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EDITED BY

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Tracing the Neolithic in the lowlands of Belgium: the evidence from Sandy Flanders

Philippe Crombé
Joris Sergant

7.1 INTRODUCTION

During his career Leendert Louwe Kooijmans has contributed tremendously to a better understanding of the neolithisation of the Netherlands and the entire Lower Rhine Basin. In various papers throughout his career he has developed a model of neolithisation in which he emphasises the role of the indigenous hunter-gatherers in the transition towards an agro-pastoral way of life. Many of his arguments are based on data coming from a series of well-preserved wetland sites in the Dutch Rhine-Meuse delta (fig. 7.1), such as Hazendonk, Hekelingen, Hardinxveld, Schipluiden, etc,

which he has excavated over the last 25 years, sometimes on a large and extensive scale. This wealth of wetland data, however, contrasts sharply with the poor data available for the adjacent dry coversand area situated in between the Rhine-Meuse delta and the loess area of Middle Belgium and south-eastern Netherlands. Until recently Neolithic data from this lowland area was restricted to isolated finds, or assemblages which are badly documented due either to surface collection or to old excavations. These major differences in data quality posed limitations to Leendert's modelling, especially when dealing with possible interaction

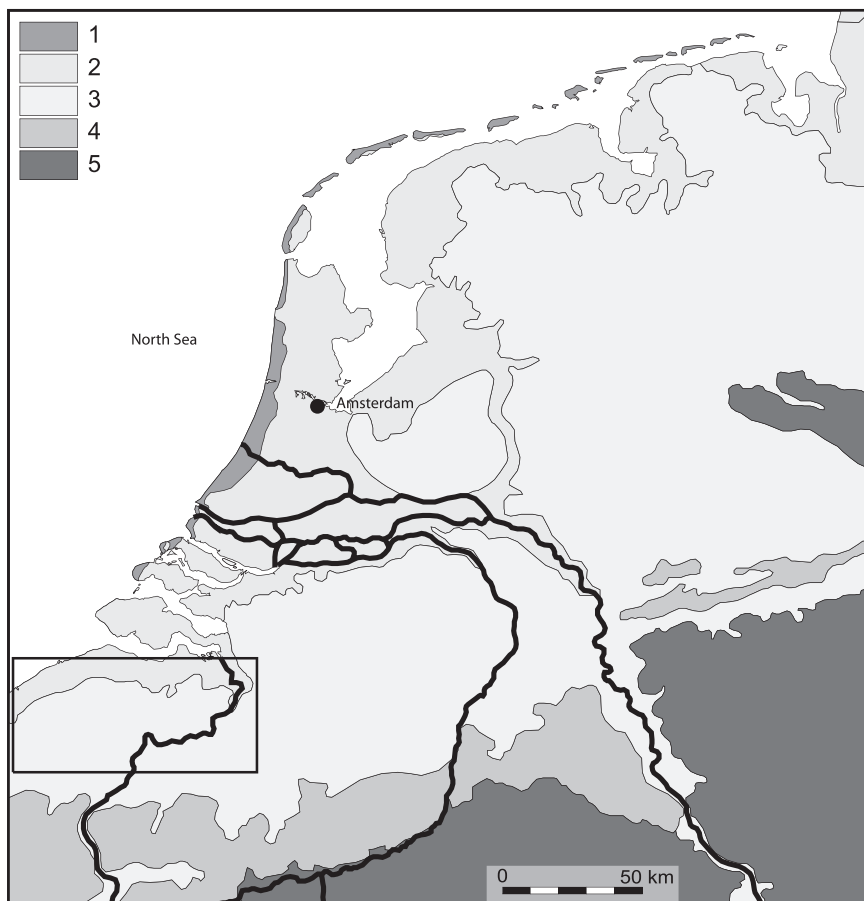


Figure 7.1 Location of Sandy Flanders (square box) within NW Europe (based on Louwe Kooijmans 1993).
1 coastal dunes
2 Rhine-Meuse-Scheldt delta
3 dry coversand area
4 loamy area
5 loamy upland area

and exchange between the first farming communities of the loess and the hunter-gatherers of the delta. Although it is very likely that indigenous groups living in the dry coversand area of northern Belgium and the southern Netherlands played a significant role in the transmission of knowledge and goods to the wetlands, until shortly this remained particularly difficult to assess as reliable data was missing.

Recently, however, new and better data has become available, in particular in the coversand area of north-western Belgium, known as Sandy Flanders or “Zandig-Vlaanderen” (fig. 7.1). In this large region of c. 3000 km², in the last few years new discoveries have been made as a result of extensive salvage excavations and intensive surveys using field walking, corings and aerial photography. These new data will be discussed below in the context of the neolithisation process.

7.2 THE 5TH MILLENNIUM CAL BC: THE TRANSITION FROM THE FINAL MESOLITHIC TOWARDS THE EARLY NEOLITHIC

Until now nearly all data related to the transitional 5th millennium cal BC originates from the floodplain of the Lower Scheldt River (fig. 7.2). Between 2000 and 2003 the presence of the Final Mesolithic Swifterbant culture, including pottery, was attested for the first time in Belgium,

thanks to the discovery of three sealed wetland sites in the deep construction trenches of the “Deurganck” dock at Doel, situated in Antwerp harbour (Bats *et al.* 2003; Crombé 2005; Crombé *et al.* 2000; Crombé *et al.* 2004). Earlier however, in the 1980s, Swifterbant pottery had already been excavated in the nearby municipality of Melsele “Hof ten Damme” (van Berg *et al.* 1992), but due to the extreme fragmentation of the pottery and the admixture with older and younger settlement waste, its connection with the Swifterbant culture was not clear at the time.

