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The Mesolithic *Le Mésolithique*

Philippe CROMBÉ and Nicolas CAUWE

Abstract

Despite the general bad site-preservation, knowledge of the Mesolithic in Belgium has increased considerably in the last 15 years. In particular the Early Mesolithic (9,500–8,700/8,500 B.P.) is currently well-documented, thanks to the recent discovery of some sealed settlements and cave-burials. Early Mesolithic settlement seems to be characterised by a system of relatively small occupational units and a pattern of dispersed “inland” versus a relatively dense and recurrent riverine occupation. Funeral practices are dominated by collective burial in rock shelters. The Middle Mesolithic (8,700/8,500–8,000/7,800 B.P.) on the other hand remains largely unstudied, while some recent discoveries in the Meuse valley inform us about the Late Mesolithic (8,000/7,800–6,500/6,000 B.P.) settlement system, environment and subsistence. The end of the period is marked by the appearance of the LBK culture in the loamy upland and the Swifterbant culture in the sandy lowland.

Résumé

Malgré la mauvaise préservation des sites, les quinze dernières années ont permis un accroissement considérable des connaissances sur le Mésolithique de Belgique. Mais le phénomène concerne essentiellement le Mésolithique ancien (9 500–8 700/8 500 B.P.), notamment grâce aux découvertes de quelques campements scellés et d'inhumations en grotte. L'occupation du territoire semble alors caractérisée par de petites unités, dont la dispersion à l'intérieur des terres s'oppose à leur concentration relativement dense et récurrente le long des cours d'eau. Les pratiques funéraires sont dominées par les inhumations collectives sous abri naturels. Par contre, le Mésolithique moyen (8 700/8 500–8 000/7 800 B.P.) est largement sous-étudié. Enfin, des travaux récents dans la vallée de la Meuse contribuent à une meilleure appréhension du système de campement, de l'environnement et des modes de subsistance du Mésolithique récent (8 000/7 800–6 500/6 000 B.P.). La fin de la période est marquée par l'apparition du Rubané, sur les riches plateaux de Moyenne-Belgique, et du Swifterbant, dans les régions sableuses de Basse-Belgique.

1. INTRODUCTION

Mesolithic research in Belgium started already early. Between 1885 and 1935 various pioneers, e.g. De Puydt, de Loë, Rahir, Hamal-Nandrin and Lequeux, were involved in field research, mainly along the Meuse and in the Kempen area. After a period of decreased interest during and after the second world war, Mesolithic research received a new impetus. From 1970 onwards several institutions started intensive research projects in different parts of Belgium, e.g. in the Kempen area of north-eastern Belgium (*Katholieke Universiteit Leuven*), Sandy Flanders in north-western Belgium (*Universiteit Gent*) and the Meuse valley in southern Belgium (*Université de Liège* and the *Royal Museums of Art and History*). In the course of the last 30 years research has evolved from a purely typological approach to a more dynamic approach focused on intra-site and inter site analysis, technology, raw material procurement, social territories and environment. Actually

about sixty, mainly open-air settlements, have been partially or completely investigated. In addition Mesolithic burials have recently been discovered in a few rock shelters.

2. SITE PRESERVATION

Just like in the neighbouring countries, the Mesolithic heritage in Belgium has to cope with a severe and advanced state of destruction. In particular open-air sites are extremely badly preserved. This has probably to do with the fact that most sites have been formed after the deposition of aeolian sediments had ended at the start of the Post-glacial. As a consequence of this, Mesolithic sites are nearly all unstratified and shallow making them extremely vulnerable to contamination and perturbation by different kinds of post-depositional processes such as soil labouring (ploughing, sod cutting), erosion, floralturbation and faunalturbation.

The most destructive activity is undoubtedly agriculture. Intensive and large-scale agriculture since medieval times has resulted in an overall levelling of the landscape and a systematic truncation of the soil up to a depth of at least 30/40 cm [4.72]. As a result of this the lithic industry is on most sites almost entirely incorporated in the actual plough-layer, reducing excavations to a systematic sieving of the cultivated top soil [4.67; 4.68]. In the upland area of Middle Belgium, erosion caused by intensive agriculture from the Neolithic onwards, has led to a loss of locally up to 1 m of soil material. Perturbation caused by tree uprooting (so called tree-falls or windthrows) and animal burrowing is also wide-spread. Recent studies in the sandy lowlands [4.13; 4.47] showed that in some areas 4% to 25% of the soil has been turned over by the uprooting of trees. Small animals (e.g. moles) and insects (e.g. worms, ants, beetles) are also responsible for artefact displacements, mainly in vertical sense, over depths over 20/30 cm to even more than 1 m [4.73]. As a result of all these biological activities the original horizontal and vertical distribution of archaeological material is generally distorted to a certain degree. Especially on sites with multiple occupation phases the results of bioturbation can be catastrophic.

Nowadays it has become particularly difficult to find sites in Belgium which are still well preserved or where perturbation is still limited. In fact there exist only a few areas and contexts which still offer good prospects for Mesolithic research. In river floodplains and polder areas potentially better preserved sites can still be expected, being sealed by peat, alluvial and/or colluvial sediments. In the Kempen area of northern Belgium small areas are known which are covered by recent aeolian or anthropogenic sediments, or which have never been cultivated.

Along the Meuse and its tributaries caves and rock shelters constitute promising contexts for further research.

Unfortunately most of these covered and sheltered contexts have not yet been fully explored archaeologically. Only few Mesolithic sites have been excavated so far (table 1). This is partly due to the fact that research in most of these contexts is often hampered by limitations on site visibility and recovery. Sealed sites are usually much more difficult to detect and to excavate. A survey of river floodplains, for example, demands adapted and specific methods which are usually very time-consuming and therefore rather expensive. Nevertheless there is a strong urge for detailed surveys, as the expansion of industry, residential areas and harbours as well as quarry activities and water treatment become more and more a real threat to these relic-areas.

3. ENVIRONMENT AND SUBSISTENCE

Very little is currently known about the environment and subsistence during the Mesolithic. Relevant environmental information is only available from a few wetland sites and caves along the Meuse. At the valley sites of Liège [4.42; 4.49] and Namur [4.52], Late Mesolithic men inhabited a rather open landscape dominated by a herbaceous vegetation (mainly *Monoletes*) and some trees, mainly lime (*Tilia*), oak (*Quercus*) and pine (*Pinus*), on the higher grounds. The species found at these locations refer to a temperate and moist climate. This is also confirmed by the faunal remains, which are dominated by red deer (*Cervus elaphus*) and wild boar (*Sus scrofa*), and to a much lesser extent by roe deer (*Capreolus capreolus*) and aurochs (*Bos primigenius*). At Namur fragments of castor

Alluvial / Colluvial Deposits	Aeolian or Anthropogenic Sediments	Caves / Rock Shelters
Verrebroek 'Dok' Verrebroek 'A.-Z.' Oudenaarde 'Donk' Schulen Holsbeek 'Marrant' Liège 'Place St-Lambert' Namur 'Grognon' Remouchamps 'Station Leduc' Melsele 'Hof ten Damme' Doel 'Deurganckdok'	Meer Brecht 'Moordenaarsven'	Petit-Modave 'Trou al'Wesse' Anseremme 'Abri du Pape' Bomal 'Grotte du Coléoptère' Abri de la Pierre Celtique Godinne 'Abri de Chauveau'

Table 1 — List of excavated settlements situated in covered or sheltered contexts

(*Castor fiber*) and fish, mainly belonging to pike (*Esox lucius*) and chub (*Leuciscus cephalus*), indicate exploitation of the riverbanks. At both sites the presence of dog (*Canis sp.*) is also attested by a few fragments.

