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42. Mesolithic territories and land-use systems in north-western Belgium

Joris Sergant, Philippe Crombé and Yves Perdaen

Over the last decade, 'Sandy Flanders' (north-west Belgium) has been the subject of intensive Mesolithic research and has revealed much new information at both intra- and inter-site levels. Analysis of the distribution of Stone Age sites and different raw materials (local and exotic) is used to reconstruct land-use systems during different stages of the Final Palaeolithic and the Mesolithic. Preliminary results indicate not only a clear shift in site location and site density but also in the distribution of exotic raw materials (quartzites) around the middle of the Boreal (c. 7600/7500 cal BC). The first shifts might point to changing settlement systems due to environmental changes, while the latter rather seems to reflect changing social or cultural conditions.

Keywords: Belgium, exotic quartzites, land-use systems, social/cultural territories.

Introduction

Sandy Flanders is situated in north-western Belgium between the North Sea coast and the lower Scheldt River. It is a typical low-lying area (between 3 and 15m asl), lying under, mainly, coversand deposits which are only in the most eastern and northerly parts, sealed by peat and/or clay (Crombé 2005). Since 1986 this area, which covers a surface of approximately 3000km², has been surveyed mainly by students and amateur archaeologists (Van der Haegen *et al.* 1999; Van Vlaenderen *et al.* 2006). This has led to the discovery of numerous surface sites, mainly dating to the Final Palaeolithic and the Mesolithic. In some parts of the study area (i.e. Meetjesland, the Moervaart depression, and Waasland), the extensive surveys were carried out very systematically.

Our research project, which started in 2004, focuses on these three core areas. Starting with a detailed inventory of data related to the Stone Age sites, additional surveys by field walking and manual drilling were undertaken to check and/or complete the database. Once the database has been completed, an analysis using a geographical information system (GIS) will be done to attempt a reconstruction of land-use systems from the Final Palaeolithic (mainly Federmesser) until the start of the Bronze Age. At present the data of two core areas, the Meetjesland and the Moervaart depression, have already been entered into the database and a first, preliminary, spatial analysis has been carried out.

One of the major problems with surface sites is the difficulty of dating them. As absolute dates are usually missing, dating can only be obtained using typological and technological criteria. However, this implies that a considerable number of artefacts, or type fossils, are present on each individual site. Sites which are small, as a result of too limited research, have deep stratigraphical positions or short occupation histories, will be particularly difficult to date. On the other hand, large sites may yield mixed assemblages from different occupation events (palimpsests). In view of these problems we have tried to classify the sites in relatively broad chronological stages, i.e. Final Palaeolithic (Federmesser), Early Mesolithic (Preboreal – first half Boreal), Middle Mesolithic (second half Boreal), Late/Final Mesolithic (first half Atlantic), and Neolithic.

Results and discussion

The chronological distribution of the sites (minimum 50 artefacts) analysed thus far shows a variability in the number of sites per phase. If we look at the raw data expressed in number of sites per phase (Figure 42.1), there is a marked dominance of sites belonging to the Early Mesolithic (37 sites), followed by those of the Late Mesolithic (22 sites). Middle (7 sites) and Final Mesolithic sites (4 sites) are, on the other hand, hardly in evidence.

However, if the difference in the duration of each phase is taken into account another pattern emerges. As a matter of fact, the Late Mesolithic lasted approximately twice as long as the Final Palaeolithic, the Early and Final Mesolithic, and even four times longer than the Middle Mesolithic. If each chronological stage is theoretically reduced to 500 uncalibrated BP years and the number of

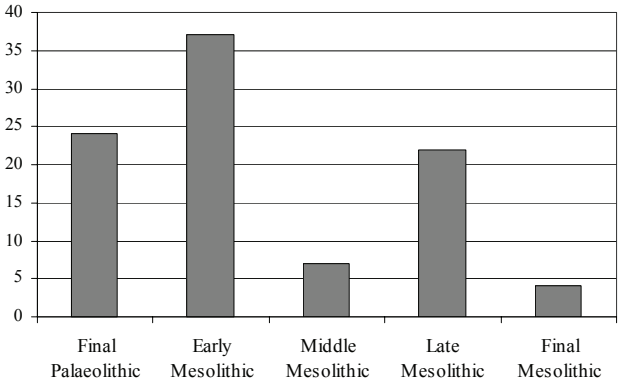


Figure 42.1. Number of sites per chronological phase.