All four sites display the same environmental setting: on the top of relatively narrow but elongated late glacial coversand ridges which, at the time of occupation, *i.e.* roughly in the second half of the 5th millennium cal BC, were situated in a marshy area close to open freshwater. The Swifterbant occupation in the Lower Scheldt valley seems to have coincided with the Wormer transgression phase of the sea, which backed up the freshwater and resulted in the deposition of organic clay deposits on top of the basal peat (Nieuwkoop Formation) and reduced the available occupation surface on the sand ridges to small stretches of relatively dry land.

Settlement traces are restricted to latent surface-hearths, invisible during excavations and only traceable through plotting of burnt artefacts and ecofacts, which yield charcoal

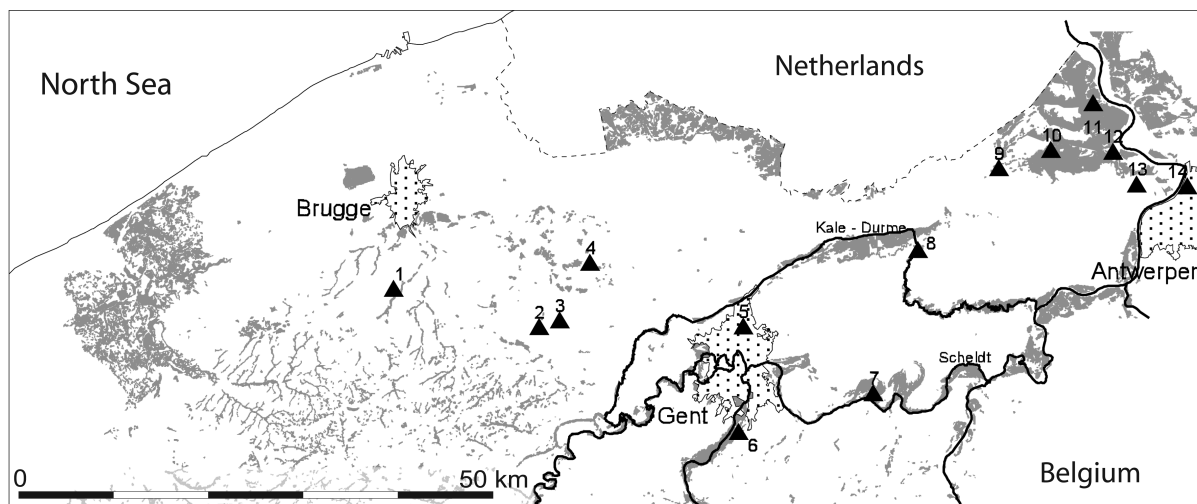


Figure 7.2 Sandy Flanders with indication of the Mesolithic and Neolithic sites mentioned in the text.

- | | |
|----------------------|--------------------|
| 1 Waardamme | 8 Eksaarde |
| 2 Aalter “Stratem” | 9 Sint-Gillis-Waas |
| 3 Aalter “Oostergem” | 10 Verrebroek |
| 4 Ursel | 11 Doel |
| 5 Gent | 12 Melsele |
| 6 Merelbeke | 13 Zwijndrecht |
| 7 Kalken | 14 Antwerpen |

Grey shaded areas: river and (peri)marine deposits.

mainly from oak and alder, together with numerous burnt bones from mammals (wild boar and red deer mainly) and freshwater fishes (carp family mainly) as well as charred seeds and fruit remains (from hazelnuts, wild apples, sloe plums, acorns and hawthorn) (Bastiaens *et al.* 2005; Van Neer *et al.* 2005). Although partly biased by burning, these remains indicate an economy which was still entirely focussed on the exploitation of wild resources, and occupations which were most likely not year-round. At the Swifterbant site situated in sector B of the “Deurganck” dock the paleoecological evidence points to probable occupations at least during early and late summer, winter and early spring. Preliminary use wear analysis on flint artefacts (internal report V. Beugnier) also indicates rather short-term activities.

Based on the character of the excavated settlements, together with the strong Late Mesolithic affinities in the lithic industries (numerous trapezes, regular Montbani blades with irregular retouch, use of exotic raw materials such as Wommersom quartzite, emphasis on plant processing, etc.) it may be concluded that apart from the presence of pottery, these Swifterbant sites hardly differed from the Late Mesolithic occupations of the 7th - 6th millennium cal BC known in the same area (fig. 7.3).

Still, an important issue remains the extent of the territory of the Swifterbant culture in Belgium (and also the southern Netherlands). Based on the present information it might be concluded that this transitional culture was restricted to the Lower Scheldt floodplain, situated at the southern edge of the large prehistoric Rhine-Meuse-Scheldt delta covering the western Netherlands. However, the question has to be asked whether the Swifterbant culture did not extend further upstream along the Scheldt valley southwards into the (sand-) loamy area. It must also be asked whether the Swifterbant culture was confined to (river) wetland environments, or also extended towards the drier coversand areas of northern Belgium and the southern Netherlands.

In the present state of research these questions remain difficult to answer, yet there is indirect evidence which may shed some light on this discussion. Along the entire Scheldt River numerous finds of so called T-shaped antler axes or Tüllengeweihäxte are known, tools which are in fact more likely to have been used as mattocks; they come mainly from dredging in the second half of the 19th and beginning of the 20th centuries (Hurt 1982; 1992). A series of 15 of these finds has recently been dated by AMS, the results proving they belong to the 5th millennium and first half of the 4th millennium cal BC (c. 5000-3450 cal BC) (Crombé *et al.* 1999). Though it remains difficult to link these isolated finds with a particular culture, it is most likely that a number of these mattocks belong to the Swifterbant culture, as similar mattocks have been found, together with production waste, on several Dutch Swifterbant sites such as Hardinxveld

(Louwe Kooijmans 2001), Almere (Hogestijn/Peeters 2001) and Swifterbant (Bulten/Clason 2001). So, a southern extension of the Swifterbant Culture along the Scheldt River is very plausible, but remains to be proven by in situ finds.

