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Detlef Gronenborn · Jörg Petrasch (Hrsg.)

DIE NEOLITHISIERUNG MITTELEUROPAS

Internationale Tagung, Mainz 24. bis 26. Juni 2005

THE SPREAD OF THE NEOLITHIC TO CENTRAL EUROPE

International Symposium, Mainz 24 June - 26 June 2005

Die Neolithisierung – der Übergang von der wildbeuterischen zur Nahrungsmittel produzierenden Lebensweise und damit auch der Übergang von Mobilität zu permanenter Sesshaftigkeit – ist in der Geschichte der Menschheit wohl eines der einschneidendsten Ereignisse überhaupt. Die 37 in diesem Band abgedruckten Artikel sind die aktualisierten Vorträge eines 2005 in Mainz abgehaltenen internationalen Symposiums mit dem Thema »Die Neolithisierung Mitteleuropas«, an dem mehr als 90 Wissenschaftler aus 16 Ländern teilnahmen. Die Beiträge geben einen Überblick über den derzeitigen Stand der Forschungen und decken Themen ab, die vom Nahen Osten, der Balkanhalbinsel über das Karpatenbecken bis zur Ostsee und weiter bis nach Frankreich und Italien reichen. Unter Berücksichtigung neuester Forschungsansätze, etwa der Paläoklimatologie und der Archäogenetik, werden die zentralen Fragen behandelt: Was ist die Neolithisierung? Wie lange dauerte sie? Was waren ihre Ursachen und Mechanismen, und wie lief sie ab?

Neolithisation – the transition from an acquiring to a producing mode of subsistence which includes the transition from mobility to full-time sedentism – marks a fundamental change in the history of humankind. Published in this volume are 37 articles which are the updated versions of contributions to a symposium held in Mainz in 2005 with the title »The Spread of the Neolithic to Central Europe«. It was attended by over 90 scholars from 16 countries. The articles allow an insight into the current state of debate with topics reaching from the Near East to the Balkan Peninsula, the Carpathian Basin, further to the Baltic Sea, to France, and to Italy. By applying new approaches of palaeoclimatology and archaeogenetics any of the central questions is covered: What is neolithisation? How long did it last? What were the causes, what were the mechanisms, and how did it happen?

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CONTACT AND INTERACTION BETWEEN EARLY FARMERS AND LATE HUNTER-GATHERERS IN BELGIUM DURING THE 6TH AND 5TH MILLENNIUM CAL BC

Recent discoveries in northern Belgium, in particular in the Scheldt valley, have demonstrated that hunter-gatherer communities persisted long after the first agro-pastoral groups had settled in the loamy area of Middle Belgium. Foragers belonging to the Swifterbant Culture occupied the sandy lowland of Belgium until almost the end of the 5th millennium cal BC. This paper examines the evidence of possible contact and interaction between both population groups.

The second half of the 6th millennium cal BC

Around 5300 cal BC, the LBK arrived in southern Belgium (van Berg / Hauzeur 2001). This is responsible for the first hard evidence of a Neolithic way of life in that area. Settlement sites of these first farmers have been discovered in three settlement clusters: first, in the Hesbaye region, on the eastern fringe of the Scheldt basin, in fact part of a larger LBK occupation territory including the Graetheide cluster in the Netherlands and the Aldenhovener Platte in Germany; second, in the Kleine Gete area where only three sites are known at present; and, third, in the upper Dender area, in the western part of the area and separated from Hesbaye by a nearly 100 km stretch, void of settlements. Based on the present data, including those recently gathered during archaeological follow-up of large infrastructural transects through the Scheldt basin, the number and distribution of settlement clusters seem fairly reliable.