A small rock shelter situated along the right bank of the Meuse, the 'Abri du Pape', has yielded a very rich faunal assemblage dating back to the Early and Middle/Late Mesolithic. Bird and rodent remains are abundant and fish present in all levels. The latter [4.63] comprise, in decreasing order of importance, cyprinids, pike, catfish (*Silurus glanis*), eel (*Anguilla anguilla*), salmon (*Salmo sp.*), perch (*Perca fluviatilis*) and allis shad (*Alosa alosa*). Large animals [4.30] include red and roe deer, wild boar, aurochs, otter (*Lutra lutra*), fox (*Vulpes vulpes*) and wild cat (*Felis silvestris*), all in small quantities. Shifts in the large game and rodent spectra indicate an increasingly more wooded landscape from the Early to the Middle/Late Mesolithic. Over 30 different bird species have been identified, though it is not fully clear yet whether they have all been captured by Mesolithic men [4.24]. Some birds may have visited (and occasionally died at) the rock shelter on their own or may have been captured by foxes or even wild cats.

Due to acidity and oxidation botanical and faunal remains are usually lacking on open-air sites situated on dry soils. Occasionally some burnt bones and plant remains are present. At the large site of Verrebroek 'Dok', for example, relatively large amounts of charred hazelnut shells and bones mainly from small and medium mammals (e.g. beaver, wild boar, ...) could be retrieved from several surface-hearths. In addition on most open-air loci there are serious problems of association between pollen diagrams and human occupation. Pollen diagrams are usually too young as a result of infiltration caused by bioturbation. Charcoal usually is the only source of information about the landscape. Unfortunately charcoal determinations so far have not been applied systematically on open-air sites. Yet, the few anthracological studies that have been performed seem to confirm the general trends of the early Post-glacial vegetation, as reconstructed on the basis of pollen diagrams from valley bottoms. At the Verrebroek site [4.50], for example, a series of hearth-pits dated to the second half of the Boreal and the transition to the Atlantic (*ca.* 7,520 to 7,280 cal. B.C. – 1 σ) mainly contain charcoal from pine (*Pinus sylvestris*), sometimes mixed with small amounts

of oak (*Quercus*), hazel (*Corylus avellana*) and poplar (*Populus*).

4. CHRONOLOGY

Due to the (near)surface character and the lack of stratigraphy on most open-air sites the chronological framework of the Belgian Mesolithic is still not well established. In the course of the past 25 years different, often contradicting typo-chronologies have been proposed, ranging from rather simple, two or three-phased chronologies [e.g. 4.70; 4.31] to elaborated ones [e.g. 4.34; 4.53]. Yet they have all been based on typological seriation of the same lithic assemblages and set of radiocarbon dates.

The origin of these chronological problems must be sought in the generally bad quality of the available data. Most analysed assemblages originate from secondary contexts, e.g. the actual surface, tree-fall features, plough-layer, colluvial sediments, etc., and are thus potentially contaminated and mixed. In addition, until recently most radiocarbon dates have been realised on charcoal samples, mostly consisting of fragments found scattered over the entire site-surfaces or in secondary contexts (e.g. tree-fall features). The majority of these dates, however, was found to be "incompatible" with the expected dating based on typological criteria [4.37; 4.65]. Apart from lots of "aberrant" dates, most charcoal dates are believed to be too young with respect to the dated human occupation. It is generally assumed that this is partly caused by old-wood effect, site re-use and possible admixture with naturally produced charcoal, e.g. from Late-glacial or Post-glacial forest-fires.

A recent tendency in the Belgian Mesolithic research is to date other, more reliable or humanly linked materials and contexts, in particular carbonised hazelnut shells [4.17], charcoal from well-defined features (e.g. hearth-pits, stone-structured hearths, ...) and stratified sequences, as well as unburnt, preferably humanly modified bone [4.11]. Over the last 5 years the number of these dates has increased considerably, enabling a first revision of the existing typo-chronologies [4.16]. There are currently enough arguments to support a subdivision of the Mesolithic chronology into three main stages: an Early, Middle and Late Mesolithic. The Early Mesolithic can be dated rather accurately in the second half of the Pre-boreal and the first half of the Boreal (*ca.* 9,500–8,700/8,500 B.P.)

Lithic assemblages dated to this early phase are mainly characterised by the occurrence of numerous points with unretouched base (obliquely truncated points and unilaterally backed points), crescents, triangles (mainly scalene) and/or points with retouched base. From a technological point of view they are characterised by an irregular bladelet production.

The chronological boundaries of the two younger phases are not yet fully defined. The Middle Mesolithic most likely falls within the limits of the second half of the Boreal, since the oldest Late Mesolithic industries (Namur, Liège) are currently dated to around 8,000/7,800 B.P. The Middle Mesolithic coincides with the appearance of two new microlithic forms, points with flat retouch (mistletoe points, leaf-shaped points, etc.) and small backed bladelets, the latter generally being predominant. The start of the Late Mesolithic is defined by the massive appearance of trapezes and a knapping technique directed towards the production of small, regular blades, so-called Montbani blades. The introduction of pottery into some contexts (*cf.* below) at the very end of the Mesolithic may be an argument to distinguish a fourth stage within the Belgian Mesolithic, a so-called Final Mesolithic, but the evidence is still too limited to justify this.

A further refinement of this general typochronological framework seems currently attainable only for the Early Mesolithic. Thanks to recent extensive excavations, e.g. at the large site of Verrebroek [4.64], a consistent series of *ca.* 70 dates related to the initial Mesolithic is now available. From a typological point of view, the Early Mesolithic can be classified into at least four different assemblage-types, each characterised by the presence of a dominating microlith form. Assemblages are dominated either by points with unretouched base (Neerharen-group), crescents (Ourlaine-group), points with retouched base (Chinru-group) or scalene triangles (Verrebroek-group). Most scholars have interpreted these variations in a purely chronological sense, claiming that they reflect a diachronic evolution of the Mesolithic hunting equipment. The newly available radiocarbon dates however suggest that most of these assemblage-types were largely or partly contemporaneous. This is the case for the Neerharen-, Ourlaine- and Verrebroek-assemblages which are all dated to the second half of the Pre-boreal. So far the Chinru-group is the only

Early Mesolithic assemblage-type dated to the early Boreal. The passage from the Pre-boreal to the Boreal thus seems to be characterised by an increasing importance of points with retouched base. Apparently, the only Pre-boreal microlithic type which "survived" into the Boreal is the scalene triangle, which is generally the second best represented microlith form within the Chinru-group.

