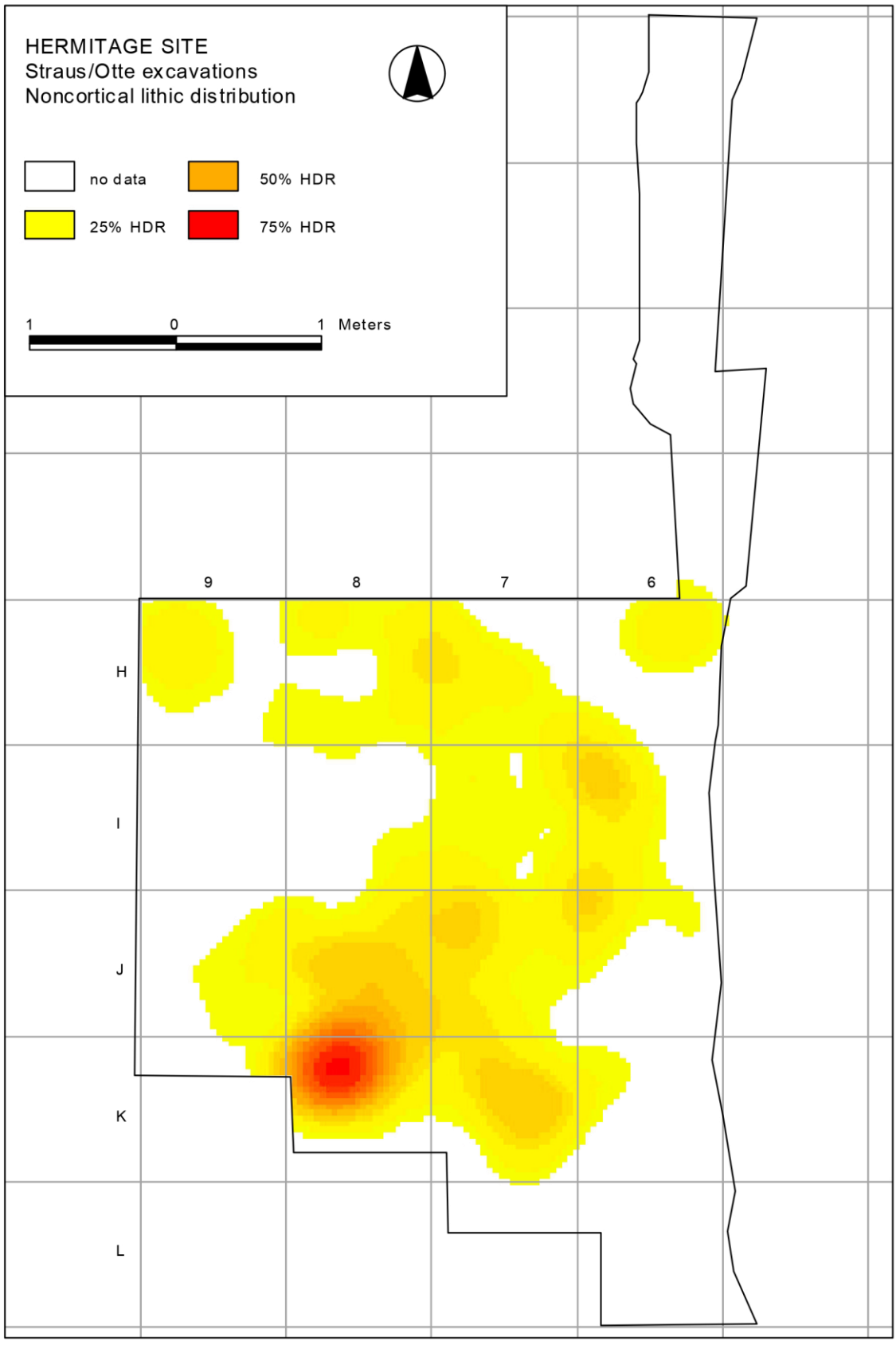
HERMITAGE SITE
Straus/Otte excavations
Noncortical lithic distribution
no data
50% HDR
25% HDR
75% HDR
1
0
1 Meters
9
8
7
6
H
I
J
K
L

Figure 10.

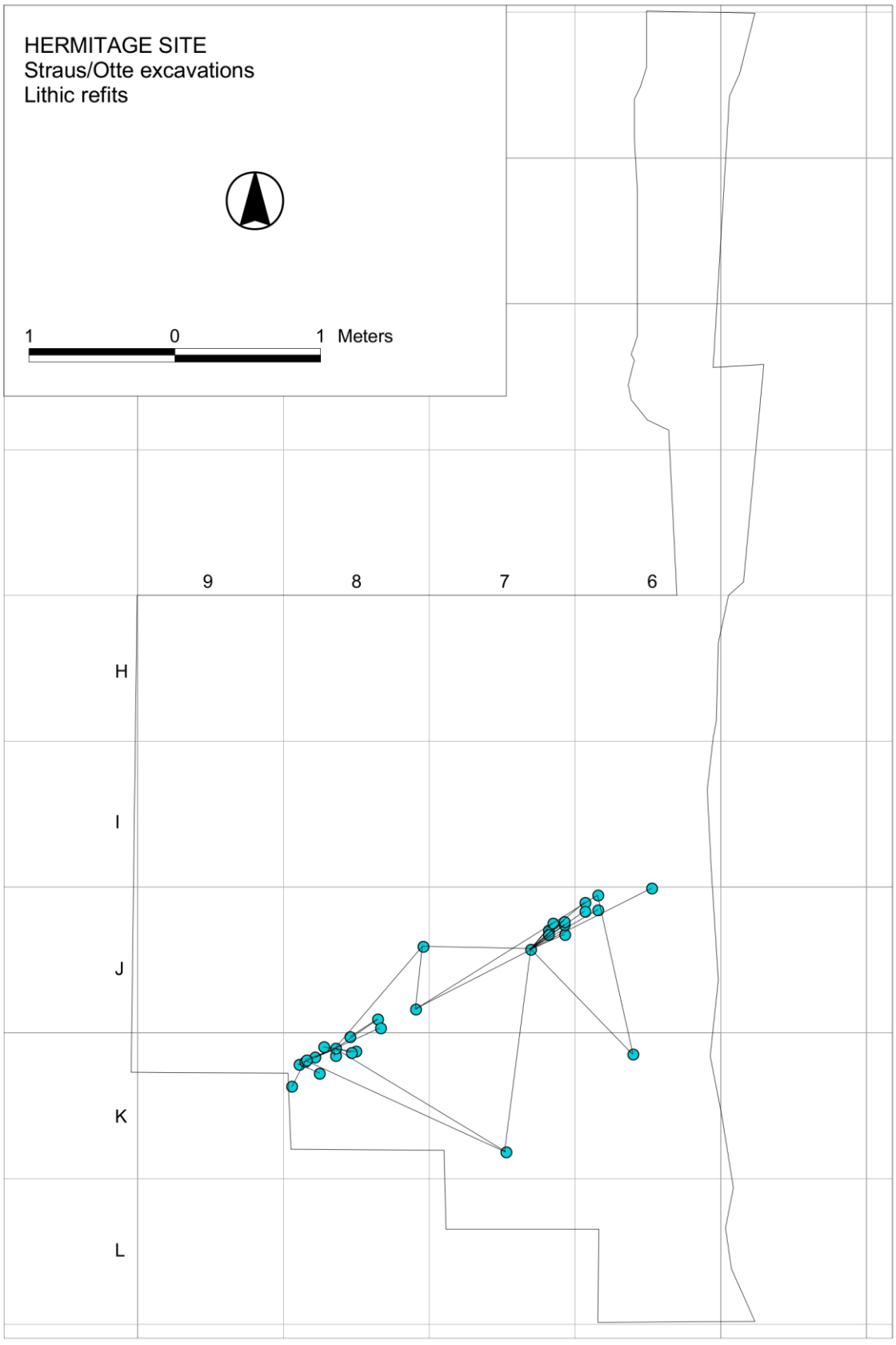
HERMITAGE SITE
Straus/Otte excavations
Lithic refits
1
0
1 Meters
9
8
7
6
H
I
J
K
L

Figure 11.

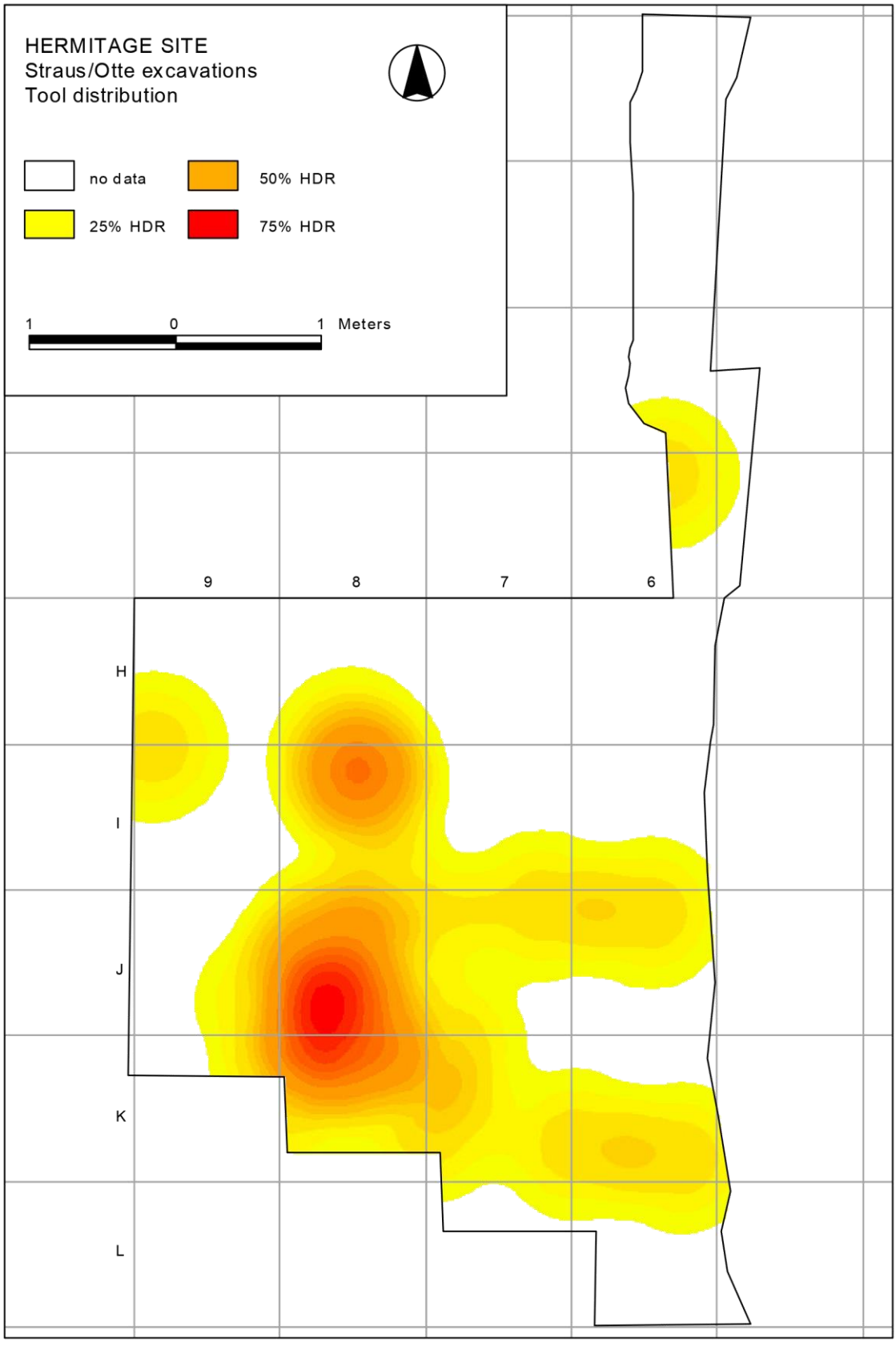
HERMITAGE SITE
Straus/Otte excavations
Tool distribution
no data
50% HDR
25% HDR
75% HDR
1
0
1 Meters
9
8
7
6
H
I
J
K
L

Figure 12.

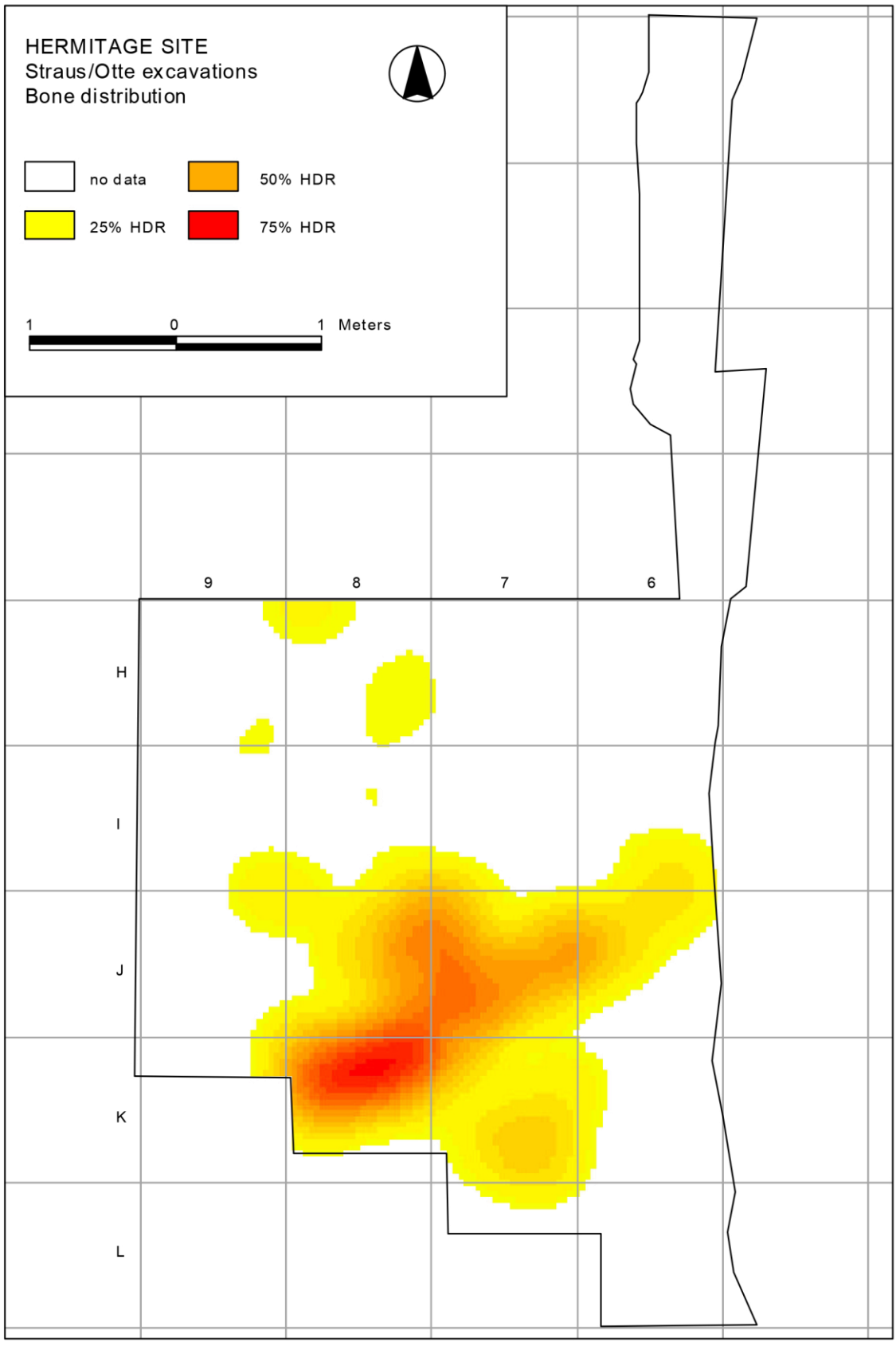
HERMITAGE SITE
Straus/Otte excavations
Bone distribution
no data
50% HDR
25% HDR
75% HDR
1 0 1 Meters
9
8
7
6
H
I
J
K
L

Figure 13.