Although firm evidence is still lacking it is generally assumed that during LBK colonisation the indigenous hunter-gatherers survived in the area in between these three LBK territories. However, no securely dated Mesolithic sites contemporaneous with the LBK are currently known in Belgium. Post-excavation research on most sites is dealing with dating problems due to uncertainties with respect to sample integrity (bulk samples, charcoal problems, and so on) and site integrity (bioturbated and/or mixed contexts, palimpsests, natural features, and so on)¹. A good example is the open-air site of Brecht-Moordenaarsven 2 situated in the cover sand area of northern Belgium (Vermeersch / Lauwers / Gendel 1992). Excavations at this site revealed a lithic scatter of approximately 70 m², containing 24.185 artefacts in flint and quartzite, among which were 850 tools. The lithic scatter was surrounded by a series of small charcoal pits which yielded ¹⁴C dates some of which are partly contemporaneous with the LBK occupation (**tab. 1**). Yet in our opinion, and contrary to that of the excavators, the chronological relationship between the dated features and the »associated« lithic assemblage remains doubtful. Similar features on other Mesolithic sites excavated in the Belgian lowlands (Van Strydonck / Crombé 2005) have often yielded dates which are incompatible with dates on other materials (hazelnut shells, burnt bone, etc.) and/or features from the same site. In addition the anthropogenic origin of the dated charcoal features at Brecht and other Mesolithic sites is still not well established (Louwagie / Langohr 2005). Furthermore, the site of Brecht is most likely an admixture of different occupation events, as the lithic toolkit clearly includes tools typical of the Middle Mesolithic (*lamelles étroites à bord abattu*, points with flat retouch) and Late Mesolithic (trapezes, Montbani blades).

Sample n°	Date (BP)	Dating material	Context
GrN-12987	8650 ± 45	charcoal	pit
Lv-1335	7990 ± 110	charcoal	pit
GrN-12988	6530 ± 60	charcoal	pit
Lv-1295D	6320 ± 120	charcoal	dispersed
Lv-1294D	6270 ± 120	charcoal	pit
GrN-12989	6070 ± 120	charcoal	pit

Tab. 1 List of radiocarbon dates from the Late Mesolithic cover sand site of Brecht Moordenaarsven 2 (from Vermeersch / Lauwers / Gendel 1992).

Despite these problems with context and dating of Mesolithic sites, it is highly likely that indigenous hunter-gatherers continued to occupy and exploit the areas not colonised by the LBK. Whether they had direct contact and exchange with their farming neighbours still remains to be proven. Yet one should note the presence of quite a few LBK stray finds, including adzes and typical LBK arrowheads (Jadin / Hauzeur 2003) outside the LBK territories. Some of these finds can most likely be linked to extra-territorial visits from LBK groups, for example for herding (transhumance) and/or hunting activities. It is not unlikely that during these expeditions LBK farmer-herders encountered local hunter-gatherers, leading in some instances to exchange of particular objects and/or raw materials. However, judging by the distribution pattern of these stray finds most contact occurred in the immediate surrounding of the LBK territories, as most of these finds are found just beyond the loess border (Verhart 2000). Indeed, the further to the west and northwest the lesser finds are reported. Furthermore, the few LBK finds reported further away (> 50 km) from the loess area should be interpreted with some care, as it is not excluded that some of them were left or deposited there in a later stage. A nice example is a fragment of a LBK adze that was recently found in a Roman pit at Evergem Kluizendok (Perdaen et al. 2006), situated at ca. 70 km to the north of the nearest LBK settlements in Hainault. Based on the total absence of other LBK finds or Late Mesolithic artefacts on the site and the totally isolated position of this adze within the general distribution of these finds (see above) it seems most likely that this item was brought to the site by the Romans perhaps as curiosity or as a recycled tool which was reused e.g. as a whetstone. As a matter of fact Roman re-use of Neolithic polished axes is a recurrent phenomenon in northwestern Belgium². The raw material of which the adze is made – *grès micacé* de Horion-Hozémont – might indicate that it was collected within the LBK territory of Hesbaye.

Similarly the find of a blade scraper of clear LBK signature on the site of Doel-Deurganckdok at about 85 km from the Hainault LBK territory can most probably be interpreted as an object transported *a posteriori*. According to a microwear study (Valérie Beugnier, analyses in progress) the flint blade was used at first as sickle and was resharpened later as endscraper, a kind of recycling well-known from the LBK (Caspar 1988; Beugnier in press a; in press b). On this site, too, no other LBK finds were collected, making it very unlikely that this tool was left by LBK members. Based on the fact that it was found in a sector of the site which yielded evidence of a Swifterbant occupation dating to the second half of the 5th millennium cal BC (see below), it may be assumed that it was brought to the site by hunter-gatherers who collected it during their migration. The presence of Swifterbant artefacts in Wommersom quartzite, a raw material originating from outcrops situated in the Middle Belgian loess area, might indicate that this particular object was taken from one of the abandoned LBK settlements along the Kleine Gete (Lodewijckx / Bakels 2000).