The question of whether or not the Swifterbant culture was solely restricted to wetlands is much more difficult to address. Most scholars, including Louwe Kooijmans, believe that the Swifterbant territory also included the dry coversands of Belgium and The Netherlands, claiming that the remains are difficult to locate due to taphonomic factors (degradation of poorly fired pottery due to soil acidity) and the absence of guide-fossils in the lithic inventories (Raemaekers 1999; Vanmontfort 2007). However, there is no reason to believe that Swifterbant pottery, which generally is of a much better quality than Michelsberg pottery found in the same area and dated to the beginning of the 4th millennium cal BC (cf. below), would not have survived. Regarding the absence of typical Swifterbant lithic tools, it should be emphasised that there is a big difference in size, morphology and technology between the trapezes found on Swifterbant sites and the Late Mesolithic ones from the coversand areas. Swifterbant trapezes (fig. 7.3) are generally much smaller, much more irregular and less standardised than Late Mesolithic specimens (Deckers 1979); a few examples rather resemble transversal arrowheads.

Furthermore Swifterbant trapezes seem not to be made by means of the microburin technique any longer. Also the flat ventral basal retouch, typical for Late Mesolithic trapezes, is completely missing. In addition there seems to be a major difference in the blade technology between the Swifterbant and the Late Mesolithic, in the sense that the importance of blade technology is decreasing very much towards the 5th millennium. At least in Sandy Flanders there are currently no surface dryland sites known, which have yielded series of these small irregular Swifterbant trapezes, hence the existence of potential Swifterbant occupation sites in this particular area seems very unlikely.

On the other hand, the few irregular trapezes which incidentally occur in this area, mostly as stray finds, do indicate that late (Swifterbant?) hunter-gatherers marginally exploited the coversand area during the 5th millennium cal BC. This pattern of land use, characterised by a focus on wetland environments and a marginal exploitation of the dry interior, seemingly was not restricted to the 5th millennium cal BC but also characterises the Late Mesolithic in Sandy Flanders. The results of an exhaustive inventory project clearly indicate that sites from the 7th/6th millennium cal BC tend to cluster around former wetlands, such as the dry banks of the Kale/Durme River – an important tributary of the Scheldt River – and the borders of swampy depressions and mires (e.g. the Moervaart and Ede depression), while sites are almost completely absent from the dry “interior”

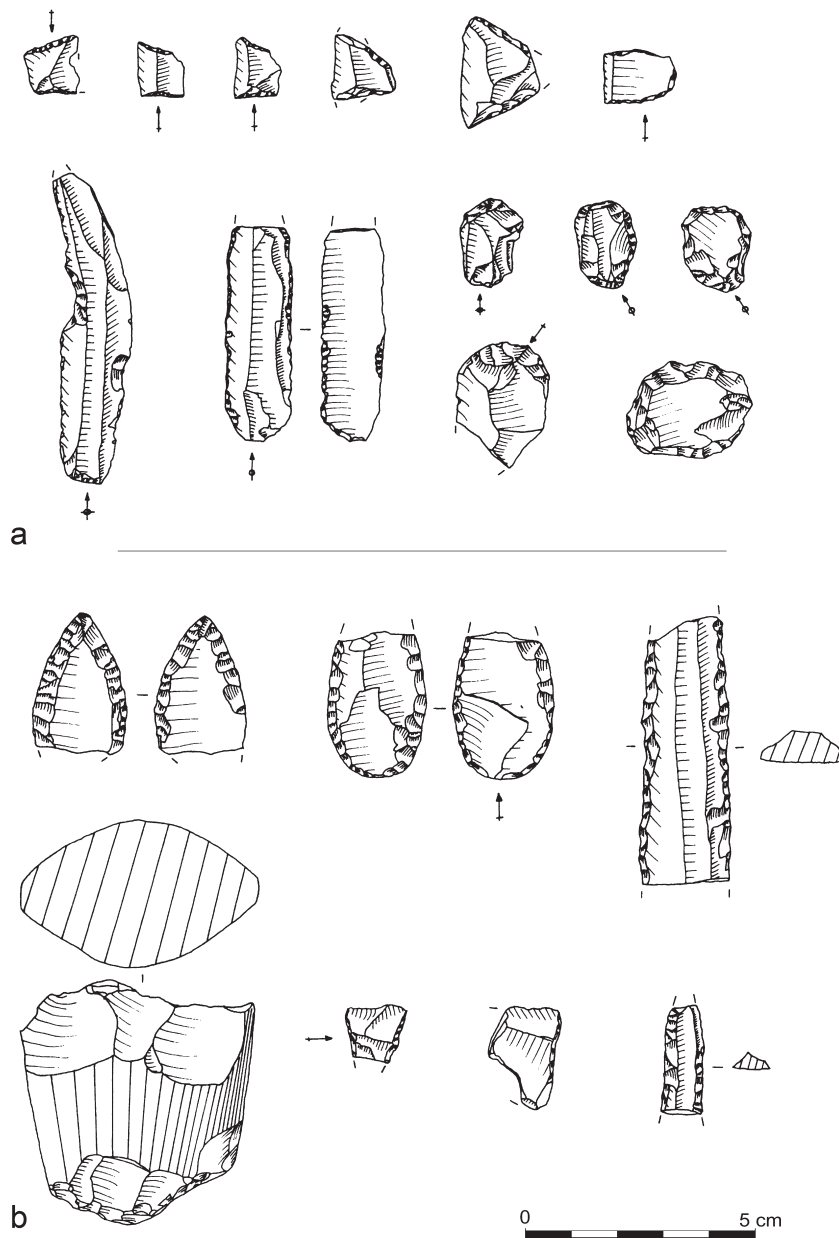


Figure 7.3 Comparison of the lithic toolkit between the Swifterbant Culture (a) and the Michelsberg Culture (b). Lithics are originating from research at Doel “Deurganck” dock, resp. sector B and C.