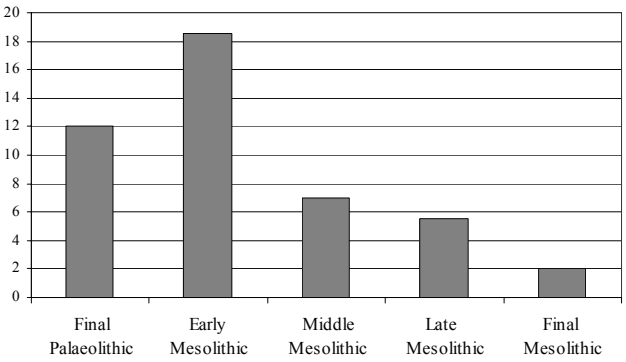


Figure 42.2. In order to avoid distortion caused by the differences in duration of the chronological phases (Middle Mesolithic: c. *500 years uncal. BP; Final Palaeolithic, Early Mesolithic and Final Mesolithic: c. 1000 years uncal. BP; Late Mesolithic:* c. *2000 years uncal. BP), each phase is reduced to 500 years uncal. BP and the number of sites is recalculated in accordance.*

sites is recalculated in accordance (e.g. by dividing the number of sites by two or more, dependent on whether the stage is reduced twice or more) (Figure 42.2), a marked and gradual decrease of sites can be noticed from the Middle Mesolithic until the Final Mesolithic. The limited number of sites belonging to the Final Mesolithic might, in part, be due to taphonomic factors. Until now sites from this stage have only been found in alluvial contexts, and through which are difficult to detect by field walking. The decline of Middle and Late Mesolithic sites, on the other hand, is much more difficult to explain: taphonomic reasons or a lesser visibility cannot be invoked here.

A similar tendency can be seen in the distribution of the radiocarbon dates obtained from salvage excavations in Sandy Flanders. At present 102 dates from different materials, coming from ten sites, are available (Crombé *et al.* 2008). The distribution of these dates shows a strong concentration between 8700 and 7000 cal BC (which corresponds to the Early Mesolithic and the first part of the Middle Mesolithic). From 7000 cal BC onwards there is a drastic decrease in the number of dates. If all charcoal dates are excluded (because these are not secure anthropogenic indicators) the tendency is even stronger: most dates cluster between 8700 and 7400 cal BC, or the Early Mesolithic.

Generally, a dramatic decline in the number of sites is interpreted as an indication of a reduced population density (Crombé *et al.* 2008). However there are other factors which might have influenced the numbers, for example changes in mobility or land-use systems in the course of the Mesolithic. There are two possibilities: either during the Late Mesolithic the same exploitation system was used as in the Early Mesolithic, but with reduced mobility, or there was a change in exploitation system, for example from a collecting to a foraging system (Binford 1980). From ethnographical studies it is known that a collecting system leads to a high number of logistical or non-residential sites, such as hunting stands, field camps, caches, etc. In an opposite sense, a foraging system creates many more residential camps than would a collecting system, because of a higher residential mobility.

However the difference between residential and non-residential camps is archaeologically hard to distinguish. When dealing with surface evidence only, it is almost impossible to assess whether there have been major changes in the mobility system throughout the Mesolithic in the study area. It is even difficult to make a distinction based on evidence retrieved from excavations such as, for example, the Early Mesolithic site of Verrebroek 'Dok I' (Crombé *et al.* 2003).

This excavation, which yielded at least 55 independent artefact concentrations, is the largest in the area so far. The largest excavated units are probably palimpsests of three or more occupation events, while the smallest ones seem to be the result of single and short-term visits. Hierarchical cluster analysis of these units indicates important intra-site variability in the tool compositions. Two major types of assemblages seem to exist. Type one is characterised by a dominance of microliths combined with a significant number of common tools: type two only consists of microliths.

Tool variability such as this is generally, or traditionally, interpreted as reflecting functional differences (Jacobi 1978; Simmons 1979; Verhart 2003). In most studies, assemblages with numerous common tools (comparable to our type 1) are interpreted as residential camps, whereas assemblages dominated by microliths (our type 2) are usually considered as non-residential camps, hunting, or field camps.