The gradual increase of points with retouched base probably reflects a gradual improvement of the hunting weaponry, in particular of the arrow tip. This assumption has recently been confirmed by wear analysis on a series of 467 microliths from the Early Mesolithic site of Verrebroek [4.2]. These analyses showed that diagnostic impact traces, such as step terminating bending fractures, spin-offs and microscopic linear impact traces (MLITs), occur very frequently on points with retouched base (*ca.* 56%) and unilaterally backed points (28%) but only seldomly on the other microlith forms (4–5%). In addition it could be argued on the basis of diagnostic wear features that triangles (27%) and crescents (16%) have preferably been used as barbs.

5. THE START ... AND THE END OF THE MESOLITHIC

There still remains a considerable gap in the radiocarbon evidence between the youngest Final Palaeolithic and the oldest Mesolithic assemblages. The cave site of Remouchamps is currently the youngest, securely dated Ahrensburgian context within Belgium. Three samples of modified bone yielded dates around 10,300/10,400 B.P. [4.10; 4.11], suggesting an occupation at the end of the Younger Dryas. Except for the Balleux cave [4.25], no absolutely dated assemblages from the first half of the Pre-boreal are currently known. On purely morphological grounds however some sites, assigned to the so-called "Zonhoven-group" (or Epi-Ahrensburgian), can tentatively be attributed to this transitional phase. Typologically they take up an intermediary position between the typical Ahrensburgian (with numerous tanged points) and the true Mesolithic industries. Sites such as Zonhoven 'Molenheide 2' [4.55], Zonhoven 'Kapelberg' [4.43] and even Fonds-de-Forêt [4.36] are characterised by a scarcity of tanged points; a predominance of so called Zonhoven points (i.e. obliquely truncated points

sometimes provided with a basal retouch); a discrete presence of proto-geometric microliths (e.g. atypical triangles and trapezoidal points); a blade-technology and the absence of microburins. Similar sites in southern Netherlands have recently been dated on burnt bone samples to the first half of the Pre-boreal [4.23]. It has been suggested that the gradual disappearance of tanged points could be related to a change in subsistence from specific reindeer hunting to hunting of less mobile species.

It is widely believed that most Early Mesolithic assemblages-types, in particular the Neerharen-group and perhaps also the Verrebroek-group, developed from the Epi-Ahrensburgian. Indeed, there is hardly any difference between the Zonhoven points of the Epi-Ahrensburgian and the obliquely truncated points from the Early Mesolithic. According to some scholars [e.g. 4.59] the origin of the (Ourlain) assemblages dominated by crescents might be found in the (Epi-) *Federmesser* or *La-borien*. If this is true, this would mean that the *Federmesser* in Belgium persisted beyond the Allerød, as it did in some parts of France [4.26; 4.27]. Unfortunately no direct evidence to support this assumption is yet available.

The end of the Mesolithic is also poorly understood. In small parts of loamy Belgium, e.g. western Hainault and Hesbaya, the Mesolithic most likely ended the moment Linearbandkeramik groups (LBK) colonised the area around 6,500 B.P. What happened in the meantime in the remaining parts of Belgium has been subject to a lot of debate. Stray finds of Linearbandkeramik artefacts, such as polished adzes, LBK arrow heads or some pottery fragments, which are regularly found outside the LBK-territories, are interpreted either as remains of small temporary (cattle) camps erected by LBK herders, or as indications of exchange and contact between a local Mesolithic population and the first farmers. Although contact between both communities can be assumed on a reasonable basis, it has not yet been proved by direct and irrefutable evidence. So far no Late Mesolithic sites with well-associated LBK artefacts have been reported in Belgium. Some scholars, however, interpret the so-called "Hoguet" and "Limburg" pottery, which is generally found in small amounts as an admixture in LBK settlement structures, as a proof of contact. According to this vision this specific pottery, which presents distinct south-western (Epicardial) connections,

would be produced by Late Mesolithic survivors, who lived in southern Belgium either before (Hoguet) or simultaneously (Limburg) with the LBK farmers.

Indications for an early appearance of pottery in the sandy lowlands of northern Belgium are not yet available. The present data rather support a late introduction, i.e. not before the end of the LBK phase. At two wetland locations, Doel 'Deurganckdok' [4.19] and Melsele 'Hof ten Damme' [4.62], a Late Mesolithic lithic industry has been found together with ceramics which display clear affinities with Swifterbant pottery and to some degree with Ertebølle pottery. Dating problems and re-occupation at the latter site unfortunately hinder an univocal interpretation of the collected finds. The in 2000 excavated site of Doel apparently offers better prospects. A first radiocarbon date on carbonised food remains preserved on the inner side of a sherd situates this occupation around $5,980 \pm 35$ B.P. and thus contemporaneous with the settlement of southern Belgium by the late LBK-Early Rössen farmers. Future analyses of charred plant remains and burnt bone fragments, the latter found in large amounts on the site, will have to inform us about how far the economy was already influenced by the Neolithic. Yet we already know from comparable sites recently excavated in the wetlands of the western Netherlands [4.51] that the Swifterbant culture was characterised by an "extended broad spectrum" (semi-agrarian) subsistence, in which all classical Mesolithic subsistence activities (hunting, fowling, fishing, foraging) were combined with first animal husbandry and later the growing of cereals too.

In connection with these recent settlement finds it is important to mention the existence of numerous antler mattocks, collected mainly in the first half of the 20th century during dredging activities in the main river valleys of the northern lowlands (Schelde, Leie, Dender, etc.). Among these finds are a number of perforated antler-beam mattocks, also called *Tüllengeweihhäxte* or T-shaped axes, comparable to the specimens found in Late Mesolithic/Early Neolithic Ertebølle and Swifterbant contexts of north-western Europe. In order to verify and refine the chronological framework of the Belgian mattocks a direct dating project was recently performed on a series of 15 antler-beam specimens. The obtained results [4.20] largely confirm the contemporaneity of these

implements with the Dutch Swifterbant, as all dates cluster between *ca.* 5,200 and 3,300 cal. B.C.

6. SETTLEMENTS

Knowledge of the intra-site spatial organisation of Mesolithic camp-sites in Belgium is still very restricted due to the bad site preservation and the scarcity of large-scale excavations. According to a recent critical examination [4.15] less than 10 Mesolithic sites offer significant and reliable spatial information. This number is obviously too limited to distinguish general behavioural patterns within the Belgian Mesolithic. Below two recently investigated sites will be discussed as an example of the spatial organisation of Early and Late Mesolithic settlements.

6.1. Verrebroek 'Dok'

The peat and clay covered site of Verrebroek 'Dok', situated in the sandy lowland of Belgium, is actually one of the largest settlement locations so far known within the Belgian Mesolithic [4.15; 4.18]. Dated by a series of *ca.* 80 radiocarbon dates to the second half of the Pre-boreal and the Boreal, this site covers a surface of at least 3 hectares situated on the eastern slope of a large Late-glacial coversand ridge. Rescue excavations conducted by the Ghent University since 1992 have resulted in the investigation of about 6,000 m² and the discovery of at least 55 spatially independent artefact loci, 20 hearth-pits and three possible anthropogenic (storage?) pits.