(Crombé *et al.* in press; Sergant *et al.* in press).¹ This pattern sharply contrasts with the earlier – Preboreal to first half of Boreal (9th and first half of 8th millennium cal BC) – occupation of Sandy Flanders, which is characterised by a more dispersed occupation covering the entire landscape.

Although the exact causes of the assumed “depopulation” of the dry coversand from the Atlantic period onwards are not yet known, it is thought that major environmental and/or social changes are the underlying factors. The general view is that the coversand area was decreasingly occupied as a

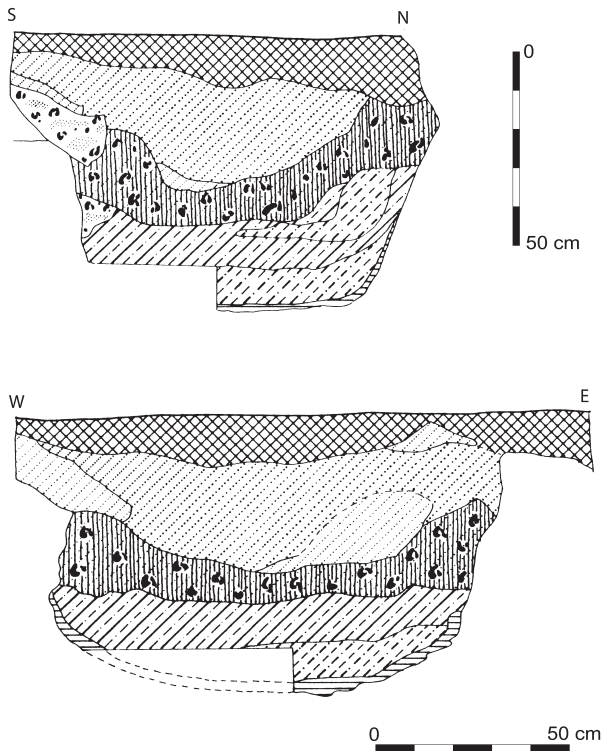


Figure 7.4 Transects from a (food?) storage pit excavated at the Michelsberg site of Melsele "Hof ten Damme" (after Van Berg *et al.* 1992).

result of the spread of dark and dense deciduous forest, which forced edible plant species as well as wild game to move to the borders of the main river valleys, leaving the forest interior unattractive for hunter-gatherers (Crombé *et al.* in press). Also, from the 6th and 5th millennium cal BC the appearance of ecologically very rich and varied peat fens might have had an impact on the settlement system and mobility of Late Mesolithic hunter-gatherers (Robinson 2007).

These wetlands might have offered the chance, for the first time during the Mesolithic, to reduce mobility. The latter is also suggested by the observation that Late Mesolithic sites tend to yield larger lithic assemblages than Early Mesolithic ones.

7.3 THE 4TH MILLENNIUM CAL BC: THE TRUE START OF THE NEOLITHIC?

It is not yet fully clear whether the marginal exploitation of the dry coversand interior of Sandy Flanders continued during the first half of the 4th millennium cal BC. At first glance, the evidence relating to the Michelsberg Culture shows an occupation pattern more or less similar to that of the 5th millennium cal BC. Indeed, up until now, it is from the Lower Scheldt floodplain that most Michelsberg finds have been reported (fig. 7.2). At Saeftinge (southwestern Netherlands) a handful of typical quartz-tempered Michelsberg potsherds (25 frag.), among which were fragments of horizontally perforated knobs (Schnurösen), were collected in 1998 (Jongepier 2002). A radiocarbon date on charcoal fragments situates these finds around 4955 ± 45 BP (GrA-19283; pers. comm. Jongepier) (fig. 7.5). Michelsberg pottery was also collected on and nearby the Swifterbant sites of Doel "Deurganck" dock (Crombé *et al.* 2000; 2002) and Melsele "Hof ten Damme" (Van Berg *et al.* 1992). Salvage excavations at Doel "sector C" led to the discovery of a small, but partially destroyed Michelsberg site, dated on foodcrusts to 5110 ± 35 BP (KIA-14334) (fig. 7.5). Besides flint-tempered pottery this site yielded a small lithic assemblage of c. 300 artefacts, including some typical Neolithic tools such as two leaf-shaped arrowheads, two transversal arrowheads, a robust retouched blade and a base fragment of polished axe (fig. 7.3). At Melsele similar tools (three leaf-shaped arrowheads, a sidescraper and a retouched blade) and pottery fragments were collected amidst older, Swifterbant occupation waste. However, this site also yielded a clear anthropogenic feature which, based on its radiocarbon dates obtained on samples of bark (OxA-3092: 4950 ± 80 BP;

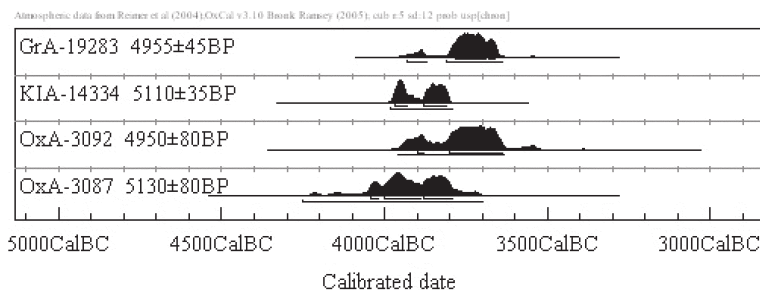


Figure 7.5 Calibration of the radiocarbon dates from Michelsberg sites in the Lower Scheldt floodplain.

OxA-3087: 5130 ± 80 BP) (fig. 7.5), is most likely connected with the Michelsberg finds. The feature (fig. 7.4) consists of a deep pit (depth c. 0.7 m; diameter c. 1.10 m) with almost vertical walls, the bottom of which was covered with bark. Based on the resemblance with Michelsberg silos, this feature may be interpreted as a (food?) storage pit.