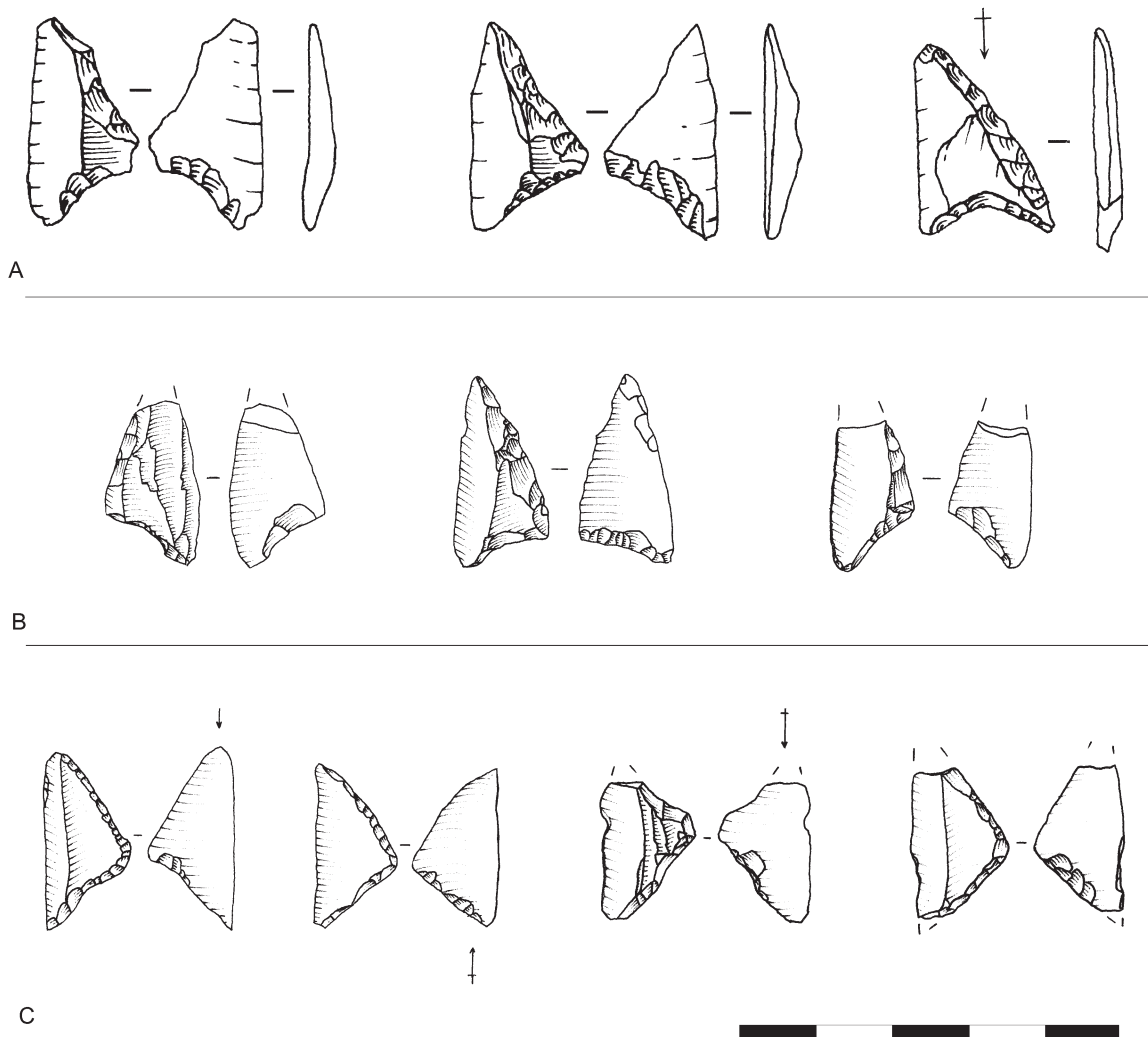


Fig. 1 Comparison between (A) Danubian points from the LBK settlement of Verlaine (Allard 2005), (B) Danubian-like points from the Mesolithic site of Verrebroek 'Dok 1' (Crombé 2005), and (C) *flèches de Belloy* from various Mesolithic (surface) sites in NW Belgium (drawing J. Sergant).