Hearth-pits prove to be shaft-like pits, dug out at about an arm's length, with only a small variety in width (40–100 cm). They occur clustered in a very small area of the site, corresponding to one of the highest grounds of the former landscape. This and the almost complete absence of finds in their filling, except for lots of charcoal fragments, leads to the assumption that these hearth-pits were fired in open air and served special purposes, such as drying, smoking or cooking [4.40].

The artefact loci on the contrary were found scattered over the entire excavated area, yet the density is clearly higher in the western sector towards the top of the sand ridge. These loci, which display an almost infinite variation in size, artefact-density, amount of artefacts, spatial arrangement and tool composition, clearly represent the remains of different diachronic occupations of the site, presumably by relatively

small groups of hunter-gatherers, e.g. nuclear families or task groups. The latter is primarily deduced from the small size of most units, which varies between 1.5 m² and 15 m².

A first and preliminary spatial analysis points to the existence of a specific patterning in the organisation of the former living-floors within each of these units. This patterning is characterised by the presence of:

1. a surface-hearth, indirectly indicated by the occurrence of numerous burnt artefacts and ecofacts (hazelnut shells and bone fragments);
2. an asymmetric distribution of the settlement waste around the hearth.

The latter consists of a clustering of artefacts along one side (wind side?) of the hearth and of specific artefact types (cores, large preparation flakes, microburins, burin spalls) and tool types (microliths, scrapers and/or burins) in discrete areas. It is assumed that this patterning reflects a functional and perhaps even a social division of the former living-areas. Similar patterns have been observed in other study areas of NW-Europe, like southern Scandinavia and northern Germany. Indeed, the small units of Verrebroek closely resemble the generally better preserved dwellings of the contemporaneous Maglemose culture, in particular those classified as Ulkestrup II-sites by O. Grøn [4.41].

The site of Verrebroek also yielded a few larger artefact units, covering 50 to 100 m² and presenting traces of several surface-hearths. Extensive ¹⁴C-dating however indicates that these units are palimpsests created by a spatial overlapping or intersecting of different smaller units, which were inhabited diachronically. Theoretically it is even possible that each individual hearth within these larger units reflects one visit, but this of course is difficult to prove by means of radiocarbon evidence. Future refittings will certainly contribute to a better understanding of their formation process.

6.2. Liège 'Place Saint-Lambert'

Final rescue excavations in the city centre of Liège [4.42; 4.48; 4.49] revealed a humiferous loamy soil incorporating two distinct occupation units separated laterally by *ca.* 60 m. Both, the southern and northern unit are dated to the Late Mesolithic on tool-typology and radiocarbon evidence (bone date of 7,800 ± 75 B.P.). The main feature in the southern unit, covering

ca. 20 m², is a semi-elliptical stone floor of ca. 2 m diameter, built of nodules and plaquettes of quartzite, quartz and flint. Apparently it was constructed on a small and weak elevation along the Légia, a side branch of the Meuse river. Judging by the associated archaeological material, which consists of flint tools (scrapers, microliths, etc.), knapping waste and small burnt bone fragments, this feature most likely represents the remains of a dwelling floor. Incomplete refits indicate the importation of prepared cores and blanks, possibly made in the northern unit of the site. The latter clearly was used as a specialised knapping area, as indicated by the huge amount of knapping waste (40 kg) and the presence of complete *chaînes opératoires*. The rich faunal remains mainly belonging to red deer (*cf. supra*) furthermore indicate that this ca. 12 m² large locus was also used as butchery area and hide-working area. The latter is deduced from the presence of numerous scrapers, a number of incised bones and the absence of phalanxes. The scarcity of burnt bones on the other hand suggests non-local consumption of the game.

A third Late Mesolithic sector was discovered only recently approximately 50 m to the east [4.56]. A humiferous layer within the filling of a palaeo-channel yielded an extensive lithic and bone industry, the latter including fragments with clear working traces.

Studies focusing on Mesolithic settlement systems and patterns are nearly totally lacking. A first attempt [4.15] to classify the sites on the basis of variations in tool composition resulted in the provisional identification of three different settlement-types:

1. sites with a broad spectrum of tools (scrapers, microliths, simply retouched artefacts, ...);
2. sites with a specialised tool kit (e.g. dominance of microliths);
3. sites with a few tools only.

It is very tempting to interpret these site differences in a purely functional way, but sufficient direct evidence (faunal data, use-wear data, etc.) to support this is not yet available. Indeed, it is questionable whether a simple correlation between site-type 1 and residential camps or site-type 2 and non-residential camps (e.g. hunting stand or field-camp) is applicable on all sites. In their environmental position both site-types apparently do not differ significantly. As the excavations at Verrebroek have clearly demonstrated, both site-types even can be found

within a same location. Furthermore micro-wear analyses [4.29; 4.2] have proved that microliths have not always been used exclusively as hunting weaponry but occasionally for other purposes such as plant processing (e.g. splitting of reed). Hence, the presence of microliths on a site does not necessarily refer to hunting related activities. Yet, microscopic analysis of unretouched blade(let)s and flakes from the microlith dominating sites of Helchteren 'Sonnissee Heide 2' [4.33] and Oudenaarde 'Donk' [4.1] revealed a clear emphasis on butchery activities, in particular scraping of bone and/or antler. Sites of type 3 on the other hand display features characteristic of so called raw material procurement sites, as documented in the ethnographical record. These features include the nearly total absence of burnt artefacts, the scarcity of tools (mainly simply retouched artefacts) and the large amount of waste products (> 40/50 kg), representing complete *chaînes opératoires*. In addition procurement sites only occur in areas with outcrops of good quality flint, such as the Meuse basin (e.g. at Opgrimbe).

Recent studies [4.66; 4.21] on the distribution of Mesolithic settlements in different parts of the sandy lowland revealed a pattern of dense riverine settlement against a dispersed settlement in areas away from large and medium-sized open water systems. This pattern most likely can be explained by the seasonal availability of abundant food resources, such as fish and waterfowl, along major waterways, making these zones very attractive for repeated and even prolonged occupation. Contrary, the inland resources must have been less dense and diversified, especially during the Atlantic phase as the forest became gradually darker and denser. It is probably not coincidental that in some parts of the lowlands (e.g. north-western part) Late Mesolithic settlements almost entirely concentrate along major river valleys, whereas the "interior" seemed to have been almost completely depopulated. Contrary to the high frequency of settlement re-use from the Final Palaeolithic *Federmesser* to the earliest Mesolithic (ca. 44% in NW-Belgium), only few Late Mesolithic settlements seem to coincide with previously occupied locations. Evidence of a coastal exploitation during the Mesolithic is totally lacking due to generally deep position of former living floors in the North Sea coastal area.