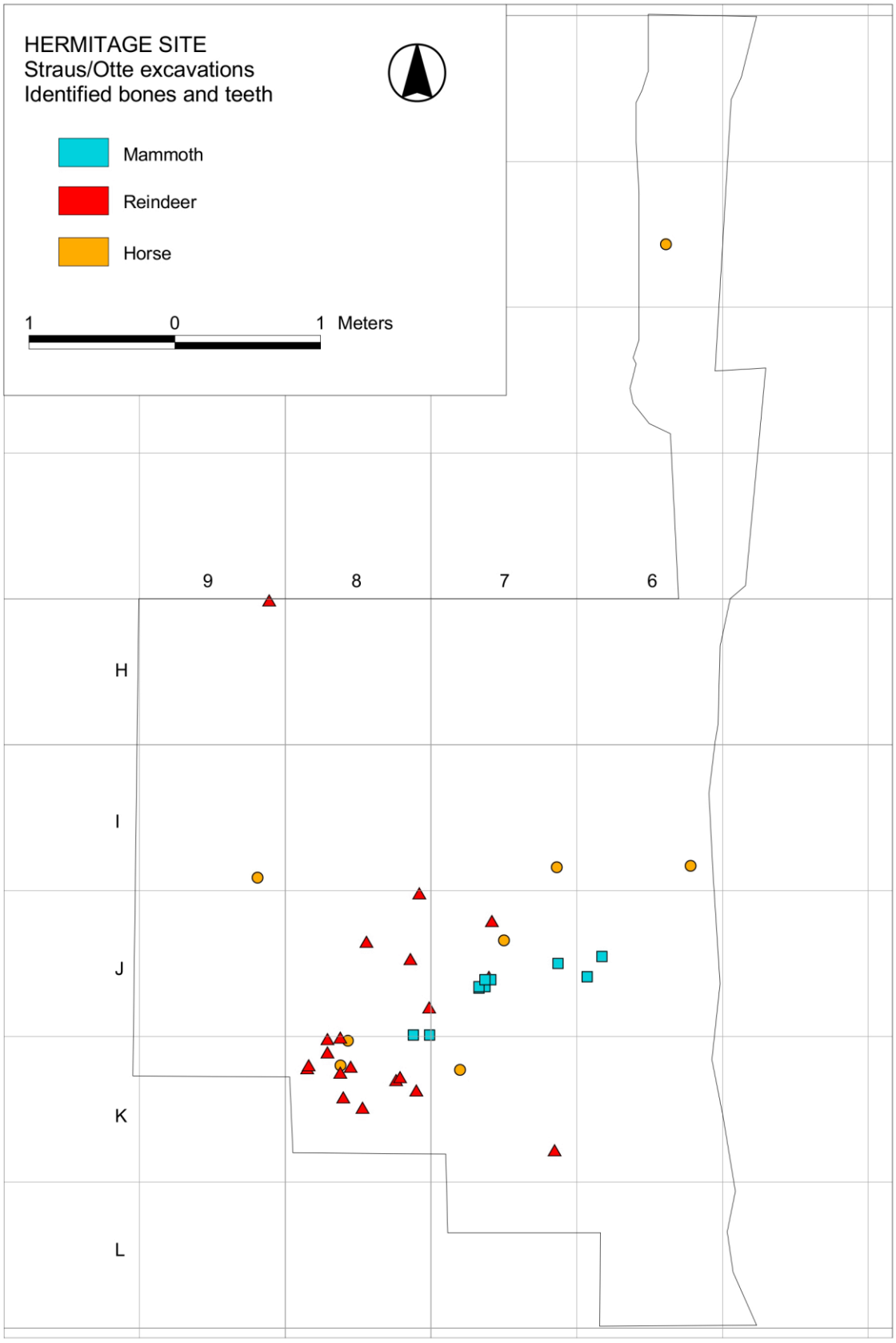
HERMITAGE SITE
Straus/Otte excavations
Identified bones and teeth
Mammoth
Reindeer
Horse
1 0 1 Meters
9
8
7
6
H
I
J
K
L

Figure 14.

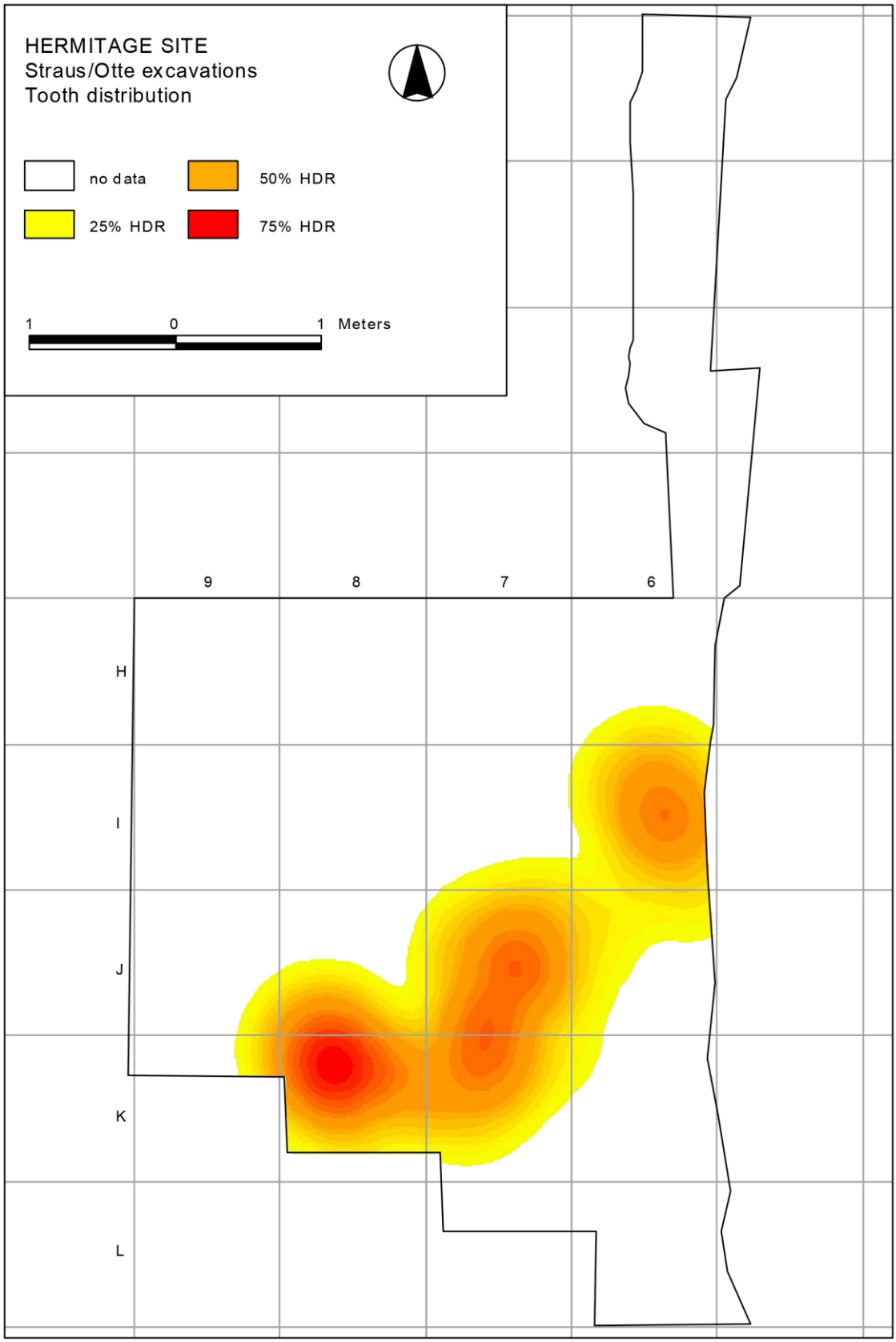
HERMITAGE SITE
Straus/Otte excavations
Tooth distribution
no data
50% HDR
25% HDR
75% HDR
1 0 1 Meters
9
8
7
6
H
I
J
K
L

Figure 15.

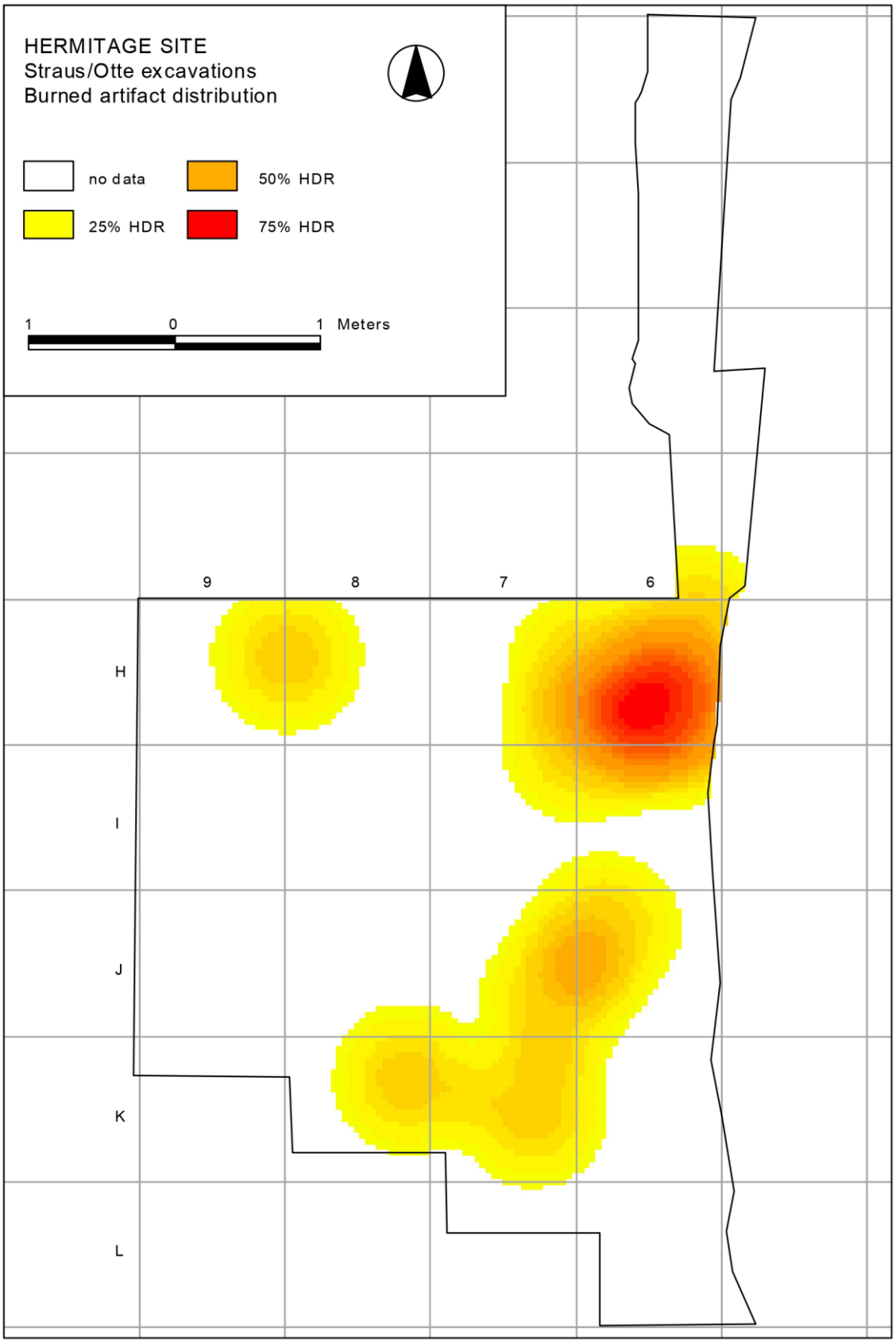
HERMITAGE SITE
Straus/Otte excavations
Burned artifact distribution
no data
50% HDR
25% HDR
75% HDR
1
0
1 Meters
9
8
7
6
H
I
J
K
L

Figure 16.


HERMITAGE SITE
Straus/Otte excavations
Lithic distribution
1
0
1 Meters
Q
R
S
26
25
View to north
Horizontal scale = 1 meter
Vertical scale = 0.10 meter
View to west
Horizontal scale = 1 meter
Vertical scale = 0.10 meter

Figure 17.