Furthermore, in the same area there is the site of Verrebroek “Aven Ackers” (Sergant *et al.* 2007), where badly preserved flint-tempered pottery and a few arrowheads were found during recent salvage excavations. Further south along the Scheldt, at Zwijndrecht “Vlaams Hoofd” (fig. 7.6), an almost complete Michelsberg Beutelbecher (Lüning type 12,1) was collected in 1903 underneath 3 to 4 m of peat, together with some bones and flint tools (Warmenbol 1987). An almost similar vessel (tulip shaped pot, Lüning type 7) was also found earlier on the right bank of the Scheldt, in the centre of Antwerp in the “Lombardenstraat” (Warmenbol 1987). Further upstream near Ghent, three locations are known which provided Michelsberg finds. A first site was detected in the First World War during the digging of a harbour dock, called “Port Arthur” (Otte *et al.* 1986). During these diggings an assemblage typical of the Michelsberg culture, consisting of triangular arrowheads (5), large flake scrapers (min. 6), flake axes or tranchets (7) and long regular blades, some of them manufactured from mined flint, was retrieved from the soil. More recently, flint-tempered pottery was also collected at Merelbeke (Janssens 2007) and Kalken (Bats/De Reu 2006).

Although similar Michelsberg finds are also known from the dry coversand interior, their interpretation is even more ambiguous as they all come from ploughed surface sites. The

recent inventory project mentioned above resulted in the registration of typical Michelsberg tools, among which were mainly triangular (32 ex.) and leaf-shaped (38 ex.) arrowheads, clearly indicating some kind of exploitation by the Michelsberg Culture. Unfortunately, as most of these occur either as isolated finds on Mesolithic sites or as stray finds, it is difficult to assess their true meaning. Only a few sites (fig. 7.2), *e.g.* Eksaarde “Fondatie”, Sint-Gillis-Waas, Aalter “Stratem” and Ussel “Wagemakersbeek” (Van der Haegen *et al.* 1999; Van Vlaenderen *et al.* 2007), yielded three to four such arrowheads together with many fragments of polished axes, some broken (un)retouched broad blades or even a few flake cores (*e.g.* at Aalter). Most likely these sites represent potential settlement sites, comparable to the ones excavated in the Lower Scheldt floodplain (*e.g.* Doel, Gent), though their number certainly is biased due to their small size and discrete character. Furthermore some isolated pottery finds, mostly consisting of small flint-tempered potsherds, are known from the dry interior, *e.g.* at Aalter “Oostergem” (De Laet *et al.* 1958). Here too some bias can be expected as a result of taphonomy.

Clearly these small assemblages of lithic artefacts and/or pottery found either in wetlands or on dryland contrast sharply with the large collections of finds from Michelsberg sites in the more southern (sand-) loamy area of the Scheldt basin. In the latter area Michelsberg sites tend to cover many tens of hectares, from which thousands of lithics are usually collected (Vanmontfort 2004). Most of these extensive sites, some of which are enclosed by interrupted ditches and palisades, are interpreted as permanent settlements and/or central foci within a fully agrarian system. Due to the major

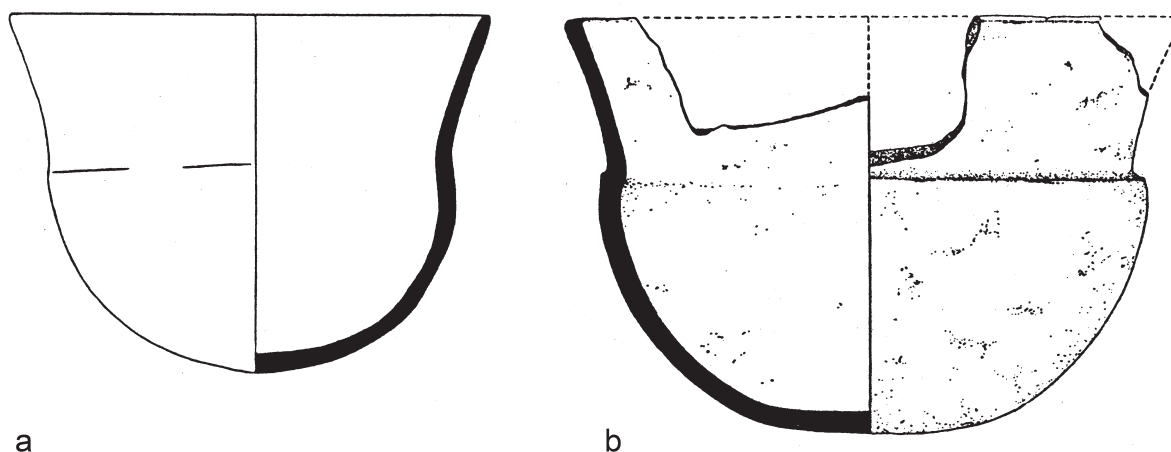


Figure 7.6 Two almost complete Michelsberg vessels from the Lower Scheldt floodplain (after Warmenbol 1987) (Scale 1:3).