7. SOCIAL TERRITORY

Based on the distribution pattern of specific artefacts, artefact attributes and raw materials, several attempts to reconstruct social territories within the Belgian Mesolithic have been undertaken. At present, however, univocal results have not yet been reached. According to J.G. Rozoy [4.58] statistical-typological differences within the microlith and common tool inventory point to the existence of two distinct population groups, one named *Ardennien*, occupying the area south of the Meuse, and another, the *Limburgien*, situated in the lowland of north-eastern Belgium and adjacent parts of southern Netherlands.

Other scholars on the other hand have used single artefacts or artefact variables to define social boundaries. L. Verhart [4.69], for example, considers bone and antler points as potential "emblemic" objects. Examination of their distribution revealed a clear cluster of points with spaced or oblique carved barbs (Verhart type 03.02 & 03.03) encompassing Belgium, The Netherlands, western Germany and eastern England. According to Verhart this patterning might infer to socio-cultural boundaries dating back to 11,000–8,500 B.P., and thus corresponding to end of the Final Palaeolithic and the Early Mesolithic. Information on social territories during the younger Mesolithic phases must be deduced from other sources. P. Gendel [4.31; 4.32] in his spatial analysis of stylistic variables among microliths observed a sharp geographical boundary coinciding approximately with the Seine river in the Paris basin. During the Middle Mesolithic the Seine apparently formed the southern distributional limit of points with surface retouch, while in the Late Mesolithic it functioned as a boundary between left (South) and right (North) lateralisation among trapezes.

The above territorial reconstructions are not entirely in concordance with data obtained from the distribution of specific raw materials, as Wommersom and Tienen quartzite, which clearly point to smaller territories during the whole Mesolithic. Both quartzites originate from a restricted area nearby the city of Tienen situated more or less in the centre of Belgium. From these outcrops these fine grained raw materials have been distributed generally in small quantities (<1–2%) over an area of about 45,000 km² enclosed by the North Sea coast in the west, the Rhine valley in the north and north-east and the Meuse valley in the

east. This distribution area might correspond to the territory of a dialectic tribe. Only the southern limit apparently does not coincide with a natural boundary, as hardly any quartzite artefacts have so far been reported beyond the actual Franco-Belgian frontier.

In the course of the Mesolithic, however, clear changes have occurred in the distribution and utilisation of these exotic raw materials. During the Early Mesolithic both Wommersom and Tienen quartzite were in use in the entire area, yet only Tienen quartzite was exported in sustained quantities of 10% to 55% as far as 80/100 km from the outcrop. In addition this diffusion occurred exclusively in north-western direction towards the area west of the Schelde river [4.15]. From the Middle Mesolithic onward, this pattern changed drastically as the exportation of Tienen quartzite stopped completely, except for the immediate area around the outcrop (radius of 20 km). The diffusion of Wommersom quartzite on the other hand was maintained and locally even intensified [4.31; 4.44]. Substantial amounts of Wommersom quartzite up to 30%–77% were now transported in northern direction towards the sandy area between Meuse and Schelde. Beyond these limits the frequencies of Wommersom quartzite drop rapidly generally to less than 5%.

The above observations might indicate the existence of different local groups (microbands) exploiting separate small territories of approximately 100 × 100 km, partly delimited by major waterways or valleys. The observed asymmetrical distribution of Tienen quartzite during the Early Mesolithic and of Wommersom quartzite during the Middle and Late Mesolithic might be related to the seasonal movements of these individual groups exploiting the outcrops. The marked fall-off in the frequency of both quartzites beyond these limits may well be an expression of interaction and exchange between these groups united within a social territory encompassing Belgium and the southern part of The Netherlands.

8. THE COLLECTIVE TOMBS OF THE EARLY MESOLITHIC

Over the past few years, two collective tombs from the Early Mesolithic (ninth millennium cal. B.C.) have been excavated in Southern Belgium, inside caves along the Meuse river (Margaux cave and Autours rock shelter) [4.5;

4.9]. First discoveries of mesolithic human remains in Belgium, these excavations have also allowed to recognize the great antiquity of a kind of funeral practices (the "collective grave" where the bodies were inhumed death after death) that we thought only joined with the first farmers of Western Europe.

The Margaux cave contained a structured tomb, inside which ten or eleven women were accumulated. The skeletons of these women have supported settings-apart, before or after their inhumation inside the cave. But clearly, it's a secondary burial. Furthermore, cut marks appear on one skull. This fact indicates that a part of the funeral treatment occurred outside of the grave. The human bones brought into the cave have been removed in a small pit, after a part of them was left on a pavement placed next to the pit. Finally, at the end of the use of the grave, a stone wall covered the tomb. The grave contained no burial good [4.5].

In the Autours rock shelter, we have only a small pit and a closing wall separating the tomb from the rest of the cavity. The grave contained at least 5 adults and 6 children. The adult remains have been dispersed everywhere in the tomb. A part of them laid inside the pit, in the southern corner of the rock shelter; another part is next to the pit; finally, some bones were left along the cave wall in the northern part of the cavity. The child remains were only found in this last northern sector. An adult, too incomplete to be able to determine the sex, has undergone a cremation which level of combustion has been relatively important. The deposit is obviously secondary, this means that not the slightest trace of fire could be seen in the shelter. The others adult skeletons have supported some settings-apart of bones, but the punctures were not the same, according to whether they were made in the funeral pit or next to this one. Globally, this tomb seems to be neither primary nor secondary. In fact, at one time it is primary, at another time it is secondary, according to the concerned body. Primary or secondary burial,

inhumation or incineration, entire or reduced bodies, we have all the elements to give to each dead its own story. The grave of the Autours rock shelter is not the result of a stereotyped way of doing [4.7].

At the moment they were discovered, the Mesolithic collective tombs of the Margaux cave and of the Autours rock shelter were without any comparison. Therefore, it was better to assume the abnormal quality of those deposits, instead of making plans by proposing some general hypothesis about the mortuary doings of the Early Mesolithic. Nevertheless, a third collective tomb, dated also from the ninth millennium (cal. B.C.), has been found five years ago in the cave of the 'Bois Laiterie' at Profondeville [4.54], some kilometres downstream of the Meuse river from the Margaux and the Autours sites. In this site, we recognized the same dislocations of the skeletons as in the Margaux and Autours caves and also the same absence of direct link with settlement patterns. Today, the *corpus* of the collective tombs of the Mesolithic includes at least a ten examples, divided in Belgium and the southern part of England [4.22; 4.28; 4.45; 4.46; 4.9]. But, except the deposits already described, the other discoveries are only known by ancient excavations or not scientific ones, which gives less explanation about the exact conditions of discovery, too rudimentary to be able to understand precisely the funeral doings. The antiquity of their excavations does not allow the counting of the bodies laid-down in each cave: it's now impossible to have an idea of the succession of the corpses in the cave as of the possible manipulation of them.

Moreover, these deposits allow to testify that gatherings of dead in natural caves are frequent during the ninth and eighth millennia in the North-western Europe. In such a context, the collective tombs of the South Belgium become less incongruous. But we may not deny the originality of these graves which probably are the most ancient collective tombs we know today.