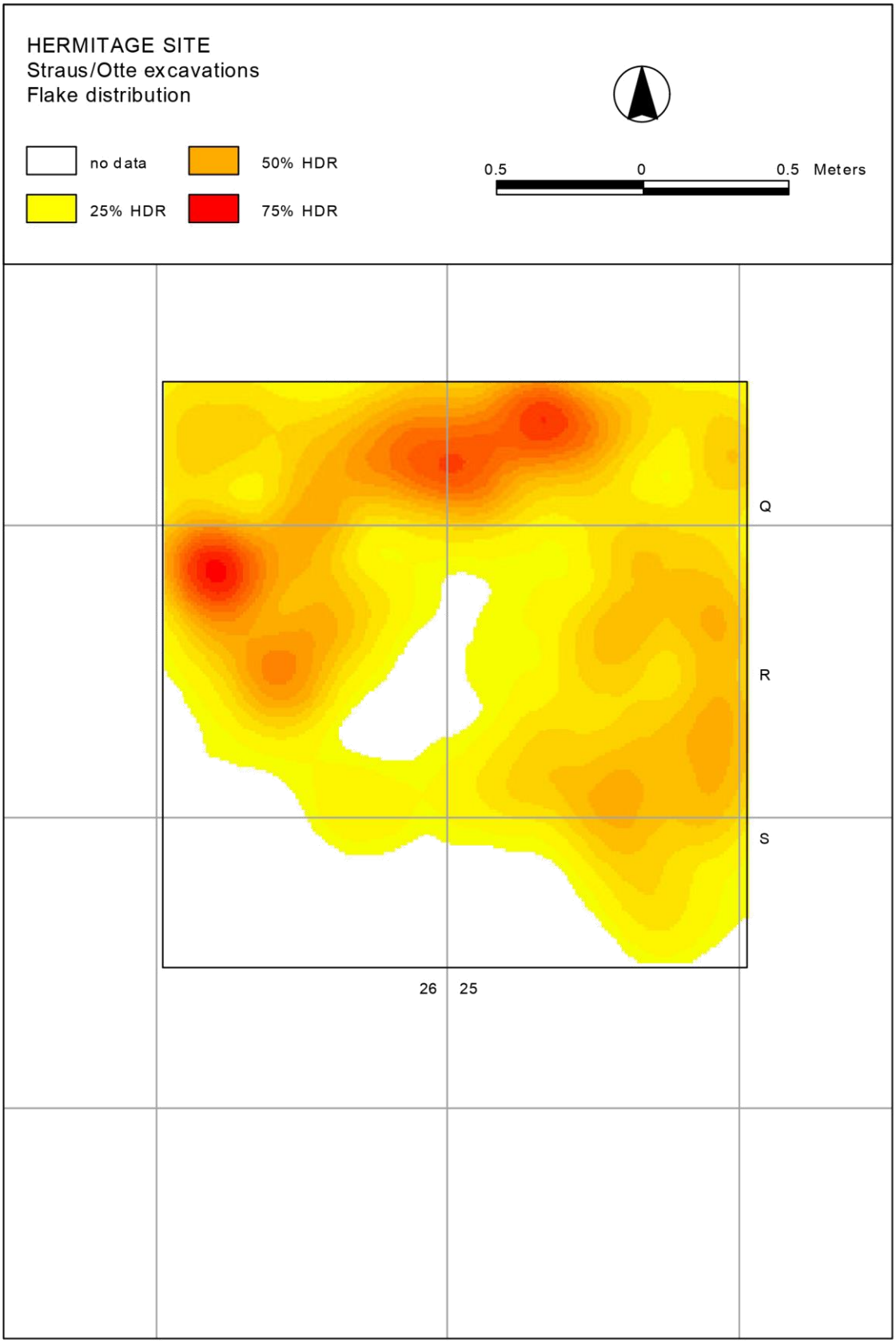
HERMITAGE SITE
Straus/Otte excavations
Flake distribution
no data
50% HDR
25% HDR
75% HDR
0.5
0
0.5 Meters
Q
R
S
26
25

Figure 18.

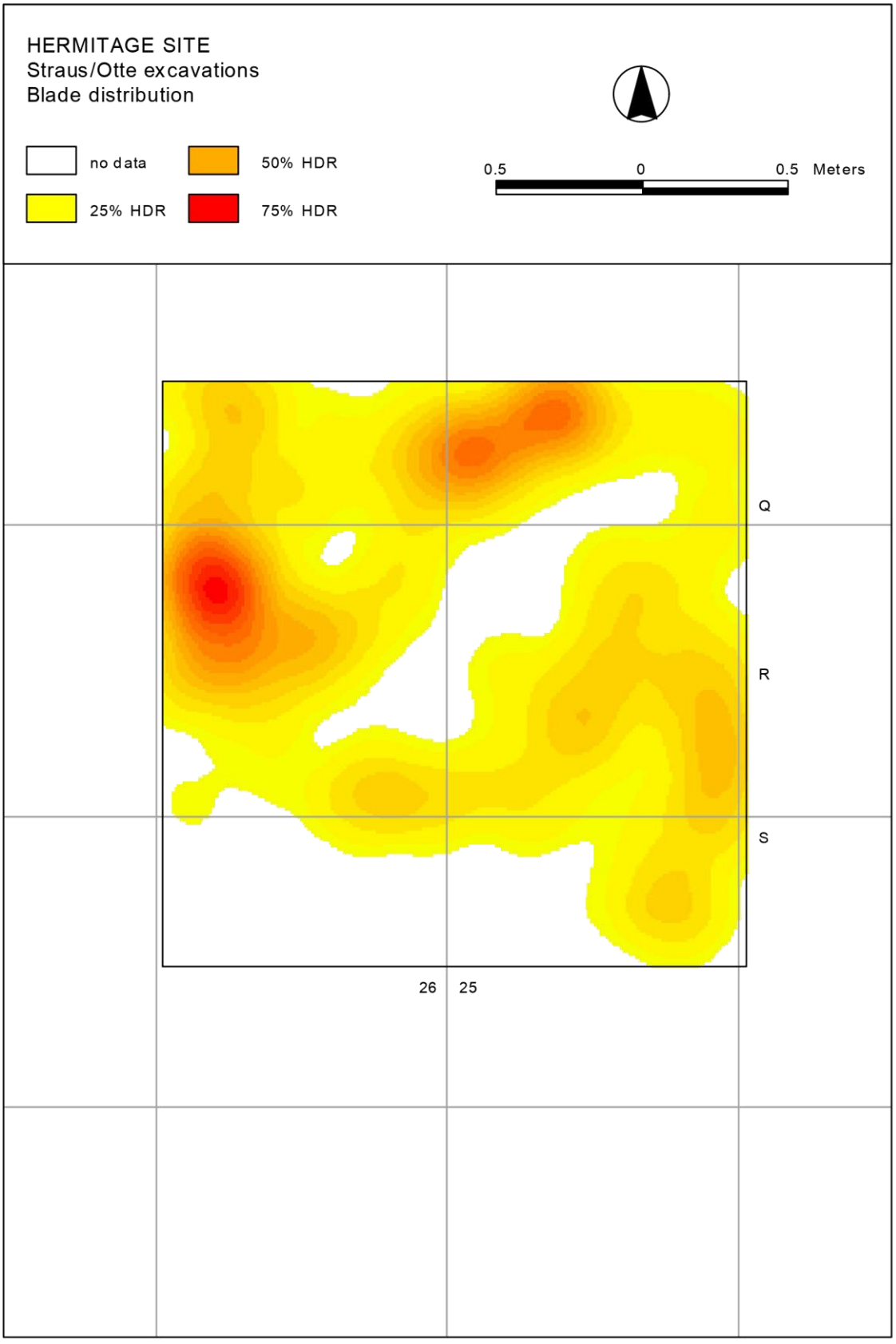
HERMITAGE SITE
Straus/Otte excavations
Blade distribution
no data
50% HDR
25% HDR
75% HDR
0.5
0
0.5 Meters
Q
R
S
26
25

Figure 19.

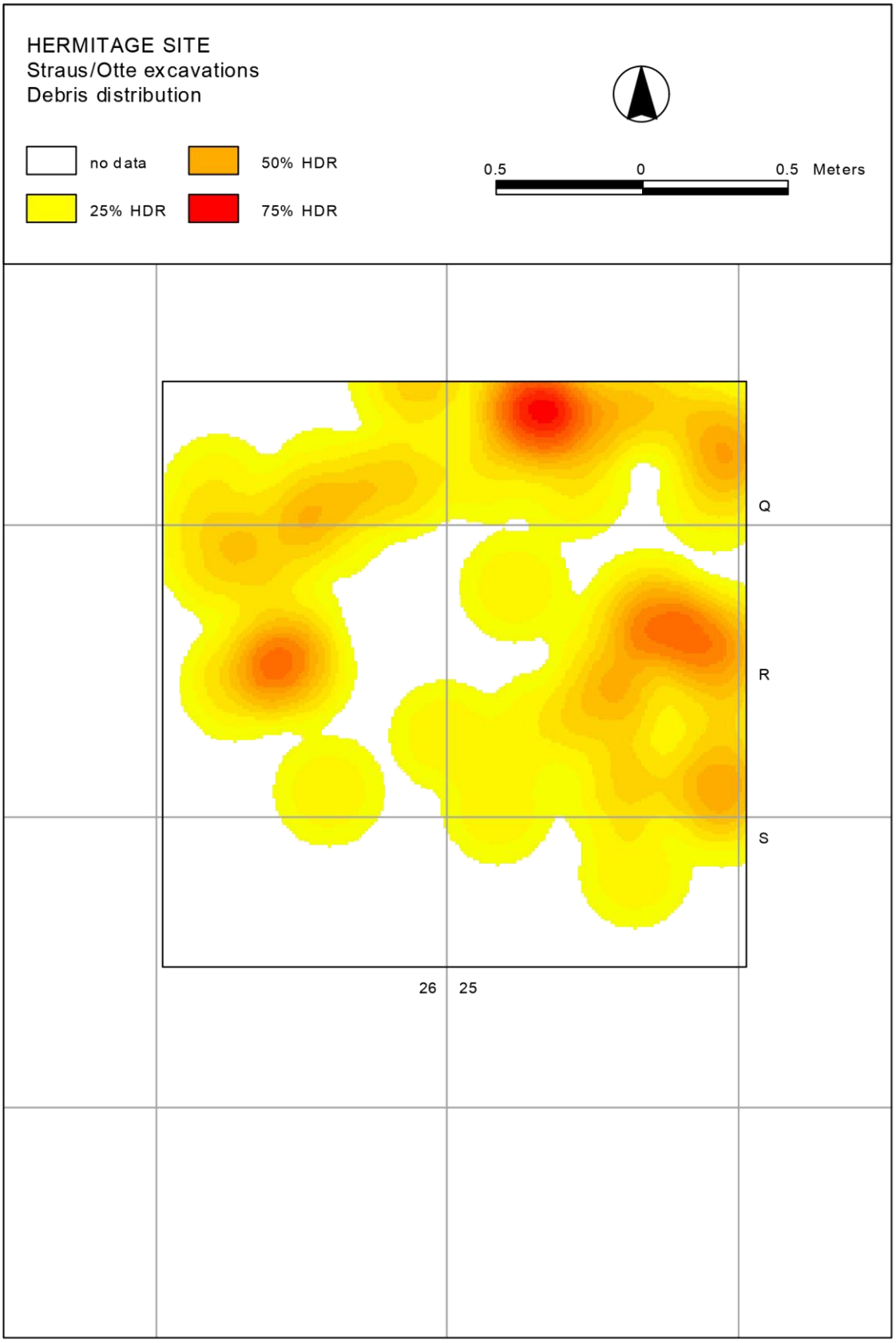
HERMITAGE SITE
Straus/Otte excavations
Debris distribution
no data
50% HDR
25% HDR
75% HDR
0.5
0
0.5 Meters
Q
R
S
26
25

Figure 20.

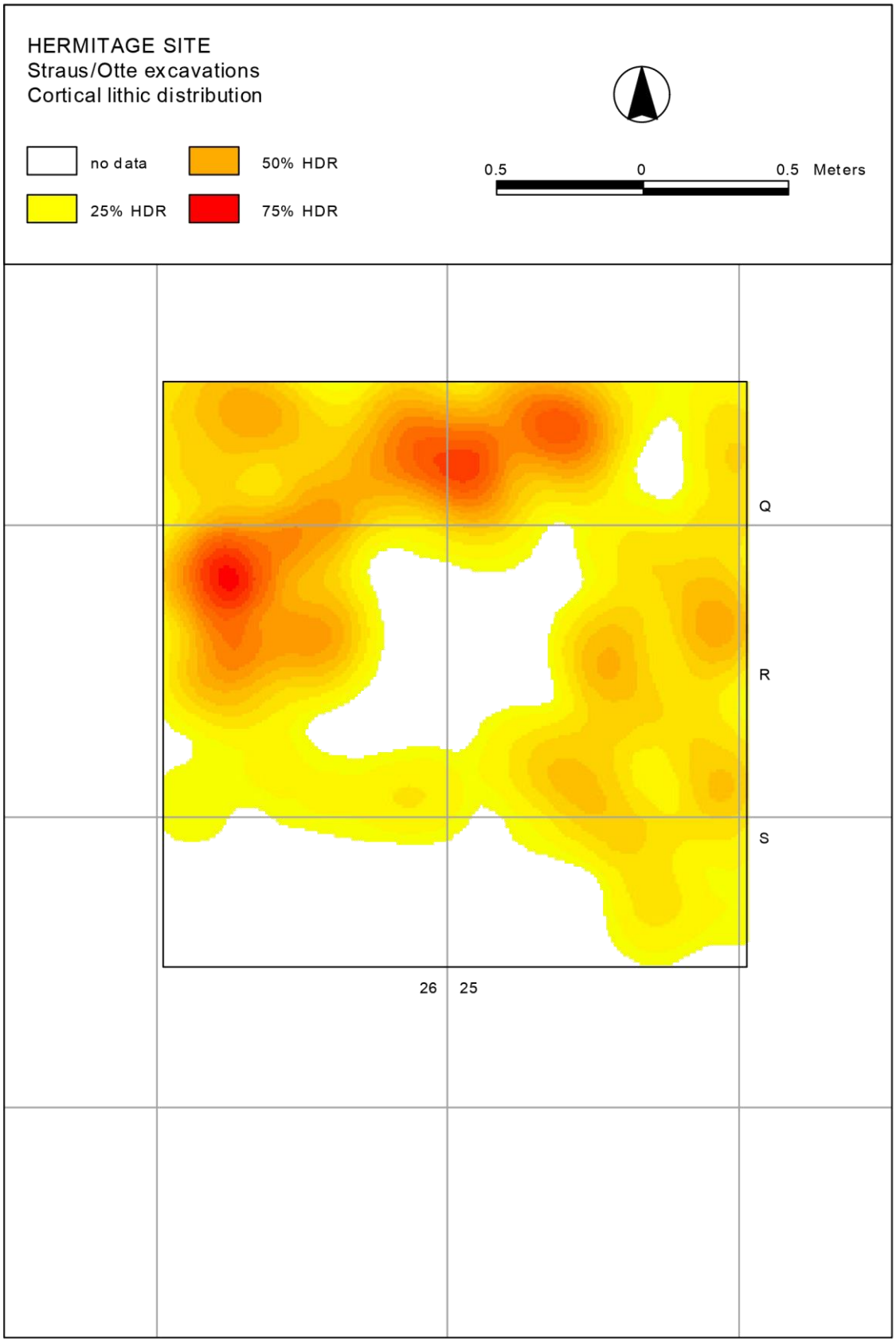
HERMITAGE SITE
Straus/Otte excavations
Cortical lithic distribution
no data
50% HDR
25% HDR
75% HDR
0.5
0
0.5 Meters
Q
R
S
26
25

Figure 21.