a Zwijndrecht “Vlaams Hoofd”

b Antwerp “Lombardenstraat”

differences in size, most scholars do not associate the small assemblages found to the north/downstream in the sandy lowlands with real occupation by the Michelsberg culture. According to Louwe Kooijmans (2006, 493-494) they most likely do not represent actual expansion of the Michelsberg communities, but rather should be interpreted as objects that were exported to the north and were there deliberately deposited in burials. Some isolated finds, *e.g.* the almost complete vessels from Zwijndrecht, Aalter and Antwerp, may indeed have been burial gifts, but this interpretation definitely cannot be applied to all assemblages from Sandy Flanders, certainly not to those which also yielded knapping waste and highly fragmented pottery. Furthermore, Vermeersch (1990) argues that Michelsberg farmers-herders were not interested in occupying the “poor” coversands, which were not suited to agricultural activities. According to this interpretation, the limited Neolithic finds from the sandy lowlands were left by Michelsberg herders during long-distance transhumance activities, and certainly do not point at real occupation. Moreover, the fact that Neolithic finds are found on some coversand sites, mainly in the Campine area (*e.g.* at Weelde, Dilsen, Meeuwen and Opgrimbie) together with Mesolithic lithics, would indicate contact and interaction between indigenous hunter-gatherers and Michelsberg stock breeders. Vermeersch even postulates the idea that hunter-gatherers from the lowlands may have been “employed” by Michelsberg farmers-herders from the south in order to tend their cattle. However, the co-existence of late hunter-gatherers and Michelsberg farmers still has to be confirmed by secure data (Crombé *et al.* 2005; Crombé/Vanmontfort 2007). The interaction model of Vermeersch is thus far based solely on ploughed sites, whose chronological integrity remains very questionable and difficult to evaluate. It is more likely that the sites discussed by Vermeersch represent mixed assemblages from Late Mesolithic and Michelsberg occupation phases. As it happens, the Late Mesolithic assemblages of Weelde, Dilsen, etc. do not show any affinities with the lithics (trapezes) from the Swifterbant Culture, but rather represent sites belonging to the 7th or 6th millennium cal BC, thus predating any Michelsberg activity. Moreover some sites (*e.g.* Meeuwen) yielded microliths typical of the Middle rather than the Late Mesolithic.

In our opinion there is no reason why the small Michelsberg sites in Sandy Flanders, as well as in other parts of the coversand region of Belgium and The Netherlands, should not be regarded as real occupation sites from the Michelsberg Culture. Sites such as Doel, Melsele, Aalter, Eksaarde, Sint-Gillis-Waas and Ussel (cf. *supra*) yielded lithic and/or ceramic assemblages which are perfectly comparable – both typologically as well as technically – with typical Michelsberg assemblages from the loamy area. They include the same standard tools and vessels, albeit their typological

range may be less wide. Also the presence of ad hoc flint knapping and in one case a (storage?) pit feature also favours an interpretation as settlement sites. The only difference is the limited size of these sites, yet small sites do also occur in the southern loamy region (Vanmontfort 2004). For example, some lowland sites (*e.g.* Doel, Gent) can be compared to a certain degree with the small, albeit better-preserved site of Oudenaarde “Donk” (Parent *et al.* 1987) situated in the Middle Scheldt floodplain within the loamy region. Salvage excavations at the latter site revealed a Michelsberg occupation of less than 30 × 50m, situated on a small point bar. Based on the preserved faunal and botanical material, the site is interpreted either as a special activity site oriented towards hunting, fishing and herding and forming part of a settlement system including the surrounding large permanent settlements (Parent *et al.* 1987) or as a temporary site belonging to an autonomous more mobile group of Michelsberg members (Vanmontfort, 2004, 162). Regardless of which interpretation is the right one, both models view the site of Oudenaarde as a semi-agrarian (extended broad spectrum, as defined by Louwe Kooijmans) and semi-permanent site, probably occupied during specific times or seasons within a yearly cycle. Both models also imply that Michelsberg farmer-herders, or at least some of them, were more mobile than traditionally thought.

Therefore, based on the above arguments and contrary to current theories (cf. *supra*) we tend to view the small sites in the coversand lowland as clear evidence for Michelsberg occupation, probably by (semi-) mobile groups which operated in the wetlands and most likely also in the drier “interior” of Sandy Flanders. Unfortunately, the present data do not indicate whether or not there was a functional difference between the wetland and the dryland sites. However, it is not excluded that the latter represent more permanent settlements. Despite the limited size of the lithic assemblages recovered from these sites, the existence of timber houses is possible, and certainly can be expected in future excavations.² The presence of constructions on small sites already has been demonstrated for the Final Neolithic (1st half of 3rd millennium cal BC) within Sandy Flanders. Salvage excavations at the site of Waardamme (Demeyere *et al.* 2006), which yielded a lithic assemblage of barely 500 artefacts, revealed a completely preserved house plan measuring 20.2 m long. Future excavations will have to prove whether similar single house sites existed for the Michelsberg Culture.

To what extent the (semi-) mobile Michelsberg groups from the coversand area were part of the same settlement system as the loamy area or, on the contrary, represent independent groups with own territories, remains to be investigated. Furthermore, the question concerning how the Michelsberg Culture was introduced into the sandy lowlands,

shortly before or after 4000 cal BC, has to be further examined. Are we really dealing with groups which migrated from the south, introducing the Neolithic culture as a package into the lowlands (demic diffusion) or is the appearance of the Michelsberg Culture the result of a sudden and abrupt acculturation of indigenous hunter-gatherers? In the former case, contact finds should be expected on both Swifterbant and Michelsberg sites, but solid and irrefutable prove for this has not yet been found (cf. supra). On the contrary, the evidence from the sealed Michelsberg site of Doel “sector C”, being the most reliable context within Sandy Flanders so far, points at the complete absence of Mesolithic or Swifterbant artefacts, despite the proximity of several Swifterbant sites at Doel. On the other hand, the acculturation hypothesis implies that some Mesolithic (Swifterbant) affinities should be observable in the earliest Michelsberg Culture. However, the available evidence currently points rather at a rupture than at continuity in the material culture. Michelsberg lithics and ceramics differ substantially in morphology, technology and raw material from Late Mesolithic and Swifterbant material culture (Crombé *et al.* 2002). The only evidence of some kind of continuity is the use of T-shaped antler mattocks until the end of the Michelsberg period. Also the presence of some transversal arrowheads within Michelsberg contexts (e.g. at Doel) may be considered as a Swifterbant heritage, as similar, albeit less typical examples are known from Swifterbant sites.