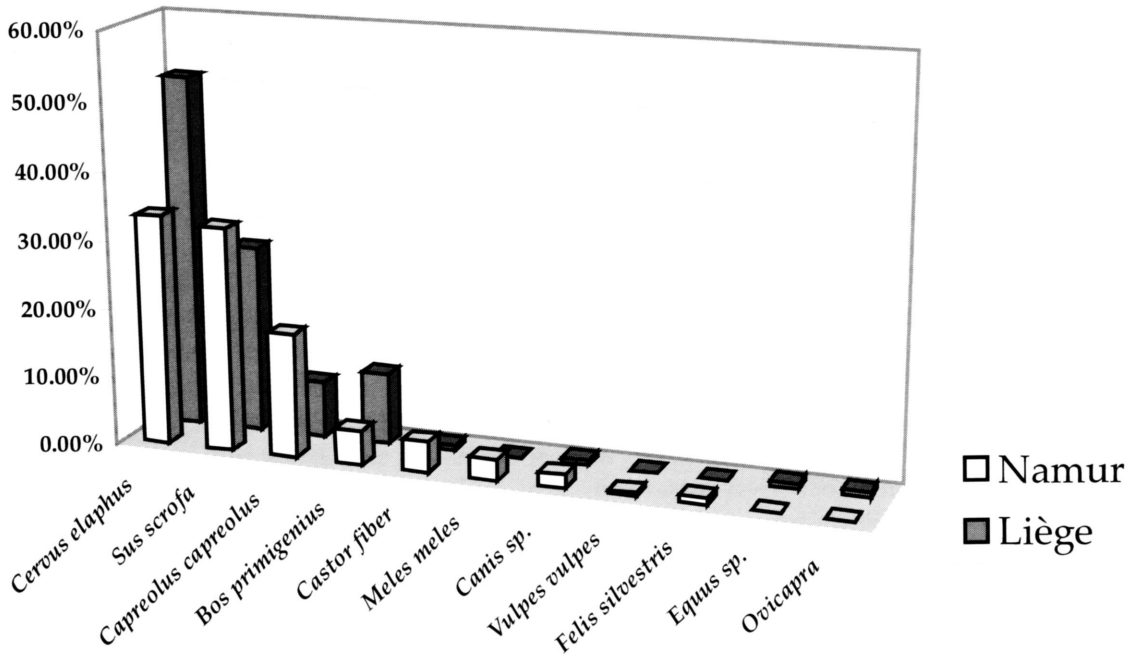


Fig. 1.

Diagram of the game species found at the Late Mesolithic wetland sites of Liège 'Place Saint-Lambert' and Namur 'Grognon'.
 Diagramme des espèces chassées trouvées sur les sites en terrain humide de la «Place Saint-Lambert» à Liège et du «Grognon» à Namur.

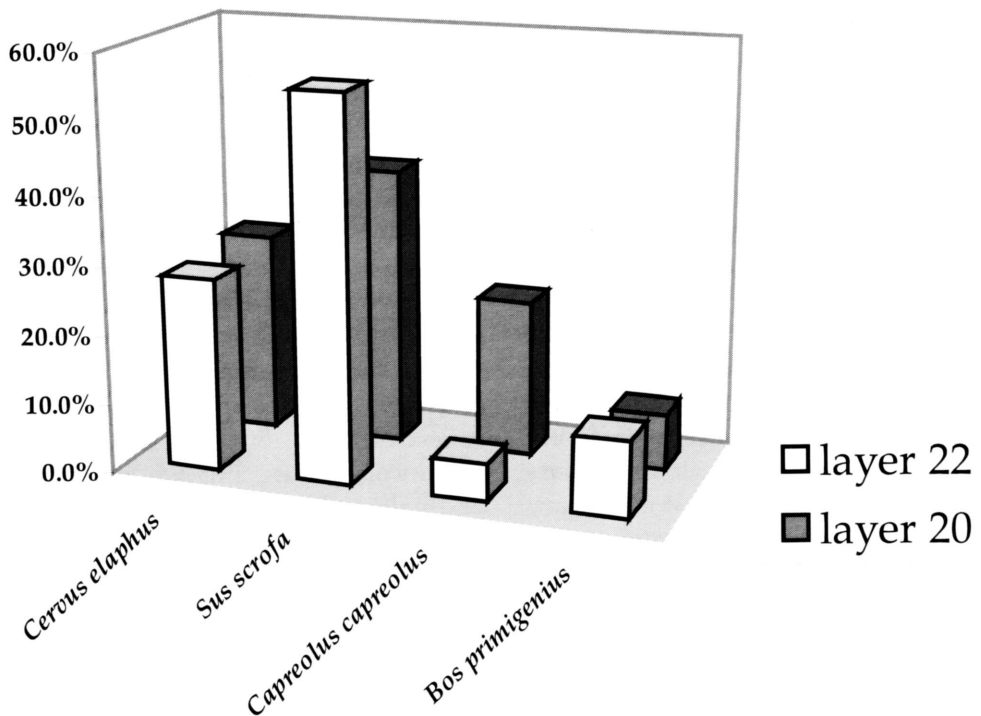


Fig. 2.

Diagram of the large game species found in layer 22 (Early Boreal) and 20 (transition Boreal to Atlantic) in the 'Abri du Pape' along the Meuse.
 Diagramme des grandes espèces chassées trouvées dans les niveaux 22 (Boréal ancien) et 20 (transition Boréal/Atlantique) de l'«abri du Pape», vallée de la Meuse.

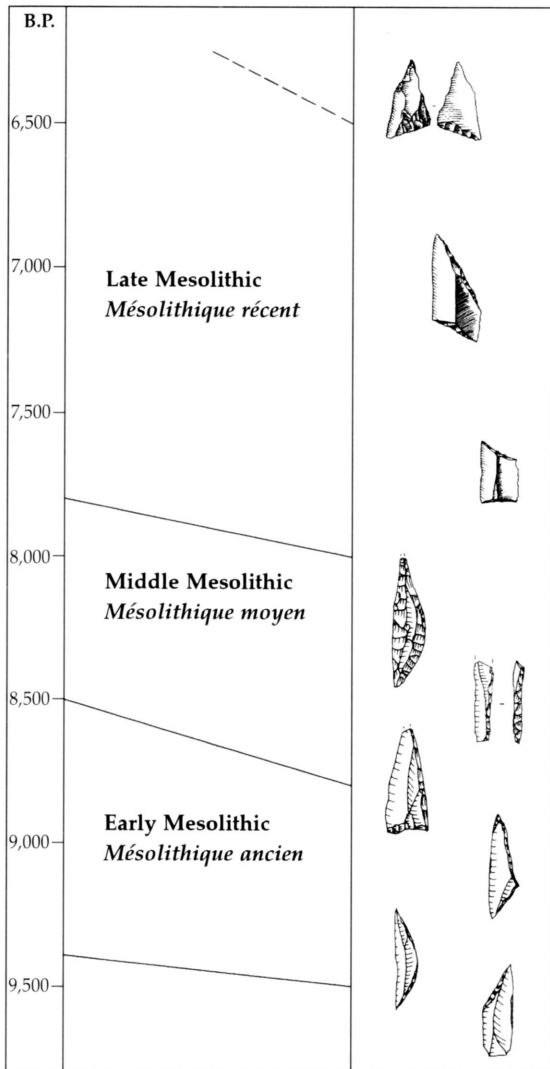


Fig. 3.
General typochronological framework of the Belgian Mesolithic.
Canevas typochronologique du Mésolithique en Belgique.