While long-distance contact and interaction is still hard to prove, there is little doubt that Early Neolithic farmers and local hunter-gatherers had (close) contacts within the boundaries of the LBK core areas itself. This conclusion is primarily based on the frequent occurrence of non-LBK pottery, i.e. La Hoguette, Limburg, and *Begleitkeramik* pottery, and asymmetrical triangular arrowheads, »LBK points«, or Danubian points on LBK settlements in the loess area of Belgium. Despite the absence of securely dated and associated find-contexts (for a detailed discussion see Crombé in press), the non-LBK pottery is generally connected with local hunter-gatherers(-horticulturists?) who regularly visited the LBK farming communities (Gronenborn 1999; Jeunesse 2002). Similarly, it is generally assumed that the LBK points indicate close contacts, as they are a close techno-morphological match for Mesolithic asymmetrical armatures with a ventral flat basal retouch, the Danubian-like points³ (fig. 1). Most scholars (Gronenborn 1990; Löhr 1994; Jeunesse 2002) assume that LBK points, which only occur in the northwestern periphery of the LBK Culture, were inspired by the

Site	Sample n°	Date (BP)	Dating material	Danubian-like points	Flèche de Belloy	Ventral basal retouch
Godinne ›Chauveau‹	Lv-1615	7350 ± 75	human bone	0	0	0
Remouchamps ›Station Leduc‹	Lv-1401	6990 ± 90	hazelnut shells	0	0	0
Weelde ›Paardsdrank 5‹	Lv-959	6990 ± 135	hazelnut shells	4 (5,8 %)	0	10 (15 %)
Petit-Modave Trou Al'Wesse layer 4B (base)	Lv-1751	6650 ± 70	bone	0	0	+
Liège ›Place Saint Lambert‹ SDT/3.3	OxA-8995 OxA-10509 OxA-8942 OxA-8941	6485 ± 80 6405 ± 50 6360 ± 55 6220 ± 45	bone (aurochs) bone bone (horse) bone (deer)	1	1	

Tab. 2 Selection of ^{14}C dates from Late Mesolithic assemblages in Belgium. Charcoal dates as well as dates not directly associated with a lithic assemblage have been omitted. For a complete listing of Late Mesolithic dates see Crombé, Perdaen and Sergant (2005).

Mesolithic ones, but this assumption is still based on a single radiocarbon date, i.e. the date of 6990 ± 135 BP (Lv-959) from the site of Weelde-Paardsdrank 5 (Huyge / Vermeersch 1982). So far no other Late Mesolithic site in Belgium which has been radiocarbon dated prior to the LBK has yielded Danubian-like points (**tab. 2**). Also the morphologically related *flèches de Belloy*⁴, which are often found in Late Mesolithic assemblages in northern France (Ducrocq 1991; Fagnart 1991), seem to be missing completely (**fig. 1**). So far only one specimen has been found in a ^{14}C dated context, i.e. at Liège ›Place Saint-Lambert‹ sector SDT, layer 3.3 (Van der Sloot et al. 2003). Unfortunately, there are indications of some degree of mixing in this layer⁵. Moreover, in northern France the exact chronological position of the *flèches de Belloy* remains unknown. There is currently only one reliable ^{14}C date, 6090 ± 95 BP (Gif-10419), from the site of Castel, which yielded five *flèches de Belloy* (Ducrocq 2001, 123-126). The radiocarbon date of 6600 ± 200 BP (Gif 5973) obtained on charcoal from a hearth at the mixed site of Dreuil-les-Amiens, which yielded similar armatures (Fagnart 1997; Ducrocq 2001, 152-155), unfortunately cannot be used because of association problems.