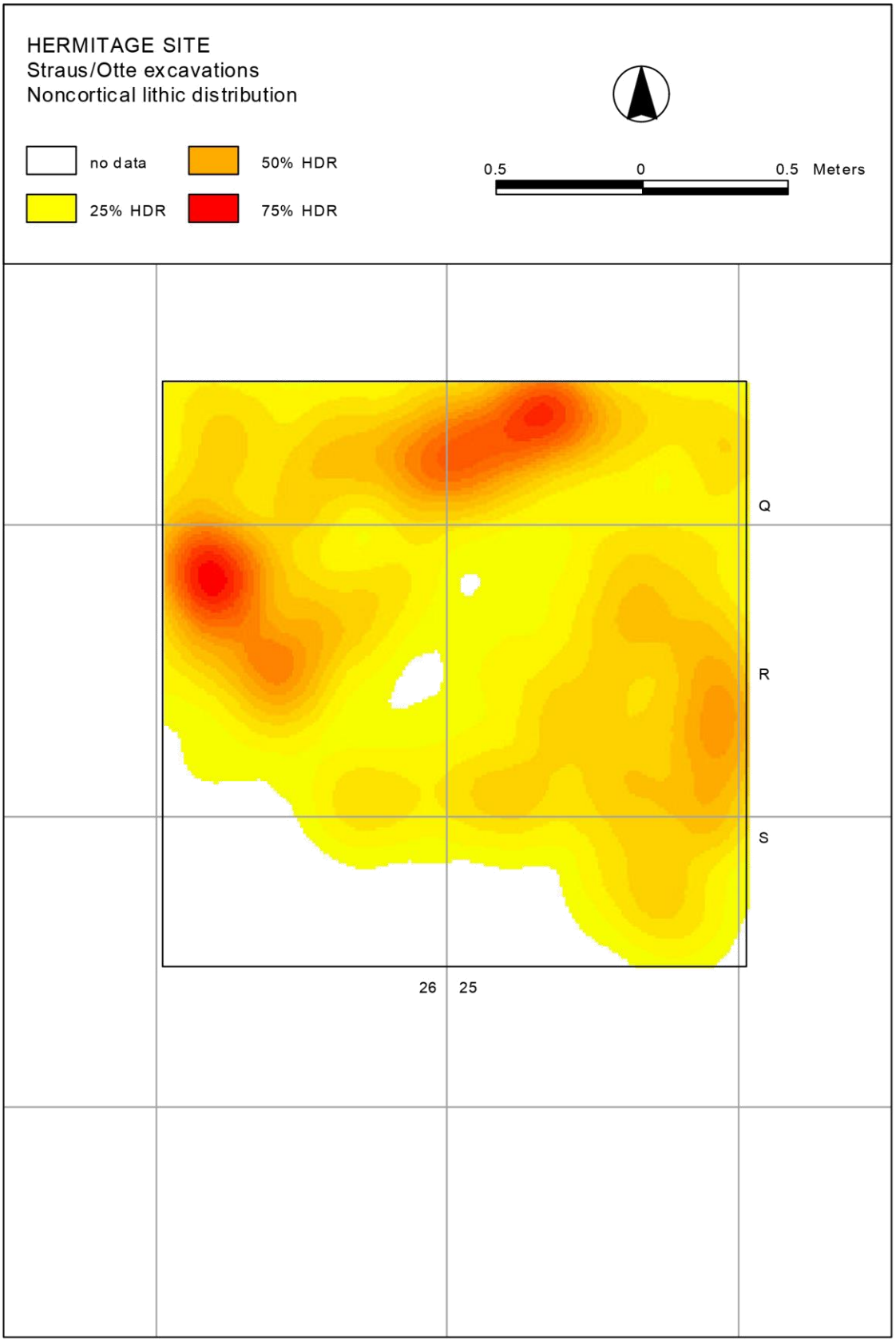
HERMITAGE SITE
Straus/Otte excavations
Noncortical lithic distribution
no data
50% HDR
25% HDR
75% HDR
0.5
0
0.5 Meters
Q
R
S
26
25

Figure 22.

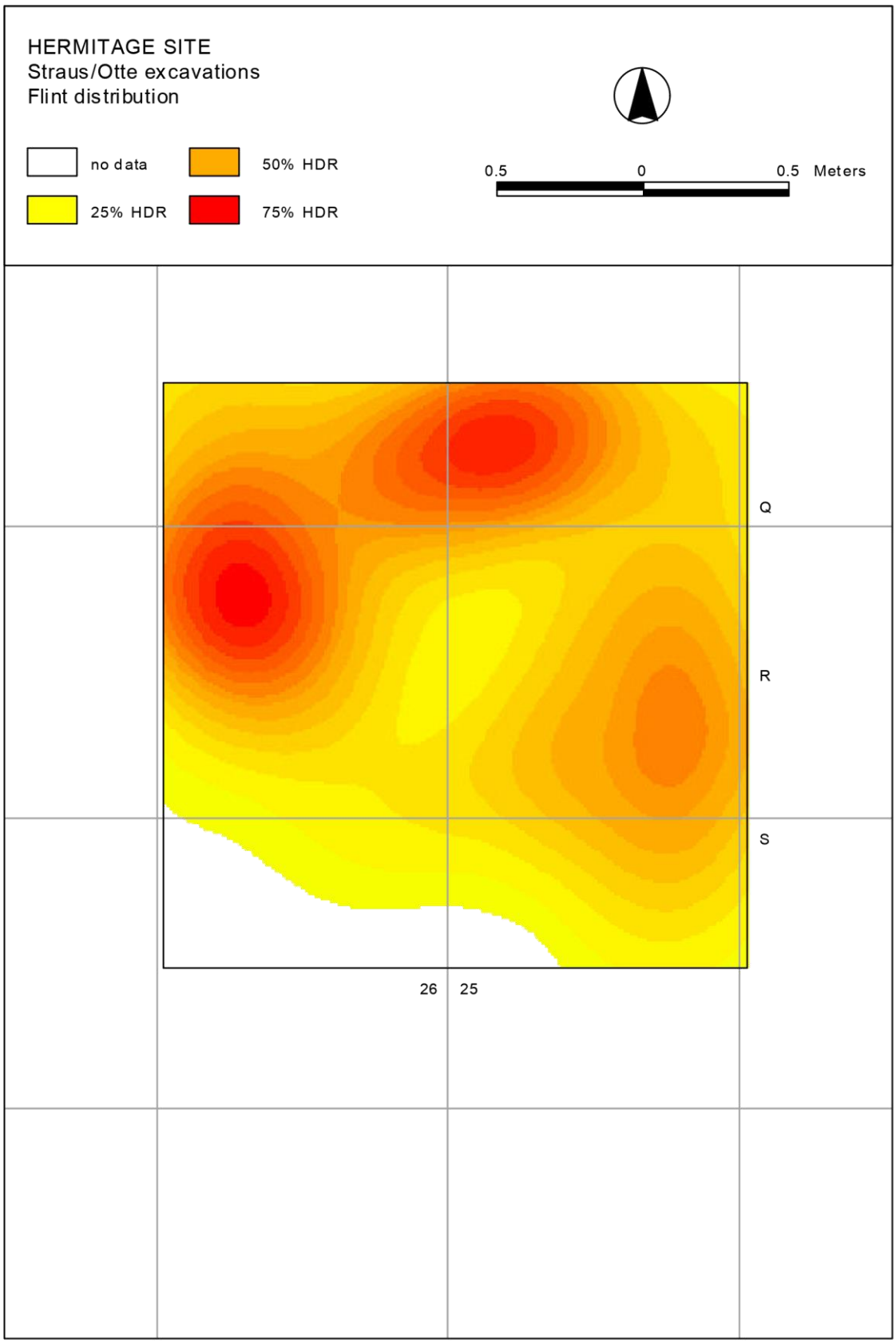
HERMITAGE SITE
Straus/Otte excavations
Flint distribution
no data
50% HDR
25% HDR
75% HDR
0.5
0
0.5 Meters
Q
R
S
26
25

Figure 23.

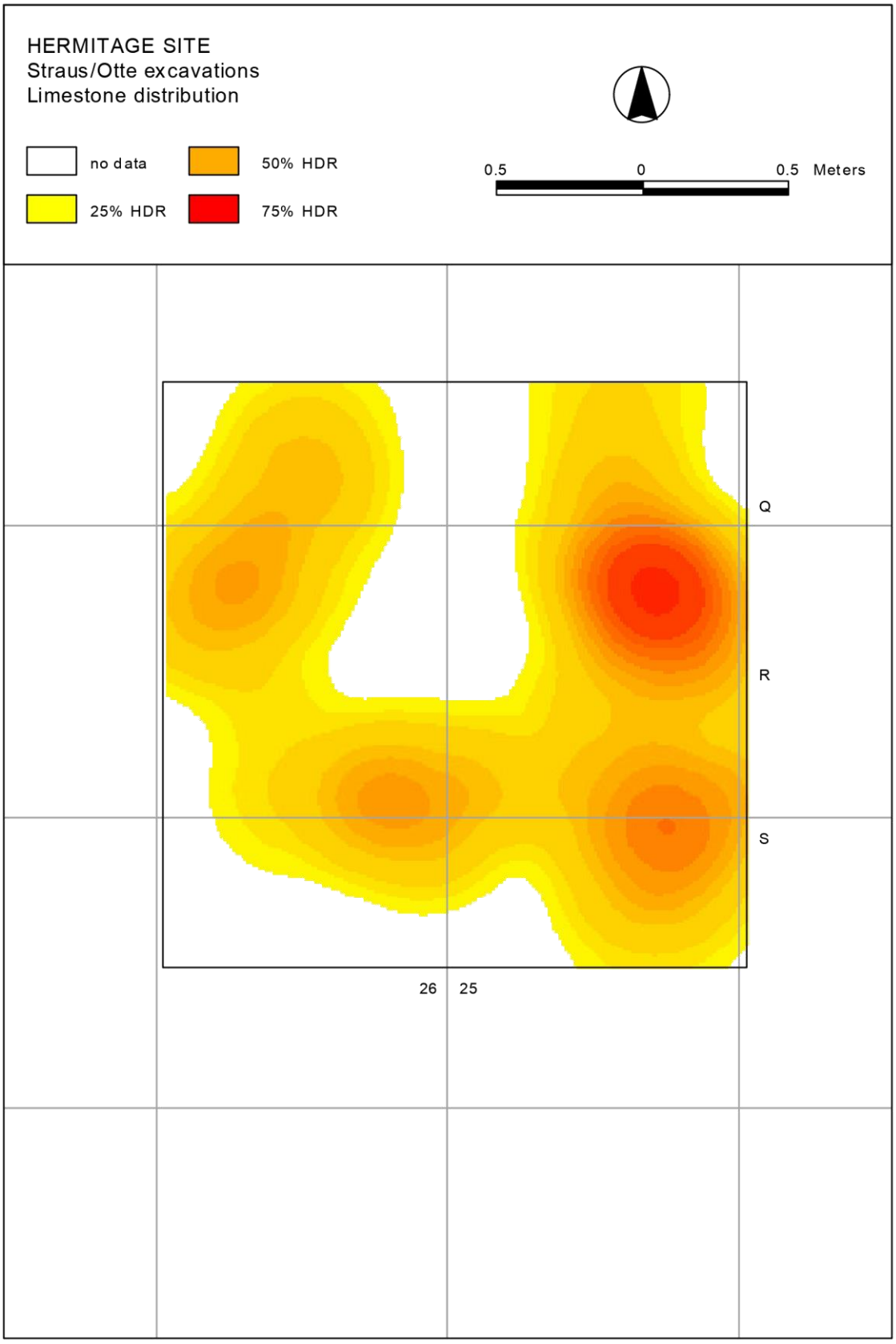
HERMITAGE SITE
Straus/Otte excavations
Limestone distribution
no data
50% HDR
25% HDR
75% HDR
0.5
0
0.5 Meters
Q
R
S
26
25

Figure 24.