7.4 CONCLUSIONS

Recent research has offered the opportunity for new insights into the neolithisation process in Sandy Flanders, situated at the contact between the well-documented Rhine-Meuse delta and the southern loess area. Albeit preliminary, the data suggest a gradual (?) depopulation of the dry coversand interior during the Late and Final (Swifterbant) Mesolithic followed at the start of the 4th millennium BC by a “re-occupation” by (semi-)mobile Michelsberg groups. Future excavations, which are planned for the coming years, will allow us to verify the validity of these findings and hopefully to refine our views on the neolithisation of the coversand lowlands of Belgium.

Notes

1 Research Programme of the Research Foundation - Flanders (FWO), entitled “Man and Landscape. Study of prehistoric land-use in three core regions of Sandy Flanders between c. 12,000 and 2000 BC” (2004-2007).

2 In the framework of a new project financed by the Research Programme of the Research Foundation - Flanders (FWO), entitled “The Neolithic in the sandy lowlands of Belgium: chronology, extension and character” (2008-2011), several Neolithic sites will be investigated by means of trial excavations and augerings.

References

- Bastiaens, J./K. Deforce/B. Klinck/L. Meersschaert/C. Verbruggen/L. Vrydaghs 2005. Palaeobotanical analyses. In: P. Crombé (ed.), *The last hunter-gatherer-fishermen in Sandy Flanders (NW Belgium); the Verrebroek and Doel excavation projects, Part 1: palaeo-environment, chronology and features*, Gent (Archaeological Reports Ghent University 3), 251-278.
- Bats, M./P. Crombé/Y. Perdaen/J. Sergant /J.-P. van Roeyen/M. van Strydonck 2003. Nieuwe ontdekkingen in het Deurganckdok te Doel (Beveren, Oost-Vlaanderen): Vroeg- en Finaal-Mesolithicum, *Notae Praehistoricae* 23, 55-59.
- Bats, M./J. de Reu 2006. Evaluerend onderzoek van boringen in de Kalkense Meersen (Oost-Vlaanderen, België), *Notae Praehistoricae* 26, 171-176.
- Berg, P.-L. van/L. Keeley/J.-P. van Roeyen/R. van Hove 1992. Le gisement mésolithique de Melsele (Flandre-Orientale, Belgique) et le subnéolithique en Europe occidentale. In: C.-T. le Roux (ed.), *Paysans et bâtisseurs; l'émergence du Néolithique atlantique et les origines du mégalithisme, Actes du 17ème Colloque interrégional sur le Néolithique, Vannes, 28-31 octobre 1990*, Rennes (Revue Archéologique de l'Ouest supplément 5), 93-99.
- Bulten, E.E./A. Clason 2001. The antler, bone and tooth tools of Swifterbant, The Netherlands. In: A.M. Choyke/L. Bartosiewicz (eds), *Crafting Bone: Skeletal Technologies through Time and Space*, Oxford (BAR International Series 937), 297-320.
- Crombé, P. 2005. *The last hunter-gatherer-fishermen in Sandy Flanders (NW Belgium); the Verrebroek and Doel excavation projects, Part 1: palaeo-environment, chronology and features*, Gent (Archaeological Report Ghent University 3).
- Crombé, Ph./M. Bats/F. Wuyts/J.-P. van Roeyen 2004. Een derde vindplaats van de Swifterbantcultuur in het Deurganckdok te Doel (Beveren, Oost-Vlaanderen, België), *Notae Praehistoricae* 24, 105-107.
- Crombé, Ph./Y. Perdaen/J. Sergant 2005. La néolithisation de la Belgique: quelques réflexions. In: G. Marchand/A. Tresset (eds), *Unité et diversité des processus de néolithisation sur la façade atlantique de l'Europe (6e – 4e millénaires avant J.-C.)*, *Table ronde de Nantes, 26-27 Avril 2002*, Paris (Mémoire de la Société Préhistorique Française 36), 47-66.
- Crombé, Ph./Y. Perdaen/J. Sergant in press. Le Mésolithique ancien dans l'ouest de la Belgique: Quelques réflexions concernant l'occupation du territoire. In: Th. Ducrocq/J.-P. Fagnart/B. Souffi/A. Thévenin (eds), *Actes de la table ronde « Le Mésolithique ancien et moyen de la France*