However recent microwear analysis has shown clearly that such correlations are too simplified. Three artefact concentrations from Verrebroek 'Dok I', all belonging to type 1, have been analysed so far (Beugnier and Crombé 2005). The results indicate a rather restricted number of domestic activities, with an emphasis on hide working and plant processing. Plant processing includes the scraping and splitting of non-woody plants, most likely reed or fresh hazelnut sticks. Hide working is represented only by its initial stages, namely stripping of the hides, smoothing the hides, and the treatment of hides with abrasives. What is surprising, however, is the almost total absence of other

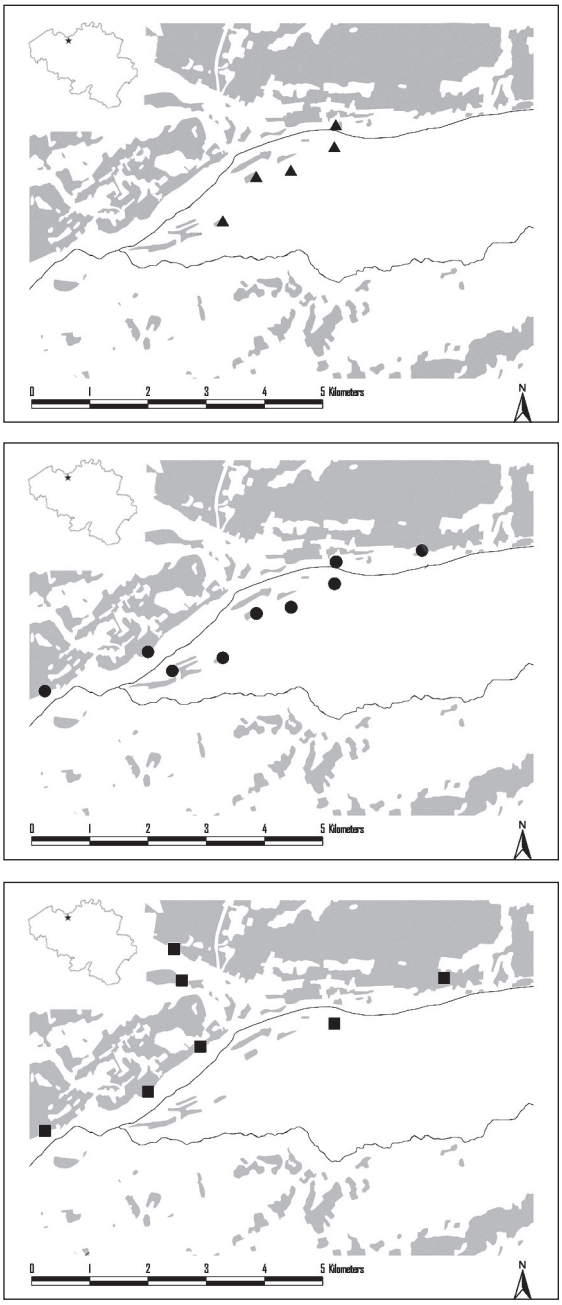
domestic activities that normally produce wear traces rather rapidly, such as wood-, bone-, and leatherworking. The activity spectrum of these three concentrations is not very consistent with what is normally expected for a residential or base camp. This spectrum might be representative of a non-residential camp type, for example a hunting field camp, where a limited set of basic domestic activities would have been performed. The only way to gain more insight into this problem is to expand the microwear analysis to other assemblage types as much as possible, on intra-site and inter-site levels.

Thus, for the time being, it is not possible to make a clear distinction between residential and non-residential sites within our study area. Hence it cannot be verified whether the decrease in sites is a result of a change from a collecting to a foraging mobility. However, besides a reduction in site numbers, a clear shift in the distribution pattern of sites between the Early and Late Mesolithic seems also to indicate a change in the settlement system.