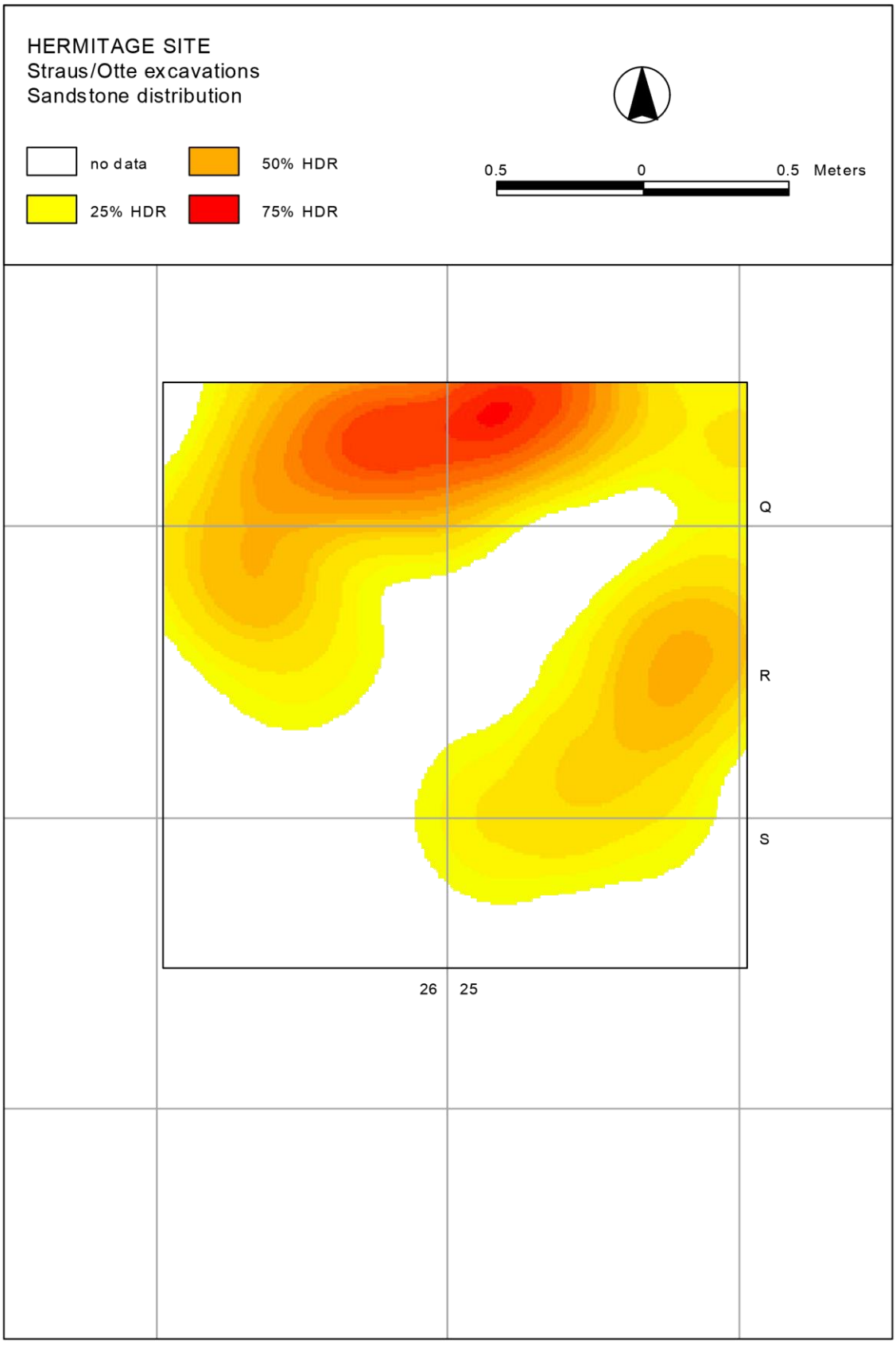
HERMITAGE SITE
Straus/Otte excavations
Sandstone distribution
no data
50% HDR
25% HDR
75% HDR
0.5
0
0.5 Meters
Q
R
S
26
25

Figure 25.

Straus L.G., Otte M. et Haesaerts P. (éds.), *La Station de l'Hermitage à Huccorgne*. Liège, ERAUL 94, 2000.

CHAPTER 15

IMMUNOLOGICAL ANALYSIS OF GRAVETTIAN LITHIC ARTIFACTS FROM HUCCORGNE

Margaret Newman

Cross-over immunoelectrophoresis (CIEP) was used to analyze lithic artifacts from Stratum 4 of the 1991-92 excavations at Huccorgne to attempt to detect and identify protein residues. Description and discussion of the methodology are provided (among other places) in this author's report on immunological analysis of artifacts from le Trou Magrite (Newman 1995, with references). Three sediment samples from Huccorgne were also analyzed as controls.

Twelve lithic artifacts from HH were analyzed. Residues extracted from the artifacts were tested against the following antisera: anti-bear, anti-bovine, anti-cat, anti-camel, anti-chicken, anti-deer, anti-dog, anti-guinea pig, anti-horse, anti-human, anti-mouse, anti-rabbit, anti-rat, anti-sheep, anti-bison, anti-elephant and anti-elk. The anti-sera were provided commercially by Organon/ Teknika, Forensic Medecine, Sigma Scientific Co., and the University of Calgary.

The results are as follows:

Artifact No.	Artifact Type	Result
H8-30	burin	negative
H8-31	blade	negative
H8-35	blade	negative
H8-65	burin/endscraper	rabbit
H8-76	blade	negative
H8-27	burin	negative
I6-18	blade	negative
H6-41.1	Gravette point	negative
J7-5	burin/endscraper	negative
I6-1	blade	negative
J6-12	retouched blade	negative
S25-42	blade	negative

There is only one positive result: to rabbit antiserum on a burin/endscraper. Other members of the Order Lagomorpha (hares and pikas) could be represented by this result (and either--but not rabbit--would make sense in this open tundra-steppe environment). Cross-reactions with other orders do not generally occur.

No other positive results were obtained in this study. The absence of identifiable proteins on the artifacts may be due to poor preservation of protein or that they were used on species other than those encompassed by the antisera samples used (but note that anti-sera of elephant, horse, elk and deer, species which are represented among the faunal remains, were used in our tests). It is also possible that the artifacts were not utilized (an hypothesis most plausible for the several unretouched blades). It is interesting that the only positive result is on a retouched tool.

Straus L.G., Otte M. et Haesaerts P. (éds.), *La Station de l'Hermitage à Huccorgne*. Liège, ERAUL 94, 2000.

CHAPTER 16

LE STYLE GRAVETTIEN DE HUCCORGNE

Marcel OTTE

Au-delà des modes d'installations perçus à Huccorgne, un "style" ethnique imprègne fortement toutes les démarches techniques représentées au site. Il s'exprime dans chaque étape des procédés suivis par les restes lithiques, du débitage aux objets abandonnés. La mise en forme des blocs est conduite selon le principe de la rectitude de et la régularité des supports. Ceux-ci sont menés selon deux schémas au moins : les lames légères pour l'armature, les supports plus massifs pour l'outillage. L'intention de contrôler les produits est évidente et spécialement bien gérée. Tous les fragments de lames révèlent la même intention et la même constance, tendues vers la régularité et l'allongement. La quête d'un matériau homogène et abondant a dû constituer une forte motivation, adéquate au développement de ces méthodes. En aval surtout, se manifeste la panoplie d'objets, conçus d'emblée, dès le débitage, pour rencontrer les besoins, présents ou futurs, en accord avec l'économie et en réponse aux traditions stylistiques propres.

On voit alors des schémas techniques, élaborés et stables, tels des marqueurs à ces traditions techniques. On y distingue un enchaînement organisé sur lamelles et orienté vers de courtes pointes tranchantes, probablement destinées à des armes composites (microlithes collés à des tiges en matières organiques). L'intensité, voire la seule présence de ces témoins démontre que le matériau ne formait pas le seul facteur d'attrait au site dont la position favorisait aussi la prédation. Nous ne saurons sans doute rien de ces pratiques à Huccorgne, à peine suggérées par quelque restes osseux, mais elles devaient aussi y être en équilibre fonctionnel avec les pratiques techniques. L'aménagement des lames plus massives passait par des pratiques hautement codifiées, telles que l'amincissement par des retouches rasantes ou des modes de fixations par crantages d'un ou deux bords.

Ces systèmes d'emmanchement et d'affûtage sont récurrents à Huccorgne: systématiques et intentionnels, appliqués à toutes formes d'outils, quelqu'en soit l'usage, montrant bien l'esprit général dans lequel ces pratiques se manifestent. A la rencontre donc de quelques besoins simples et des exigences mécaniques de la roche, se révèle une pensée cohérente et constante, témoignant d'une tradition forte et organisée.

De telles traces à la fois se distinguent clairement des "messages" émis par l'Aurignacien local et s'identifient à celles exprimées ailleurs en Belgique, selon des modalités légèrement adaptées à chaque situation particulière. Ainsi, ces procédés se trouvent-ils clairement représentés également à Maisières, dans la conception générale qui régit les activités techniques générales. On ne peut donc nier l'évidente liaison entretenue entre ces traditions culturelles. Toutefois, des différences significatives ont pu tout aussi bien s'y manifester, dues par exemple à l'extrême abondance du silex à Maisières, justifiant peut-être la massivité générale qu'y présentent les supports laminaires. Les formules techniques y sont pourtant identiques, dans les modes d'amincissement et les procédés de fixation. Quelques différences pertinentes apparaissent néanmoins telle la rareté des pièces sur lamelles (peut-être due à l'absence de tamisage) et l'importance du débitage de tradition Levallois (peut-être due à une décalage chronologique). Considérée globalement, cette "pensée technique" ne se révèle et se manifeste que lorsqu'elle est incarnée dans des matières premières durables, tel le silex. Elles y apparaissent alors comme une radiographie des outils et des intentions techniques.

Avec le recul, on perçoit les mêmes conceptions, exprimées en différents autres sites belges. Trou Magrite, Spy, Goyet, Font de Forêt. L'enchaînement des gestes y est si précis, si élaboré qu'il ne peut correspondre qu'à des conceptions communes, issues d'un même peuple, participant aux mêmes valeurs. Des différences de dates peuvent intervenir de l'un à l'autre emplacement et, surtout, les conditions d'existence, voire des variations individuelles justifient les nuances néanmoins perceptibles, particulièrement dans les dimensions des pièces.

En élargissant davantage encore le champ d'étude (Fig. 1-4), on observe la présence de ces traditions, dans le nord de la France, à Nemours et dans le sud de l'Angleterre, à Kent's Cavern où les dates y sont également hautes. Tenant compte de la position géographique septentrionale et de la présence, en ces mêmes aires, des "traditions foliacées" antérieures, on peut tenter d'y trouver un lien évolutif, distinct de toute influence aurignacienne : les sites de Pologne, de Thuringe et d'Angleterre contiennent des procédés analogues à ceux révélés à Maisières et à Huccorgne, dans les phases antérieures, au tout début du paléolithique supérieur (Bosselin et Djindjian 1994; Campbell 1977; Hülle 1977; Jacobi 1980; Kozlowski 1986; Kozlowski et Otte 1982, 1987; Otte 1976, 1985a, 1985b; Schmider 1971). De cette façon, on pourrait concevoir, une aire culturelle septentrionale et centrale (en Moravie), le site de Petrkovice fournit cette liaison (Oliva et Neruda 1999), où les industries anciennes, dérivées du paléolithique moyen, basculent progressivement vers les pratiques leptolithiques exclusives, tout en maintenant les systèmes d'affûtage et de fixation.

Plus tard, cette composante gravettienne semble migrer vers le sud-ouest où elle fut décrite comme "Périgordien supérieur V, A". Plus tard encore, ces mêmes tendances semblent participer à la genèse du Proto-Solutréen local. A Huccorgne, nous nous situons dans une phase intermédiaire : avant la reprise des grands froids du pléni-glaciaire et encore imprégné des traditions originelles propres aux régions nordiques. Il s'agit là d'une des composantes de ce vaste complexe" pan-européen" qui uniformisera toute l'aire moyenne de l'Europe au cours du Gravettien pour finalement se déstabiliser en "faciès régionaux" durant le tardi-glaciaire.

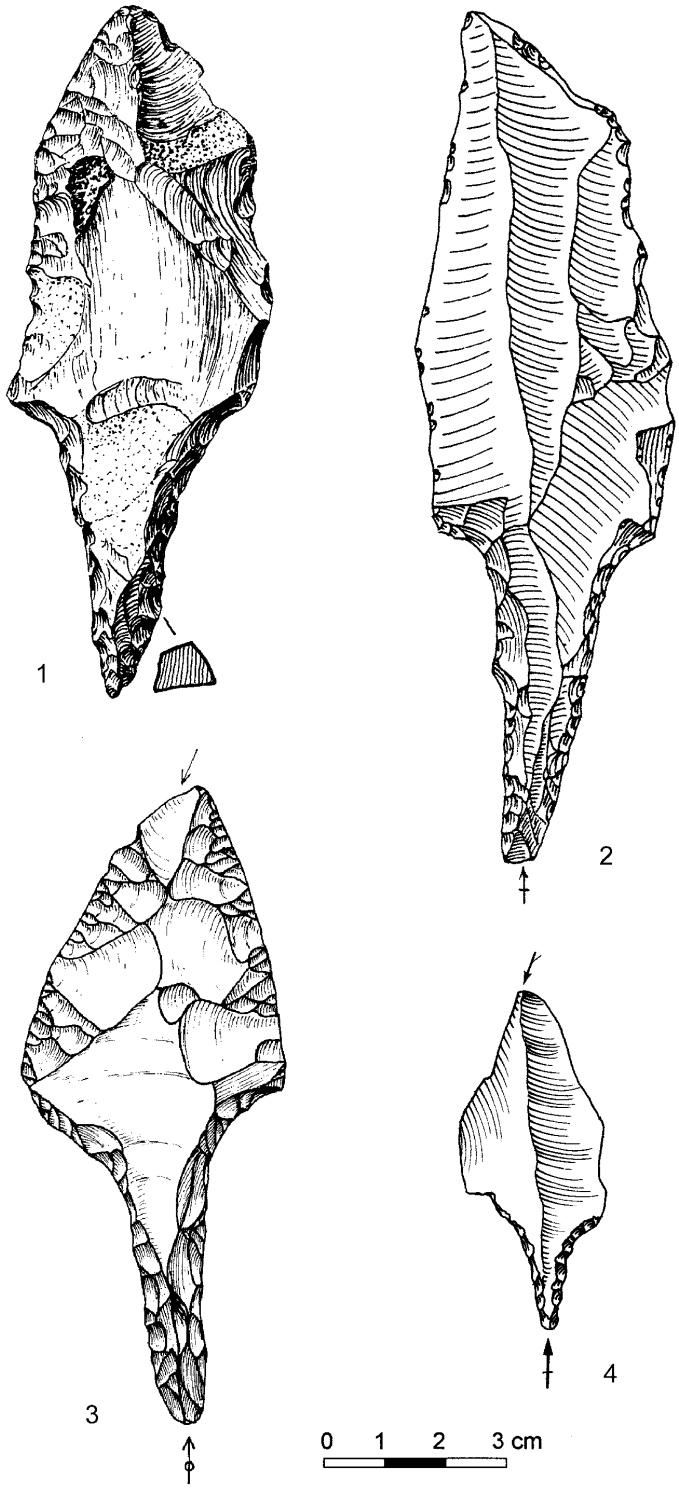

Figure 1. Pièces pédonculées. 1: Cirque de la Patrie, Nemours (d'après Schmider 1971); 2:Pin Hole (d'après Otte 1985a, 1985b); 3: Maisières-Canal (d'après Otte 1979); 4: Huccorgne-Hermitage (d'après Otte et Destexhe, ce volume).