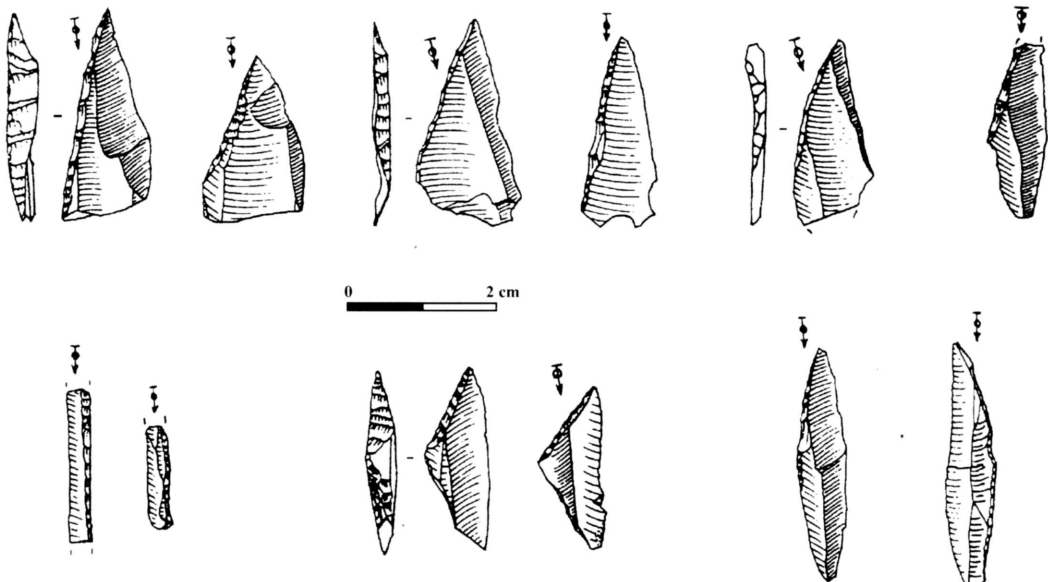


Fig. 4.

Microoliths typical of the Neerharen assemblage-type. Site of Neerharen 'De Kip' (after Lauwers & Vermeersch, 1982).
Microlithes caractéristiques des assemblages de type Neerharen. Site de Neerharen "De Kip" (d'après Lauwers & Vermeersch, 1982).

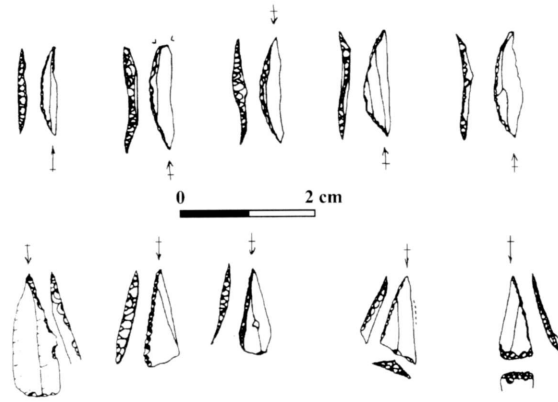


Fig. 5.
 Microliths typical of the Ourlaine assemblage-type. Site of Ourlaine (after Gob, 1984).
Microlithes caractéristiques des assemblages de type Ourlaine. Site d'Ourlaine (d'après Gob, 1984).

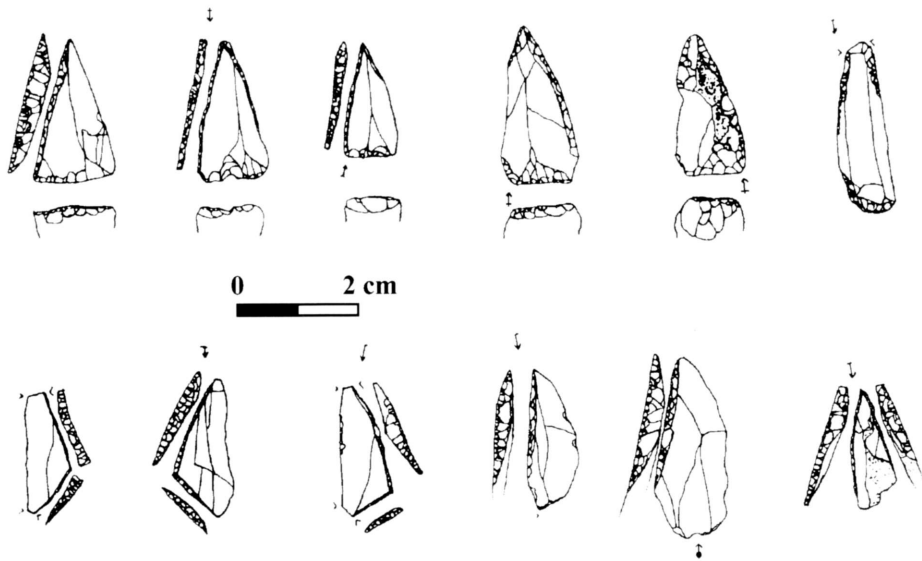


Fig. 6.
 Microliths typical of the Chinru assemblage-type. Site of Chinru (after Gob, 1984).
Microlithes caractéristiques des assemblages de type Chinru. Site de Chinru (d'après Gob, 1984).

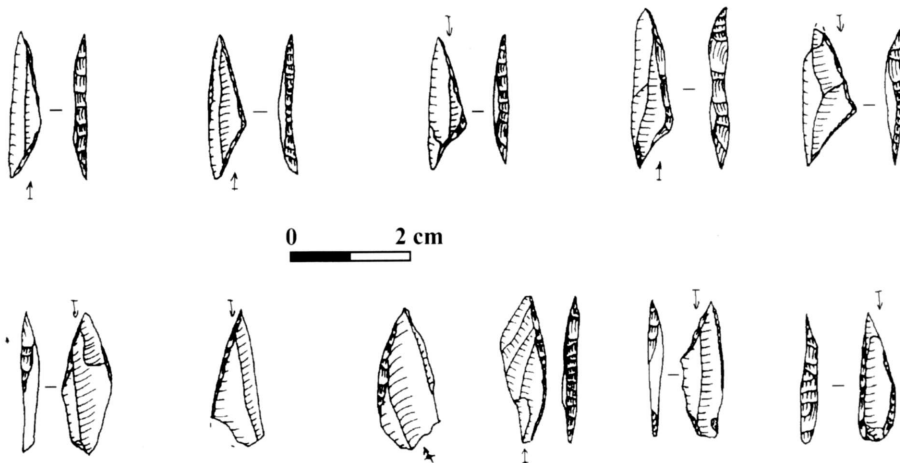


Fig. 7.
 Microliths typical of the Verrebroek assemblage-type. Site of Verrebroek 'Dok' (after Crombé, 1998).
Microlithes caractéristiques des assemblages de type Verrebroek. Site de Verrebroek "Dok" (d'après Crombé, 1998).