Firstly, Early Mesolithic sites often seem to cluster in specific landscape features, for example, in the eastern part of the study area. Here Early Mesolithic sites cluster along the southern slope of a large sand ridge over a distance of more than 7km. Such extensive clusters are not known from the Late Mesolithic. Second, there seems to be a marked discontinuity in the settlement location between the Early and Late Mesolithic (Figures 42.3, 42.4 and 42.5). Final Palaeolithic sites were very often re-occupied during the Early and Middle Mesolithic (Crombé and Verbruggen 2002). However these sites are only a small percentage of the Early and Middle Mesolithic sites: most sites are situated in new locations. On the other hand the Final Palaeolithic sites were nearly all not re-occupied in the Late Mesolithic, and only 38% of the Late Mesolithic occupations were established on the same location as Early and Middle Mesolithic sites. Most of these re-used sites seem to be located close to open water systems.

Similar trends have been observed in other study areas of north-west Europe (e.g. Waterbolk 1983–4; Groenendijk 1993; Spikins 1999), and have been explained as resulting from major environmental changes, more precisely the change from a rather open coniferous forest in the Preboreal and Boreal, characterised by evenly distributed resources, to a dense and dark broad-leaf forest with clustered resources.

Another major change obviously occurred in the use and distribution of exotic raw materials. During the Mesolithic two different types of quartzites were imported in Sandy Flanders – from Tienen and Wommersom. Both raw materials originate from the Tienen region in central Belgium, more than 80km away from the research area (Caspar 1984; Crombé 1998). On Early Mesolithic sites in Sandy Flanders Tienen quartzite clearly predominates over Wommersom quartzite (Crombé *et al.* 2008) (Figure 42.6). It is remarkable that in the area to the east of Sandy Flanders, in the Campine region, Wommersom quartzite is the only exogenous raw material attested. From the Middle Mesolithic, and definitely from the Late Mesolithic onwards, the situation in Sandy Flanders changes completely: just as in the Campine region, Wommersom quartzite now becomes the most important, and, most of the time, the only exogenous raw material (Figure 42.7).



Figures 42.3, 42.4, 42.5. Distribution of Final Palaeolithic (above), Early Mesolithic (centre), and Late Mesolithic sites (below) in the western part of the Moervaart depression (grey: sand substratum).

It is clear that environmental arguments cannot be held responsible for these changes. Rather, we should look in the direction of social and/or cultural changes. It is not unlikely that these exotic materials, originating from the same outcrop area, were used as social markers by different groups in order to visualise and defend their social territories.

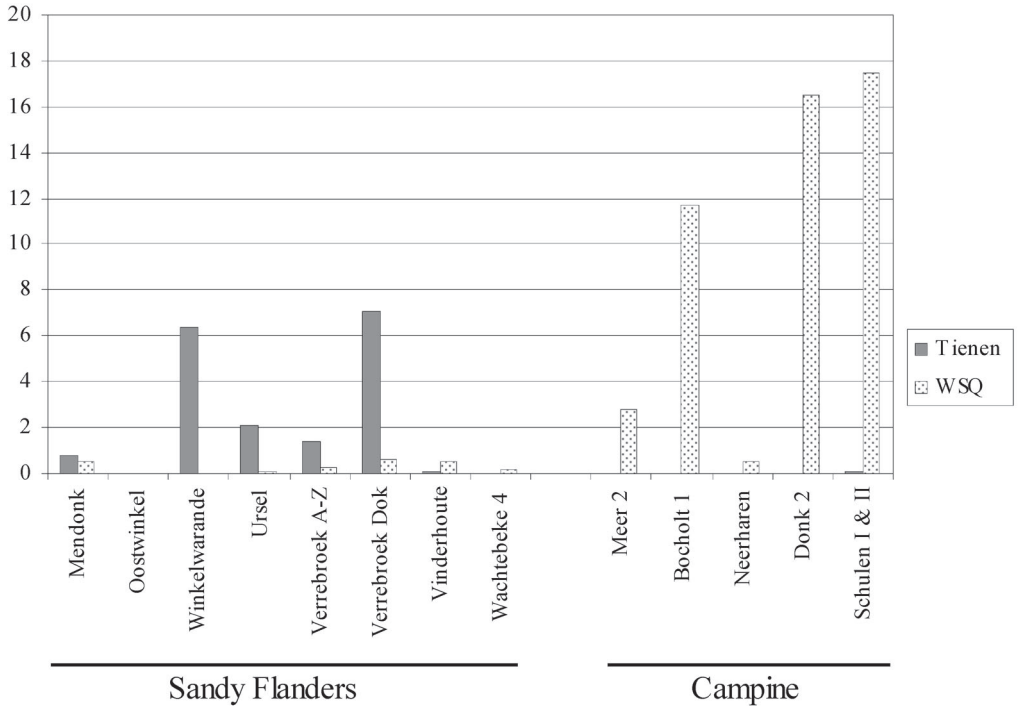


Figure 42.6. Percentages of Tienen and Wommersom quartzite from Early Mesolithic sites in Sandy Flanders and the Campine.