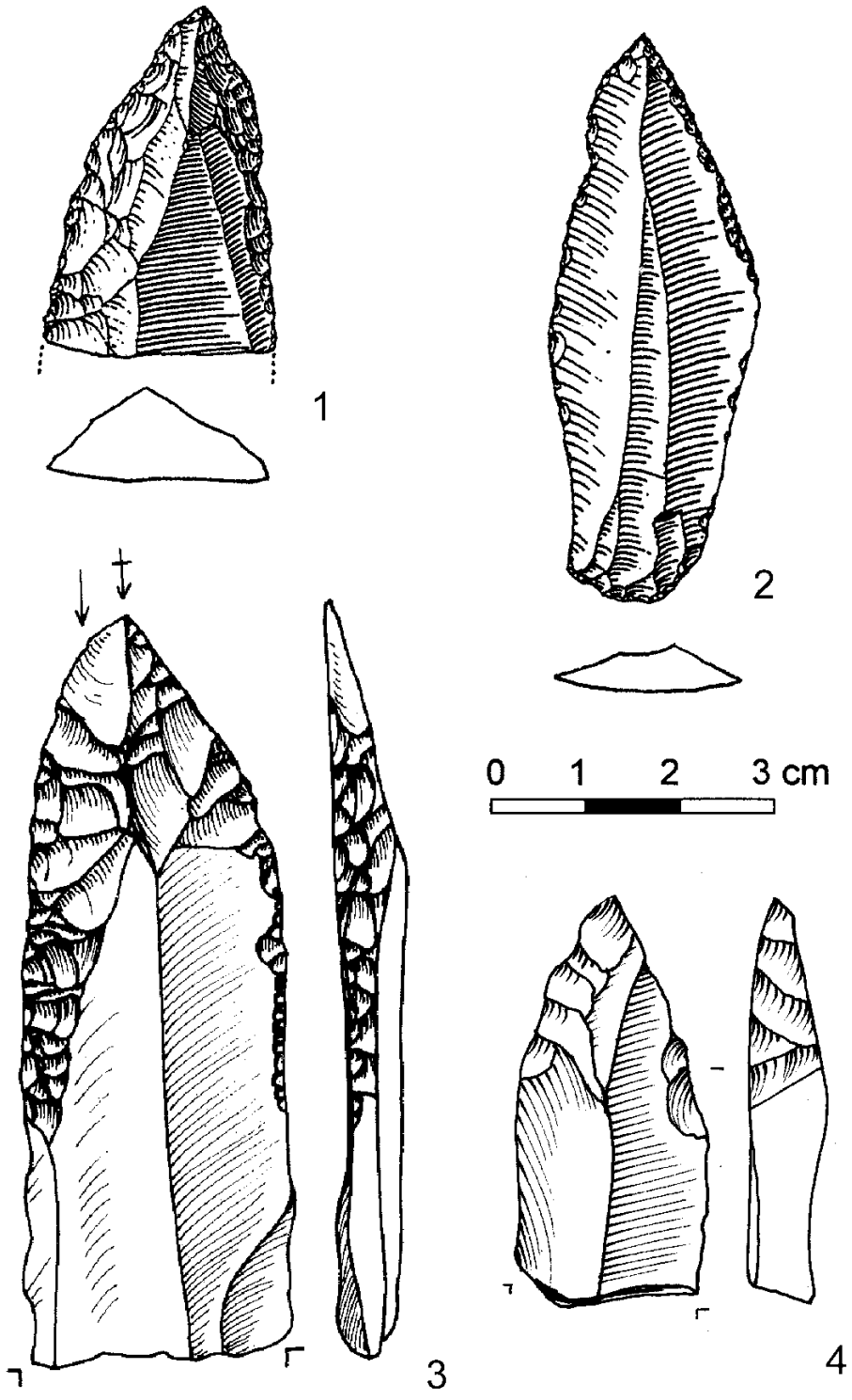

Figure 2. Lames appointées. 1-2: Petrkovice (d'après Oliva et Neruda 1999); 3: Maisières-Canal (d'après Otte 1979); 4: Huccorgne-Hermitage (d'après Otte et Destexhe, ce volume).

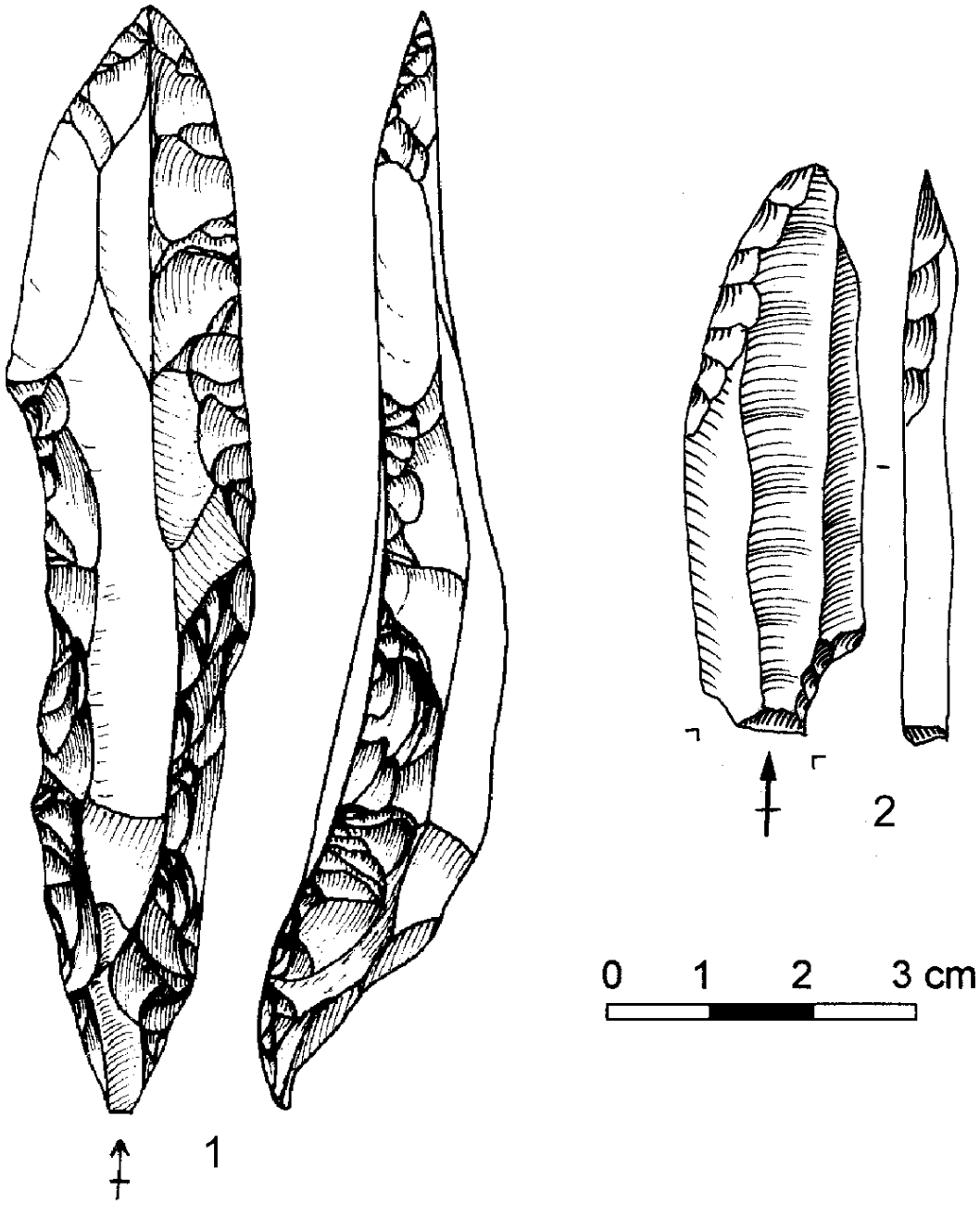

Figure 3. Pièces à cran. 1: Maisières-Canal (d'après Otte 1979); 2: Huccorgne-Hermitage (d'après Otte et Destexhe, ce volume).

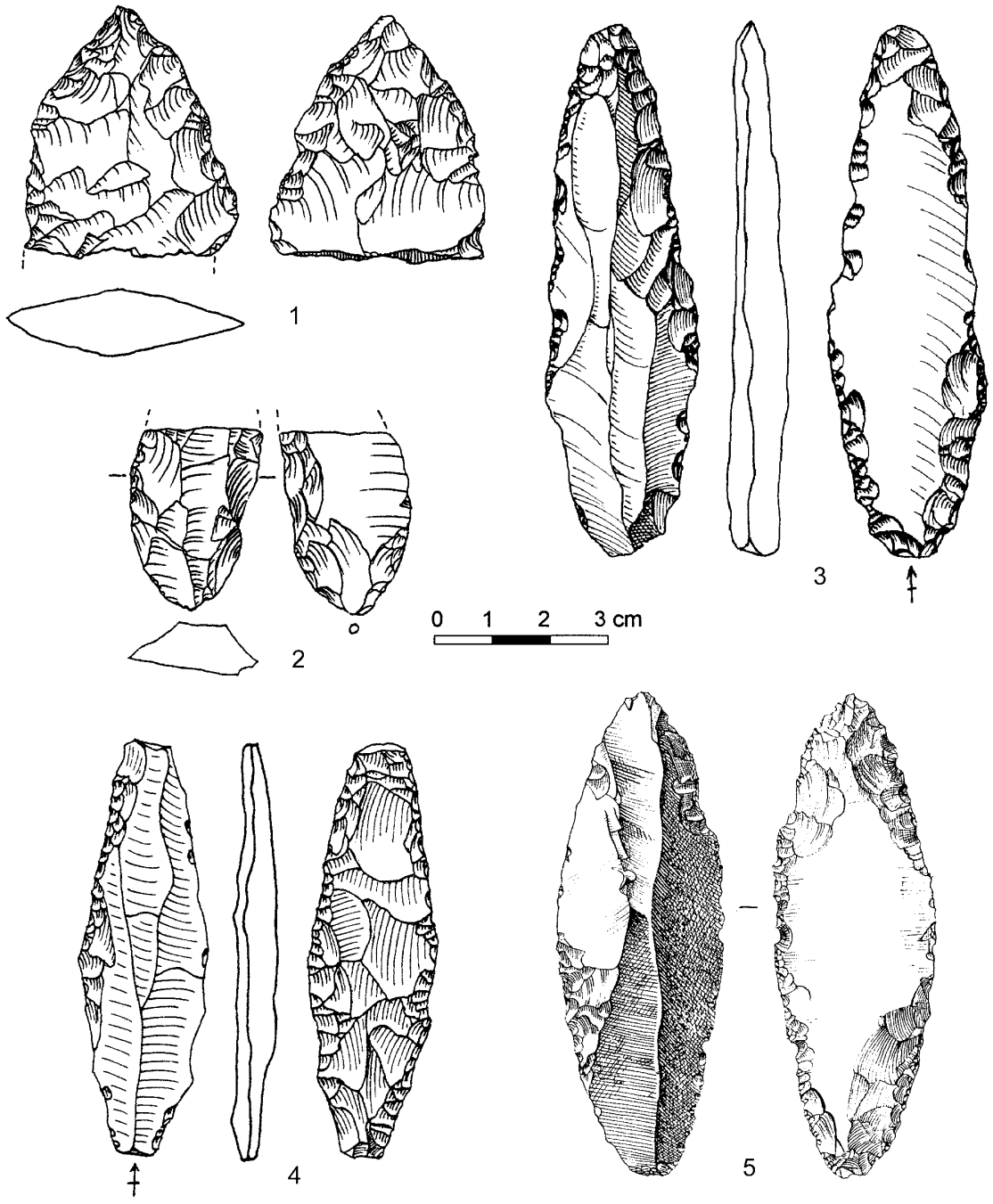

Figure 4. Pointes foliacées. 1-2: Petrkovice (d'après Oliva et Neruda 1999); 3: Spy (d'après Otte 1979); 4: Badger Hole (d'après Otte 1985a, 1985b); 5: Ranis 2 (d'après Hülle 1977).

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CHAPTER 17

SUMMARY AND CONCLUSIONS

Lawrence Straus and Marcel Otte

The Hermitage open-air site at Huccorgne was apparently first visited (probably on many brief occasions) by the Neandertal makers of Mousterian tools. Dating of the Mousterian assemblages that have been found over the years (by Tihon, by Haesaerts and by us) in different levels is fraught with uncertainly, although at least some of them may have corresponded to or predated some of the major humid periods of oxygen isotope stage 5 (*sensu lato*) (Ulrix-Closet 1975), while the most recent ones are thought to date to stage 3 (Moershoofd or Hengelo) (Haesaerts 1978:127 and personal communication). Although none were found by us, bifacial foliate pieces have been found at HH--a phenomenon characteristic of many Middle Paleolithic industries in northwestern and central Europe. Presumably Neandertals were drawn to Huccorgne for its flint; there are no faunal remains that would give us a hint as to possible subsistence activities at the site. Certainly the densities of artifactual material in levels below Stratum 4/4.1 are infinitely lower than those of the Gravettian horizon, at least in the excavation areas where these earlier levels were attained. Neandertals were at HH at times when the environmental conditions were considerably more moderate than during the Gravettian in early oxygen isotope stage 2.

Attracted by locally available nodular chalk flint of excellent quality, as well as by a strategic setting on an oxbow ridge cutting across the Méhaigne River gorge midway between the surface of the Hesbaye Plateau and the middle Belgian Meuse valley in Liège Province, foragers of the Gravettian period repeatedly visited the open-air site of Huccorgne-Hermitage. Like its "sister" site, Maisières-Canal in Hainaut Province, HH witnessed both intensive quarry-workshop activity and hunting. But the visits were ephemeral and evidence of investment in constructions is minimal (i.e., a possible hearth in the central part of the site, excavated by Joseph Destexhe and the Chercheurs de la Wallonie 30 years ago, and problematic "arrangements" of limestone blocks found in the UNM/ULg excavations near the eastern end of HH). The exposed ridge-top location would have provided scant protection and the site would have been particularly unliveable in winter. Warm-season forays onto the plateaux of Middle Belgium from over-wintering bases in the caves in and near the Ardennes Massif may have been in order during the millennia leading up to the Last Glacial Maximum, by which time the entire territory of Belgium (and indeed all of northwest Europe) was abandoned by humans. There is only the slightest (and rather ambiguous) hint of warm season visits to HH in the form of shed cervid antlers that may have been collected by humans following their cold season loss by the animals.