- septentrionale et des pays limitrophes, Amiens 9-10/10/2004*, Paris (Mémoires de la Société Préhistorique Française).
- Crombé, Ph./Y. Perdaen/J. Sergeant/J.-P. van Roeyen/M. van Strydonck 2002. The Mesolithic-Neolithic transition in the sandy lowlands of Belgium: new evidence, *Antiquity* 76, 699-706.
- Crombé, Ph./J.-P. van Roeyen/J. Sergeant/Y. Perdaen/K. Cordemans/M. van Strydonck 2000. Doel 'Deurganckdok' (Flanders, Belgium): settlement traces from the Final Palaeolithic and the Early to Middle Neolithic, *Notae Praehistoricae* 20, 111-119.
- Crombé, Ph./M. van Strydonck/V. Hendrix 1999. AMS-dating of antler mattocks from the Schelde river in northern Belgium, *Notae Praehistoricae* 19, 111-119.
- Crombé, Ph./B. Vanmontfort 2007. The neolithisation of the Scheldt basin in western Belgium. In: A. Whittle/V. Cummings (eds), *Proceedings of the conference "Going Over: the Mesolithic-Neolithic Transition in North-west Europe"*, Cardiff, 16-18 May 2005, London (Proceedings of the British Academy Press 144), 261-283.
- De Laet, S.J./J.A.E. Nenquin/P. Spitaels 1958. *Contributions à l'étude de la Civilisation des Champs d'Urnes en Flandres*, Brugge (Dissertationes Archaeologicae Gandenses 4).
- Deckers, P.H. 1979. The flint material from Swifterbant, earlier Neolithic of the northern Netherlands. I. Sites S-2, S-4 and S-1. Final reports on Swifterbant II, *Palaeohistoria* 21, 143-180.
- Demeyere, F./J. Bourgeois/Ph. Crombé/M. van Strydonck 2006. New evidence on the Final Neolithic occupation of the sandy lowlands of Belgium: the Waardamme "Vijvers" site, West Flanders, *Archäologisches Korrespondenzblatt* 16, 179-194.
- Haegen, G. van der/Ph. Crombé/J. Semey 1999. *Steentijd-vondsten in het Meetjesland*, Gent (Archeologische Inventaris Vlaanderen, Buitengewone reeks 6).
- Hogestijn, J.W.H./J.H.M. Peeters 2001 (eds). *De mesolithische en vroeg-neolithische vindplaats Hoge Vaart-A27 (Flevoland)*, Amersfoort (Rapportage Archeologische Monumentenzorg 79).
- Hurt, V. 1982. Les haches en bois de cerf: essai de classification, *Amphora* 29, 14-24.
- Hurt, V. 1992. Le matériel en os et bois de cervidé. In: E. Warmenbol/Y. Cabuy/V. Hurt/N. Cauwe (eds), *La collection Edouard Bernays, Néolithique et âge du bronze, époques Gallo-Romaine et médiévale*, Bruxelles (Monographie d'Archéologie Nationale des Musées Royaux d'Art et d'Histoire), 32-65.
- Janssens, E. 2007. *Archeologisch onderzoek in de gemeentes Merelbeke, Baaigen en Zevegem: prospectie-analyse-synthese. Een studie van de bewoningsgeschiedenis in de Schelde-vallei*, MA thesis Gent.
- Jongepier, H. 2002. Het Verdrongen Land Van Saeftinghe. In: A.M.J. de Kraker (ed.), *De Westerschelde, een water zonder weerga*, Kloosterzande, 149-159.
- Louwe Kooijmans, L.P. (ed.) 2001. *Hardinxveld-Giessendam Polderweg. Een mesolithisch jachtkamp in het rivierengebied (5500-5000 v.Chr.)*, Amersfoort (Rapportage Archeologische Monumentenzorg 83).
- Louwe Kooijmans, L.P./P.F.B. Jongste (eds) 2006. *Schipluiden, a Neolithic Settlement on the Dutch North Sea Coast c. 3500 cal BC*, Leiden (Analecta Praehistorica Leidensia 37/38).
- Neer, W. van/A. Ervynck/A. Lentacker 2005. Features: archaeozoological analyses. In: P. Crombé (ed.), *The last hunter-gatherer-fishermen in Sandy Flanders (NW Belgium); the Verrebroek and Doel excavation projects, Part 1: palaeo-environment, chronology and features*, Gent (Archaeological Reports Ghent University 3), 279-294.
- Otte, M./A. Gob/N. Cauwe/V. Hurt 1986. Les documents préhistoriques inédits (Paléolithique, Mésolithique, Néolithique et âge du bronze) découverts à Gent/Port-Arthur. In: H. Thoen/J. Bourgeois/S.J. De Laet (eds), *Les fouilles du Séminaire d'Archéologie de la Rijksuniversiteit te Gent à Destelbergen-Eenbeekeinde (1960-1984) et l'histoire la plus ancienne de la région de Gent (Gand)*, Brugge (Dissertationes Archaeologicae Gandenses 23), 157-201.
- Parent, J.-P./P. van der Plaetsen/J. Vanmoerkerke 1987. *Prehistorische jagers en veetelers aan de Donk te Oudenaarde*, Gent (Vobov-info 24-25).
- Raemaekers, D.C.M. 1999. *The articulation of a 'New Neolithic'. The meaning of the Swifterbant culture for the process of neolithisation in the western part of the North European Plain (4900-3400 BC)*, Leiden (Archaeological Studies Leiden University 3).
- Robinson, E.N. 2007. Cultural Landscapes and Neolithisation Processes: Outline of a Model for the Scheldt Basin, *Internet Archaeology* 22.
- Sergeant, J./M. Bats/G. Noens/L. Lombaert/D. D'Hollander 2007. Voorlopige resultaten van noodopgravingen in het afgedekte dekzandlandschap van Verrebroek – Aven Ackers (Mesolithicum, Neolithicum), *Notae Praehistoricae* 27, 101-107.
- Sergeant, J./Ph. Crombé/Y. Perdaen in press. Mesolithic territories and land-use systems in north-western Belgium. In: *Proceedings of the international meeting MESO 2005*, Belfast, Oxford.

Vanmontfort, B. 2004. *Converging worlds, the Neolithisation of the Scheldt basin during the late fifth and early fourth millennium cal BC*, (PhD thesis Leuven).

Vanmontfort, B. 2007. Bridging the gap. The Mesolithic-Neolithic transition in a frontier zone, *Documenta Praehistorica* 34, 105-118.

Vermeersch, P.M. 1990. La transition du Mésolithique au Néolithique en Basse et Moyenne Belgique. In: D. Cahen/ M. Otte (eds), *Rubané and Cardial, Actes du Colloque de Liège, nov. 1988*, Liège (ERAUL 39), 95-103.

Vlaenderen, L. van/J. Sergeant/H. De Bock/M. de Meireleir 2007. *Steentijdvondsten in de Moervaart*, Gent (Archeologische Inventaris Vlaanderen, Buitengewone reeks 9).

Warmenbol, E. 1987. Het Neolithicum in het Antwerpse: bijlen en pijlen, geslepen en geslagen. In: E. Warmenbol (ed.), *Het ontstaan van Antwerpen; feiten en fabels*, Antwerpen, 37-46.

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