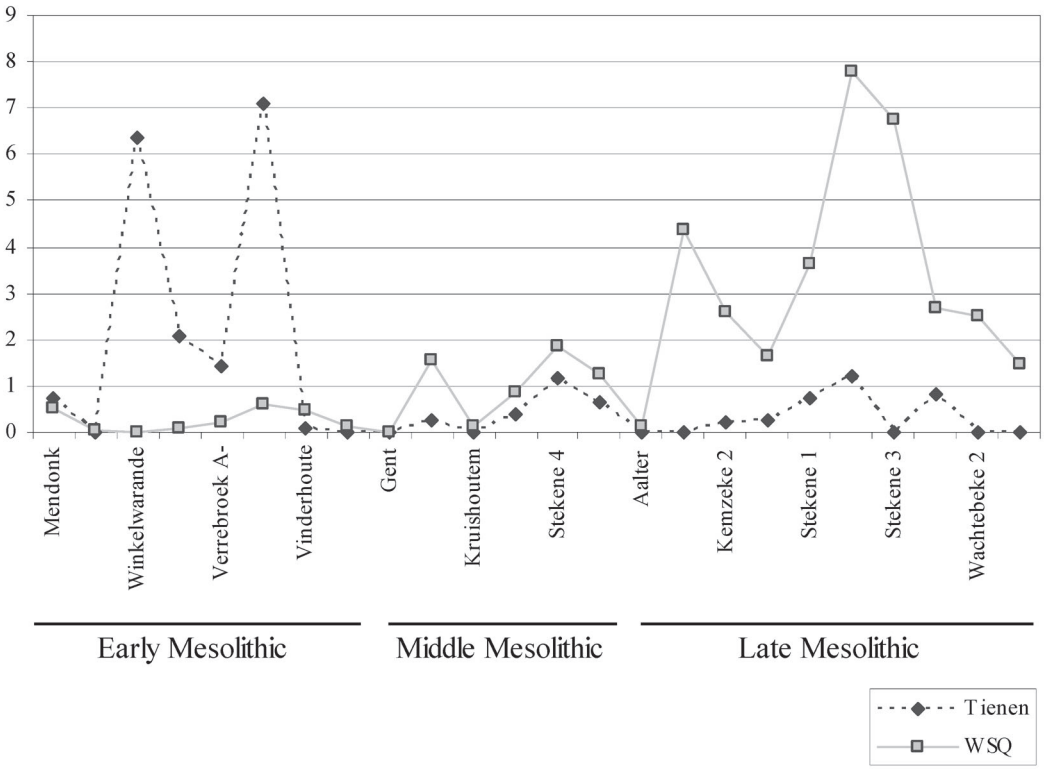


Figure 42.7. Percentages of Tienen and Wommersom quartzite from Early, Middle, and Late Mesolithic sites in Sandy Flanders.

If this were the case, then the Scheldt River in the Early Mesolithic might have been the limit between two different groups, one to the west of the Scheldt using Tienen quartzite, another to the east using Wommersom quartzite. In the Later Mesolithic the Scheldt ceased to signify a limit, or the need to visualise the borders of group territories disappeared or decreased considerably. Whether this points to a change from a period of social stress in the

Early Mesolithic to a period of more stabilisation in the Late Mesolithic remains to be further investigated.

Conclusions

The first results of our research project, although still very preliminary, indicate at least three major changes at the transition from the Early/Middle Mesolithic to the Late Mesolithic in Sandy Flanders. Changes occur in the site density with a marked reduction in site number, in the site location with a stronger emphasis on locations along open water systems, and in the use and distribution of exotic raw materials.

The first two changes might be related to changes in the landscape, forcing local hunter-gatherers to change their way of exploiting the area. The third might be an expression of changing social conditions, for example an increasing territoriality.

Acknowledgements

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