Excluding a couple of totally erroneous, contaminated dates, the plausible radiocarbon determinations point to human occupations of HH during the period between c. 28-23 kya. With the assumption that the date of 23 kya, done several years ago on a bulk sample of bone fragments from the main Gravettian layer in the Destexhe excavation, is too

young (due to contamination from humic acids, for example), we can narrow the timeframe of Gravettian occupation at HH to the period between 28-24 kya. By eliminating the younger of two determinations (done on whole bone collagen) from a single bone, we can further narrow the range down to the period between 28-26.5 kya (with single standard errors of c. 400 years). This estimate is based on 4 AMS dates of carefully prepared samples of collagen (in some cases, on the aspartic acid fraction) from 3 bones found intimately associated with numerous flint artifacts at the base of Stratum 4 in one small area of the eastern excavation area near the railroad cut. The fact that this part of the site was occupied during this period does not, of course, preclude the possibility that there may have been younger occupations in other sectors.

Geomorphological evidence, supported by these radiocarbon dates, suggests that HH was occupied by humans during the Maisières (a.k.a. Kesselt) oscillation, which saw a moderately cold climate in Belgium, with limited humiferous soil formation, surface runoff and colluvial redeposition of loess. While this episode represented a significant interruption in pleniglacial conditions, the environment was still rigorous, with open steppe-tundra vegetation, but probably few or no trees or bushes in the vicinity of HH. (Attempts to obtain pollen grains in samples taken systematically from the UNM/ULg excavation sections were unfortunately all unsuccessful.) The presence of runoff on lightly vegetated surfaces (perhaps disturbed by human activity) is manifest at the base of the Stratum 4 loess, and the relative humidity and somewhat moderated temperature are attested by the weathering that is shown by oxidized Stratum 4.1.

It is likely that--especially toward the west-- there was post-depositional disturbance at HH, consisting of running water, with some rilling and size-sorting of artifacts. This is apparent both in the western *sondage* dug by the UNM/ULg crew near the road cut in the main ("Dock") site and in the trenches dug by crews from the IRSNB under the direction of Paul Haesaerts along both the eastern and, especially, western faces of the road cut that separates the "Dock" and "Smetz" properties. Evidence of water flow erosion was also apparent in both pits dug in the western ("Smetz") site by UNM/ULg. Movement of artifacts and redeposition seems to have been part of the picture in this western part of HH. Nonetheless, there is considerable evidence of intactness in the central area of the "Dock" property dug by Destexhe (hearth, distinct flint-knapping areas) and near its eastern edge along the railroad cut, dug by UNM/ULg, with knapping areas, small clusters of moderately well-preserved bones (mainly mammoth), and, most spectacular, a spatially-restricted cluster of blades and flakes that refit to a single prismatic blade core. The existence of at least two episodes of (first successful and then failed) blank removal from this core, separated by a period of surface exposure and hard freezing of the core, proves that the site was visited at least twice, although several more visits likely took place, perhaps over centuries, if not millennia. The spread of dates is suggestive of a long period of episodic use (probably centered on the somewhat more temperate, humid Maisières oscillation, but perhaps also later during the Tursac phase--after which human occupation of Belgium became impossible). But it is also clear (especially with the rather broad vertical scatter of artifacts and the existence of a few lithic refits spanning several centimeters of vertical separation along the eastern face of the road cut) that part of the spread within the Gravettian horizon is also the result of reworking by geomorphological processes, notably slope runoff and perhaps solifluction.

The presence of mammoth, horse and reindeer remains are emblematic of a "mammoth steppe" (a.k.a. periglacial steppe-tundra) habitat. The suggestion of red deer presence (a single shed antler fragment from the IRSNB excavation), as identified by Gautier, is disconcerting in this context. Its apparent association with the above-mentioned taxa (and with marmot) could only slightly moderate the overall impression of cold, open conditions, albeit with fodder adequate to support several large-bodied herd ungulates. The faunal assemblages are far too small and fragmentary to say anything about human hunting or butchering practices. The question as to whether they actually hunted mammoths or not remains open, although HH joins a long list of Gravettian and Pavlovian sites across that North European Plain that contain mammoth remains in close association with artifacts. Mammoth carcasses (or just mammoth skeletons) may have been attractive additional resources of scavengable food and/or fuel at certain sites. Their bones and teeth are prominent on the Gravettian landsurface at HH. However, nothing at this site suggests highly specialized hunting of any one species, although horse may actually have been the most important game species at HH. The discrete presence of tanged Font-Robert points in the Tihon and Destexhe collections and of shouldered and/or "stiletto-like" Gravette points in the IRSNB and UNM/ULg ones testifies to hunting as a significant--if not predominant--activity at HH, perhaps underestimated by the badly preserved faunal assemblages. Certainly the humans took advantage of hunting opportunities when they presented themselves at this strategically located site.

HH was, however, fundamentally a place to which humans came to knap flint, probably for the acquisition of large blades which were then transported back to residential sites. The latter most likely included caves in the sheltered valleys of the flint-less uplands. The assemblages from the IRSNB and UNM/ULg excavations (and probably from the Destexhe ones as well) are overwhelmingly dominated by knapping debris (especially débitage and "chunks", which are often exhausted core remnants). Debris outnumber retouched tools and weapons by 40 to 1 in the combined IRSNB collections from the trenches along both faces of the road cut and by 93 to 1 in the combined UNM/ULg excavations in the main ("Dock") site. There is an apparent, roughly east-to west gradient, however, in the ratio of debris to tools across the site: 66 to 1 in the excavation area adjacent to the railroad trench; 200 to 1 in the *sondage* near the road cut; 41 to 1 in the trenches along the east face of the road cut; 32 to 1 in the trenches along the west face of the road cut; and 12 to 1 in the west ("Smetz") area. The most dramatically different collection is, however, the one from the UNM/ULg *sondage* near the road cut, where there are many flakes and blades, but few tools or microdébitage items. The scarcity of the latter can be explained by runoff, but the rarity of the former might be due to the existence of definite activity areas within the site. As noted by earlier excavators, and as observed by us, both in our excavations and in study of the distribution plans drawn by Haesaerts, it is apparent that there were distinct knapping areas at HH, especially at and around the center of the site. Perhaps tools associated with other activities (preparation for hunting, butchering, hide-scraping, bone/ivory/ antler-working, etc.) were mainly to be found in peripheral areas--notably to the west (the eastern periphery having been essentially destroyed by the wide railroad trench, while the northern periphery is under a house and outbuildings and the southern periphery too deeply buried in loess to be easily accessible). The distribution of finds is certainly far from even across this large site, suggesting that

different activities had been spatially discrete and that the site had had a certain organizational structure. One can imagine, for example, the logical physical separation of knapping, butchering and food preparation and consumption activities. The long history of excavations and the disparate state of the archeological record from various parts of the site prevents, however, the development of a complete, integrated picture of the detailed site structure of HH.

It is apparent that the objective of the flint knappers at HH was the production of blades (and bladelets). The HH assemblages are highly laminar overall. Only the best blades were chosen for local tool manufacture or--more commonly--for export. Many apparently unused blades and bladelets were abandoned at the site. Indeed the artifacts are generally striking in their "freshness", even despite subsequent periglacial processes such as cycles of freeze and thaw.

Despite the fact that burins are the dominant tool type among all the small collections of tools, burin spalls are relatively scarce. Dihedral burins far outnumber truncation burins. End-scrapers and perforators are very few, testifying to the rarity of processing and maintenance activities at HH. The same is true of denticulates, notches, and truncated pieces. Together with the paucity of hearths and absence of significant, clear-cut structures, this suggests that HH was not a long-term residential site, but rather a frequently re-visited, special-purpose knapping locale. Only a minimum of formal tools and weapon tips was left behind after visits to HH.

The presence of Font-Robert points places HH squarely within the tradition of tanged point Gravettian assemblages in the northwestern end of the North European Plain, although shouldered elements (more common to the east) are present in trace quantities here as in other Belgian sites (e.g., Maisières, Spy) (Otte 1979).

HH has had a long, complex history of excavation that makes it difficult to piece together a full picture of this large open-air site. Unfortunately, the modern, controlled excavations that are mainly published here, were limited in area and peripheral in location vis à vis the central part of the site, which was mainly excavated by Destexhe. It was in this area that there apparently had been at least one hearth, in addition to distinct knapping areas. Similarly dense concentrations of débitage and core remnants were uncovered near the railroad trench and along the east face of the road cut by the UNM/ULg and IRSNB projects respectively. Naturally occurring limestone slabs blocks (probably derived by gravity and solifluction from the cliffside to the east and the butte at the western end of the ridge) may have served as "site furniture", but the extent (if any) to which they may have been arranged by humans remains unclear. No definite structures have been detected, although simple shelters (perhaps using mammoth bones as construction elements) are not out of the question.

In the last analysis, it is the mass of flint artifacts (especially knapping debris) that defines the HH site. Not counting the western ("Smetz") area, where artifacts are very few, densities of artifacts range from 251/sq.m in the UNM/ULg road-side *sondage* down to 33/sq.m in the IRSNB trenches along the west side of the road cut, with intermediate values of 79/sq.m in the UNM/ULg railroad-side excavation and 145/sq.m in the IRSNB trenches

along the east face of the road cut. Judging from Destexhe's plan, the masses of artifacts, especially in the northwest sector of his large excavation, must have been even more impressive in the central part of the site (said to be locally >600 artifacts/sq.m according to Destexhe [Haesaerts 1978:128]). Although the Gravettian component of HH is undoubtedly a palimpsest resultant from several (many?) visits to the site, the intensive nature of knapping activity here is patent. What is absent here is evidence of long-term occupation. The unsheltered nature of the location, its probable lack (or great scarcity) of wood for fuel, and the likely absence of game in winter all make HH a reasonable case for warm-season occupation by humans and a site that was complementary to the Gravettian-age cave sites of Upper Belgium, from Trou Walou in the east to Trou Magrite in the west. In this way, HH may have been fundamentally similar to Maisières-Canal, similarly located in an exposed, albeit flint-rich, setting in the broad valley of the Haine and perhaps seasonally complementary to such well-sheltered cave sites as Spy and Montaigle.

Survival in the Belgium of early oxygen isotope stage 2 depended on humans' ability to find shelter, food, fuel, water and flint. Not all these essentials could be found at the same place at the same time, but by combining the positive attributes of the cave sites in and along the Ardennes with those of the open-air localities at chalk flint outcrops, not far away in Middle Belgium, and perhaps moving with the horse and reindeer herds between the southern valleys and the plateaux to the north, survive they did for a few brief millennia on the most remote frontier of the Western Gravettian world--until they could do so no more and had to retreat ultimately to the Last Glacial Maximum refugia of southern France and Iberia. Future discoveries excavations of sites both on the plateaux and in the upland caves, especially if they yield seasonality data and positive identification of the sources of flint blanks and tools found in the cave, hopefully should be able further to put this attractive hypothesis to the test. As it is, the site of HH, even with its imperfections stemming from some geologic disturbance to a checkered history of excavation, joins Maisières--also with its problems of dating and palimpsest deposits--in shedding some light on the lithic technology and wider adaptations of the last Early Upper Paleolithic settlers on the northwestern fringes of the Gravettian *oikumene*.

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CHAPTER 18

RÉSUMÉ ET CONCLUSIONS

Lawrence G. Straus et Marcel Otte

Le site de plein air de l'Hermitage à Huccorgne fut apparemment visité, sans doute en plusieurs courtes occasions, d'abord par des Néandertaliens porteurs d'un outillage moustérien. La datation des ensembles moustériens découverts au fil des années par Tihon, Haesaerts, puis par nous dans les différents niveaux reste entachée d'incertitude, bien que quelques-uns de ces ensembles au moins correspondent ou sont antérieurs à certaines phases humides majeures du stade isotopique 5 *sensu lato* (Ulrix-Closset 1975), tandis que les plus récents relèvent apparemment du stade 3 : Moershoofdt ou Hengelo (Haesaerts 1978: 129 et communication personnelle). Bien qu'il n'y en ait aucune dans les fouilles récentes, des pièces bifaciales ont été découvertes à Huccorgne-Hermitage; elles sont caractéristiques de nombreuses industries du Paléolithique moyen en Europe du Nord-Ouest et en Europe centrale. On peut supposer que les Néandertaliens ont été attirés à Huccorgne par le silex. Aucun reste faunique ne donne d'indice des activités de subsistance possibles sur le site. Il est certain que les densités d'artefacts dans les niveaux sous-jacents à la Couche 4/4.1 sont très inférieures à celles de l'horizon gravettien, au moins dans les zones de fouilles où ces niveaux anciens ont été atteints. Les Néandertaliens sont donc venus à Huccorgne dans des conditions environnementales considérablement plus modérées que durant le Gravettien, au début du stade isotopique 2.

Attirés par la disponibilité de nodules de silex d'excellente qualité, autant que par une situation stratégique sur une crête recoupant la vallée de la Mehaigne à mi-chemin du Plateau de Hesbaye et de la moyenne vallée de la Meuse, des chasseurs gravettiens ont visité de manière répétée ce site de plein air. Comme son "site-frère" de Maisières-Canal (province du Hainaut), Huccorgne-Hermitage témoigne à la fois d'intenses activités d'atelier et de chasse. Toutefois, les visites y furent éphémères et les traces d'aménagements sont minimes, par exemple un possible foyer dans la partie centrale du site, fouillé par Joseph Destexhe et les Chercheurs de la Wallonie il y a 30 ans, et des "dispositions" problématiques de blocs calcaires découverts dans les fouilles récentes U.N.M./U.Lg. près de l'extrémité orientale du site. La situation, au sommet d'une crête exposée, n'a probablement pu procurer que peu de protection et le site a alors été particulièrement invivable en hiver. Des incursions sur les plateaux de Moyenne Belgique pendant la bonne saison, à partir de sites hivernaux en grottes dans et près du Massif Ardennais, ont pu être la règle durant le millénaire précédant le Dernier Maximum Glaciaire. À partir de ce stade, tout les territoires de la Belgique, et d'ailleurs tout le Nord de l'Europe, ont été abandonnés par les hommes. Seuls de rares témoins douteux pourraient correspondre à une occupation estivale : bois de chute de cervidés peut-être ramassés après la saison froide.

En excluant deux datations totalement erronées par contamination, les déterminations radiométriques acceptables indiquent des occupations humaines durant la période comprise entre vers 28.000 et 23.000 ans BP. En admettant que la datation de 23.000 BP, réalisée il y a quelques années sur un échantillon de fragments d'os issus du niveau gravettien principal (fouille de Destexhe) soit trop jeune, par exemple à cause d'une contamination par des acides humiques, nous pouvons réduire le cadre chronologique de l'occupation gravettienne à la période comprise entre 28.000 et 24.000 ans BP. En éliminant la plus jeune des deux déterminations faites sur tout le collagène d'un seul ossement, nous pouvons encore réduire le

cadre entre 28.000 et 26.500 ans BP (erreur standard d'environ 400 ans). Cette estimation est fondée sur 4 résultats AMS réalisés sur des échantillons de collagène soigneusement préparés (dans certains cas, sur la fraction acide aspartique), à partir de 3 ossements découverts en étroite association avec de nombreux artefacts en silex à la base de la Couche 4, dans une petite zone de l'aire orientale de fouille, près de la tranchée du chemin de fer. Le fait que cette zone ait été occupée pendant cette période n'élimine pas la possibilité qu'il puisse y avoir eu des occupations plus récentes, dans d'autres secteurs.