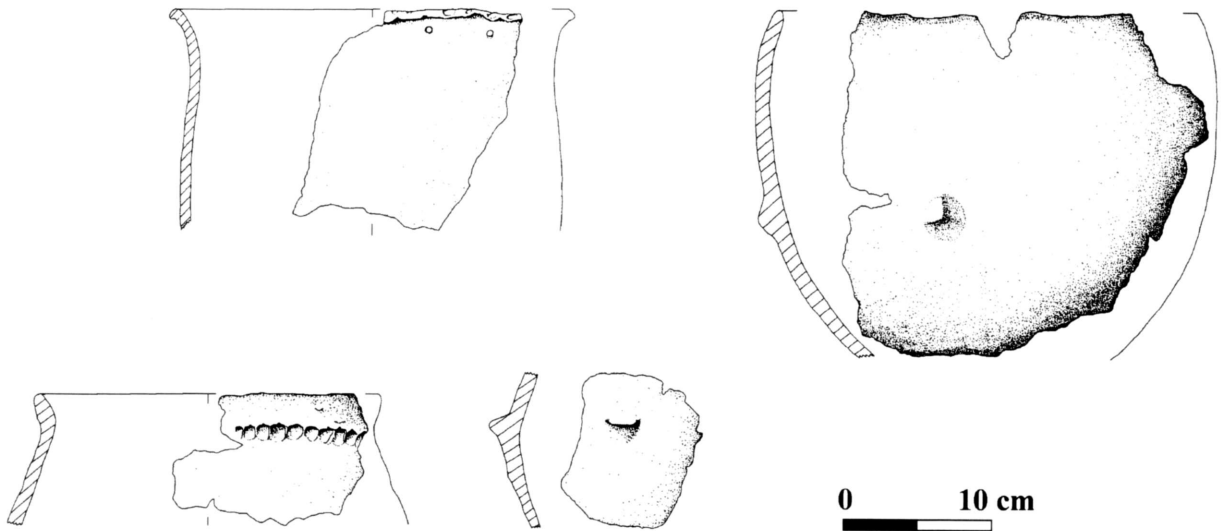


Fig. 8.

Late Mesolithic/Early Neolithic (Swifterbant) pottery from the site of Doel 'Deurganckdok' (after Crombé *et al.*, 2000).
Céramique du Mésolithique récent/Néolithique ancien (Swifterbant) trouvée sur le site de Doel "Deurganckdok" (d'après Crombé et al., 2000).



Fig. 9.

Antler-beam mattock dredged from the Schelde river at Gent, radiocarbon dated at $5,930 \pm 45$ B.P. (UtC-8243) [©Irpa-Kik].
Pioche en bois de cervidé trouvée lors de dragages de l'Escaut à Gand, datée par le radiocarbone de $5\,930 \pm 45$ B.P. (UtC-8243) [©Irpa-Kik].

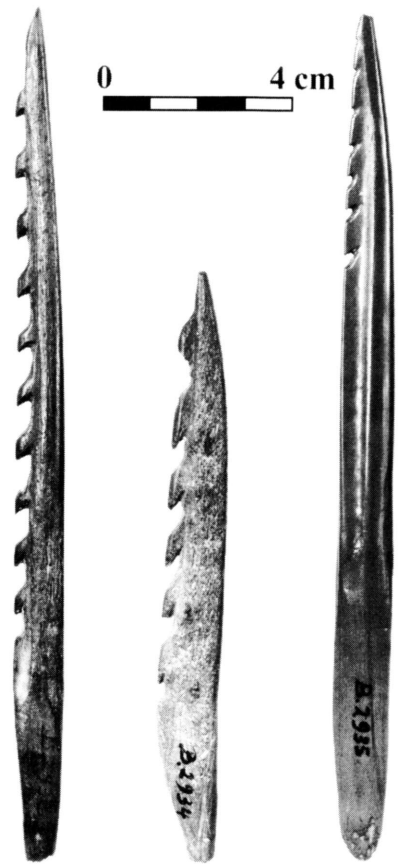


Fig. 10.

Barbed bone points dredged from the Schelde river at Schoonaarde (left) and Melle (centre and right) [after Hurt, 1992].
Pointes à barbelures trouvées lors de dragages de l'Escaut à Schoonaarde (gauche) et Melle (centre et droite) [d'après Hurt, 1992].



Fig. 11.

Preliminary distribution map of the artefact loci excavated at the Early Mesolithic site of Verrebroek 'Dok' (after Crombé *et al.*, in press); 1. Hearth-pit; 2. Bone cluster; 3. Surface-hearth; 4. Artefact locus; 5. Medieval ditch.
Plan préliminaire des concentrations d'artefacts fouillées sur le site mésolithique ancien de Verrebroek « Dok » (d'après Crombé et al., sous presse); 1. foyers en fosse; 2. amas d'ossements; 3. foyers de surface; 4. nappes d'artefacts; 5. tranchées médiévales.

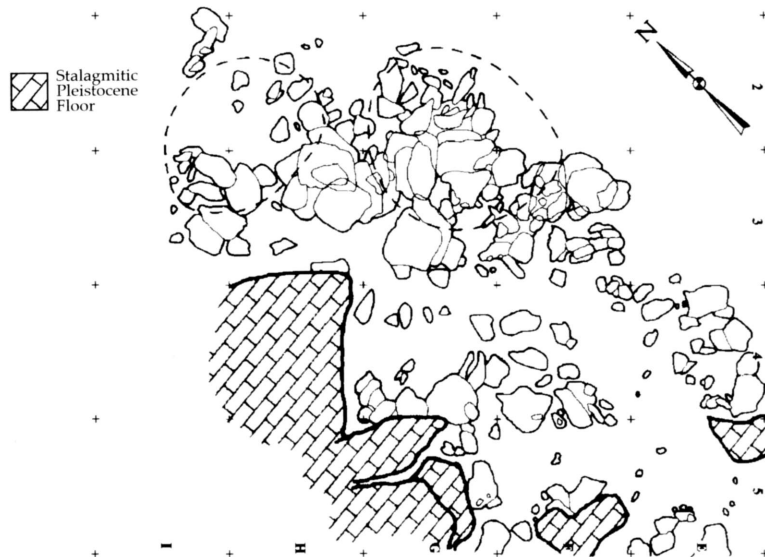


Fig. 12.

Margaux Cave: plan of the cairn built above the collective burial (the broken lines indicate the human bones concentrations) [after Cauwe, 1998].
Grotte Margaux : plan du cairn construit au-dessus de la tombe collective (les lignes interrompues indiquent les concentrations en os humains) [d'après Cauwe, 1998].