L'analyse géomorphologique, confirmée par ces datations radiométriques, suggère que HH était occupé durant l'oscillation de Maisières (Kesselt), au climat modérément froid en Belgique, avec formation limitée de sol humifère, érosion de surface et colluvion de lœss. Alors que cet épisode a représenté une interruption significative des conditions pléniglaciaires, l'environnement était toujours rigoureux, avec une végétation de steppe-toundra ouverte, mais probablement peu ou pas d'arbres ou de buissons dans le voisinage de HH. Les tentatives d'extraction de grains de pollen par un échantillonnage systématique lors des fouilles U.N.M./U.Lg. ont toutes été infructueuses. L'écoulement d'eau sur des surfaces portant peu de végétation, peut-être perturbées par l'activité humaine, est manifeste à la base du lœss de la Couche 4. L'humidité relative et la température modérée sont attestées par des processus chimiques, illustrés par l'oxydation de la Couche 4.1.

Particulièrement vers l'ouest, il est probable qu'il y ait eu une perturbation post-dépositionnelle à HH, due à l'écoulement d'eau, laissant des traces de légers sillons à la surface du sol et triant les artefacts par taille. Ce phénomène est visible à la fois dans le sondage occidental de l'équipe U.N.M./U.Lg., près de la tranchée de la route dans le site principal ("Dock"), et dans les tranchées de l'I.R.Sc.N.B. réalisées sous la direction de Paul Haesaerts le long des talus est et – surtout – ouest de la tranchée de la route (qui sépare les propriétés "Dock" et "Smetz"). Des preuves d'érosion par écoulement d'eau sont aussi visibles dans les deux sondages effectués dans le site occidental ("Smetz") par l'équipe U.N.M./U/Lg. Un déplacement des artefacts et une re-déposition semblent avoir eu lieu dans la partie occidentale de HH. De nombreuses indices attestent de l'intégrité de la partie centrale dans la propriété "Dock", fouillée par Destexhe (foyer, différentes aires de débitage), ainsi qu'à son extrémité orientale le long de la tranchée du chemin de fer (fouilles U.N.M./U.Lg.) où des aires de débitage, des petites concentrations d'ossements bien préservés – surtout du mammouth – et la concentration sur une surface restreinte de lames et éclats se remontant en un seul nucléus prismatique, ont été découvertes. L'existence d'au moins deux phases d'enlèvements laminaires (la première réussie, la seconde manquée), séparées dans le temps par une période d'exposition du nucléus au gel, prouve que le site a été visité au moins à deux reprises, même si quelques autres visites supplémentaires ont sans doute eu lieu, peut-être durant plusieurs siècles, voire plusieurs millénaires. La dispersion des datations est indicative d'une longue période d'utilisation épisodique du site, probablement centrée sur l'oscillation assez tempérée et humide de Maisières, mais peut-être aussi plus tard, durant l'oscillation de Tursac – après laquelle l'occupation de la Belgique fut devenue impossible. Cependant, il est clair également qu'une partie de la dispersion à l'intérieur de l'horizon gravettien est due à des processus géomorphologiques, notamment une érosion de pente due à l'eau et peut-être de la solifluxion. Ceci est indiqué par la dispersion verticale fréquente des artefacts et l'existence de quelques remontages lithiques réalisés à partir d'élément répartis verticalement sur plusieurs centimètres de hauteur le long du talus oriental de la tranchée de la route.

La présence de restes de mammouth, de cheval et de renne est révélatrice d'un habitat de type steppe-toundra périglaciaire. La présence du cerf rouge, identifié par A. Gautier (un seul fragment de bois de chute provenant de la collection de l'I.R.Sc.N.B.), est déconcertante dans ce

contexte. Son association apparente avec les taxons mentionnés ci-dessus et avec la marmotte pourrait seulement modérer légèrement l'impression générale de conditions froides, ouvertes, mais avec une végétation suffisante pour plusieurs troupeaux d'herbivores de grande taille. Les ensembles fauniques sont beaucoup trop petits et fragmentaires pour indiquer quoique ce soit sur la chasse par l'homme et les pratiques de boucherie. La question de savoir si le mammouth était chassé réellement ou non reste ouverte, bien que HH s'ajoute à une longue liste de sites gravettiens et pavloviens à travers la plaine de l'Europe centrale qui comportent des restes de mammouths en association étroite avec des artefacts. Des carcasses de mammouths peuvent avoir constitué des ressources supplémentaires attractives de nourriture, de combustible à certains endroits, ou de matériaux pour l'habitat. Leurs ossements et dents sont visibles à la surface gravettienne du sol. Cependant, rien dans ce site ne suggère une chasse hautement spécialisée d'une quelconque espèce, bien que le cheval puisse avoir été le gibier le plus important. La présence discrète de pointes à pédoncule de type Font-Robert dans les collections de Tihon et Destexhe et de pointes crantées ou de La Gravette dans celles de l'I.R.Sc.N.B. et de l'U.N.M./U.Lg. témoigne que la chasse était une activité significative sinon dominante à HH, peut-être sous-estimée sur base des ensembles fauniques mal préservés. Les hommes ont certainement pris avantage des occasions de chasse quand ils se sont installés sur ce site stratégique.

Cependant, HH reste fondamentalement un site où les hommes sont venus tailler le silex, probablement pour l'acquisition de grandes lames rapportées ensuite aux sites résidentiels, tels que les grottes des vallées abritées dépourvues de silex. Les collections issues des fouilles de l'I.R.Sc.N.B. et de l'U.N.M./U.Lg. (et probablement celles des fouilles de Destexhe également) sont très largement dominées par les déchets de taille (spécialement les esquilles, débris et blocs, qui peuvent être des restes de nucléus épuisés). Ces déchets dépassent en nombre les outils et armatures selon un rapport de 40 pour 1 dans les collections cumulées provenant des talus des deux côtés de la tranchée de la route (I.R.Sc.N.B.), et selon un rapport de 93 pour 1 dans les collections cumulées des fouilles du site principal ("Dock"; U.N.M./U.Lg.). Il existe cependant un gradient apparent à travers le site, grossièrement orienté est-ouest, dans le taux de déchets par rapport aux outils : 66 pour 1 dans la zone de fouilles adjacente à la tranchée du chemin de fer; 200 pour 1 dans le sondage près de la tranchée de la route; 41 pour 1 dans les tranchées le long de la face orientale du talus de la route; 32 pour 1 dans les tranchées le long de la face occidentale du talus de la route; et 12 pour 1 dans la zone ouest ("Smetz"). La collection la plus radicalement différente est celle provenant du sondage U.N.M./U.Lg. près de la route, où ont été découverts de nombreux éclats et lames, mais peu d'outils ou de pièces du microdébitage. Cette pauvreté peut être expliquée par l'écoulement d'eau, mais la rareté des outils pourrait bien être due à l'existence d'aires d'activités spécifiques réparties à l'intérieur du site. Comme cela a été noté par les fouilleurs précédents, et observé dans nos fouilles et lors de l'étude des plans de distribution dessinés par Haesaerts, il est visible qu'il existait à HH plusieurs aires distinctes de débitage, spécialement au centre et aux alentours. Peut-être les outils associés à d'autres activités (préparation de la chasse, boucherie, travail de peausserie, travail de l'os, de l'ivoire, du bois de renne) se trouvaient-ils dans des aires périphériques – notamment vers l'ouest : la périphérie orientale a été en grande partie détruite lors de la réalisation de la large tranchée du chemin de fer, la périphérie nord se trouve sous des bâtiments, et celle située au sud est trop profondément enfouie sous les lœss pour être facilement accessible. La distribution des découvertes est certainement très irrégulière à travers le site, suggérant que différentes activités ont été séparées dans l'espace et que le site connut une certaine structure d'organisation. Par exemple, on peut imaginer la séparation physique logique des activités de débitage, de boucherie et de préparation et consommation de la nourriture. La longue succession de fouilles et la variabilité de l'enregistrement archéologique selon les

différentes parties du site empêche toutefois la reconstitution d'une image complète, intégrée, de la structure détaillée du site.

L'objectif des tailleurs à HH est bien apparent : il s'agissait de la production de lames et lamelles. Les collections sont dans l'ensemble hautement laminaires. Seules les meilleures lames étaient choisies pour la confection locale d'outils ou – le plus souvent – pour l'exportation. Beaucoup de lames et lamelles apparemment non utilisées ont été abandonnées sur le site. Les artefacts sont d'ailleurs généralement remarquables par leur "fraîcheur", malgré les processus périglaciaires postérieurs, par exemple les cycles de gel-dégel.

Malgré la dominance des burins, les chutes de burin sont relativement rares. Les burins dièdres sont de loin mieux représentés que ceux sur troncature. Les grattoirs et les perçoirs sont très peu nombreux, montrant par là la rareté des activités domestiques à HH. Le cas des denticulés, des encoches et des pièces tronquées est identique. Avec le manque de foyers et l'absence de structures bien significatives, cela suggère que HH n'a pas été un site de résidence prolongée, mais plutôt une localité fréquemment re-visitée, particulièrement dans un but lié au débitage. Seul un petit nombre de vrais outils et de pointes de traits fut abandonné après les visites.

La présence de pointes de Font-Robert place HH dans la tradition des ensembles gravettiens à pointes pédonculées de l'extrémité nord-ouest de la Plaine du Nord de l'Europe, bien que les éléments crantés plus communs en Europe orientale soient présents en faible quantité, ici comme en d'autres sites belges, par exemple Maisières et Spy (Otte 1979).

L'histoire des fouilles à HH est longue et complexe et toute tentative de dresser un portrait complet de ce grand site de plein air est délicate. Les fouilles modernes, bien contrôlées, qui constituent l'objet principal de cette monographie ont été limitées en extension et sont restées à la périphérie de la partie centrale principalement fouillée par J. Destexhe. Dans cette zone se trouvait apparemment au moins un foyer, ainsi que différentes aires de débitage. Des concentrations denses similaires ont été mises au jour près de la tranchée du chemin de fer et le long de la face est du talus de la tranchée de la route, respectivement lors des travaux de l'U.N.M./U.Lg. et l'I.R.Sc.N.B. Des blocs et dalles de calcaire disponibles aux alentours, probablement déplacés par érosion et solifluxion de la falaise située à l'est, et de la butte à l'extrémité ouest de la crête, ont pu servir à l'aménagement du site. Si ce fut le cas, jusqu'à quel point ont-ils pu être disposés intentionnellement ? Aucune structure définie n'a été rencontrée, bien que de simples abris utilisant peut-être des ossements de mammouth ne soient pas hors de question.

En dernière analyse, c'est la masse d'artefacts en silex, particulièrement les déchets de débitage, qui caractérise le site de HH. Sans tenir compte de la zone ouest ("Smetz"), où les artefacts sont très peu nombreux, les densités d'artefacts varient de 251 au m² dans le sondage U.N.M./U.Lg. le long de la route, à 33 par m² dans les tranchées de l'I.R.Sc.N.B. le long du côté ouest du talus de la route, avec des valeurs intermédiaires de 79 par m² dans la fouille U.N.M./U.Lg. le long du chemin de fer et de 145 par m² dans les tranchées de l'I.R.Sc.N.B. le long du côté est du talus de la route. D'après le plan de J. Destexhe, les masses d'artefacts, particulièrement dans le secteur nord de sa grande fouille, ont du être encore plus importantes dans la partie centrale du site, localement jusqu'à plus de 600 artefacts au m² d'après J. Destexhe (Haesaerts 1978: 128). Bien que la composante gravettienne de HH soit incontestablement un palimpseste résultant de plusieurs visites au site, l'intensité de l'activité de débitage est ici patente. Par contre, l'indication d'une occupation de longue durée est absente. Le caractère non protégé de l'endroit, le manque probable (la grande pauvreté, en tout cas) de bois comme

combustible, et l'absence apparente de gibier en hiver permettent de considérer raisonnablement HH comme un site occupé pendant la bonne saison par les hommes et comme un site complémentaire d'occupations gravettiennes en grottes, connues en Belgique, du Trou Walou à l'est au Trou Magrite à l'ouest. Ainsi, HH peut avoir été fondamentalement similaire à Maisières-Canal, installé de manière comparable dans une lieu exposé, mais riche en silex, dans la large vallée de la Haine et peut-être complémentaire – en terme de saisonnalité – de sites en grottes bien protégés comme Spy et Montaigle.

La subsistance en Belgique durant le début du stade isotopique 2 dépendait de l'habilité des hommes à trouver un abri, de la nourriture, du combustible, de l'eau et du silex. Ces nécessités ne peuvent pas toujours être rencontrées au même endroit au même moment, mais en combinant les attributs positifs des sites de grotte, le long des Ardennes, à ceux des localités de plein air liées aux affleurement de silex crayeux proches en Moyenne Belgique, et peut-être en se déplaçant en suivant les troupeaux de chevaux et de rennes entre les vallées méridionales et les plateaux au nord, les hommes ont pu survivre pour quelques millénaires. Cette frontière la plus extrême du monde gravettien occidental fut abandonnée lorsque la situation n'était plus possible et que les populations soient obligées finalement de se retirer dans les refuges du Dernier Maximum Glaciaire, dans le sud de la France et la Péninsule Ibérique. La découverte de nouveaux sites, et leur fouille, à la fois sur les plateaux et dans les grottes, surtout s'ils livrent des informations liées à la saisonnalité, à l'identification des sources de silex utilisé pour les supports et les outils, devraient permettre de tester cette hypothèse. À l'heure actuelle, le site de HH, même avec ses lacunes dues à la perturbation géologique, à un historique des recherches très disparate, rejoint Maisières – qui possède aussi ses problèmes (datation, dépôts en palimpseste) – dans la mise en évidence de la technologie lithique et des plus larges adaptations des derniers occupants du Paléolithique supérieur ancien aux franges nord-ouest de l'*oikumene* gravettienne.

Traduction : Pierre Noiret et Rebecca Miller

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