Furthermore, it should be emphasised that the Danubian-like point is not at all a common tool type in Late Mesolithic lithic assemblages from Belgium. On the contrary, armatures of this kind generally represent less than 5 % of the totality of projectiles (**tab. 3**), whereas different types of trapezes (mainly rectangular and rhombic ones) predominate. In addition, technically as well as metrically Danubian-like points differ considerably from the associated Mesolithic armatures. Compared to the trapezes, for example, they are generally smaller, the lateral retouch is much less steep (mostly oblique but sometimes even flat) and the basal retouch much more elaborated. Hence they cannot be classified simply as microliths in the traditional sense of the word but rather constitute somewhat strange (intrusive?) artefacts. It is even doubtful whether these points derive from triangular or trapezoidal microliths (Huyge / Vermeersch 1982, 196)⁶.

In conclusion there is currently little evidence which supports a pre-LBK origin of the Danubian-like points or a direct affiliation with Late Mesolithic armatures, hence the idea that LBK farmers simply copied an

Site	Danubian-like points	trapezes	%
Weelde ›Paardsdrank 1‹	3	68	4,2
Weelde ›Paardsdrank 4‹	2	84	2,3
Weelde ›Paardsdrank 5‹	4	65	5,8
Aalter ›Stratem‹	4	32	12,5
Brecht ›Thomas Heyveld‹	1	77	1,3

Tab. 3 Frequency of Danubian-like points on Late Mesolithic sites in Belgium.

existing Mesolithic projectile type seems hard to defend. The possibility that the »LBK point« as well as the »Danubian-like point« emerged as a result of contact between the earliest farmers and local hunter-gatherers has to be further investigated. As a matter of fact both arrowheads display features characteristic of both indigenous and Neolithic armatures. Some technological characteristics clearly were inherited from local hunter-gatherer lithic traditions, e.g. the microburin technique (indicated by the frequent presence of a *piquant-trièdre*), the basal ventral retouch, and perhaps also the right lateralisation. Both former techniques were already in use before the first appearance of LBK farmers in the loess area. The microburin technique is known already from the start of the Mesolithic, while the application of a ventral basal retouch on Mesolithic trapezes was introduced during the 6th millennium cal BC (**tab. 2**). The oblique to flat lateral retouch, on the other hand, is clearly not an indigenous characteristic, as nearly all Mesolithic trapezes (as well as *flèches de Belloy*) are manufactured by means of a steep to semi-steep retouch (Ducrocq 1991, 432). However, a flat to oblique lateral retouch seems to be typical of another type of LBK arrowhead, namely the symmetrical triangular point (Allard 2005, 201-207) which is generally found in the Champagne, Moselle, and Upper Rhine area, but rarely further (north)west⁷.

Hence, as a working hypothesis, awaiting better and more confident data, we would like to suggest that triangular asymmetrical arrowheads, both LBK points and Danubian-like points, were created as a result of a fusion of local indigenous and LBK projectiles, probably in the more eastern districts of the LBK territory, i.e. Moselle and Upper Rhine area. Indirectly this might imply a partial incorporation and/or acculturation of local hunter-gatherers in LBK society, a hypothesis which we also proposed in order to explain the emergence of non-LBK pottery in LBK settlement contexts (Crombé in press).

Another possible indication of interaction on a local level between indigenous hunter-gatherers and LBK farmers is offered by the Late Mesolithic site of Oeudeghien (Crombé / Velghe 1993), situated only 8 km northwest of the cluster of LBK settlements in Hainault. The lithic assemblage of this site, albeit recovered in secondary position (plough-layer, tree-fall features), deviates considerably from the traditional regional Mesolithic, but rather presents affinities with the »Omalien«, both on the level of raw material procurement as with respect to the knapping technology (Pierre Allard, analyses in progress). The debitage, which is oriented towards the systematic production of Montbani bladelets, is characterised by a careful and intense preparation of the cores (shaping of the cores by removal of large flakes, preparation of crests, ...) as well as by a repeated rejuvenation of the striking platforms through removal of core tablets. In addition, cores, which are mostly made on large and massive flakes, are not completely exploited; even in their final stage cores remain rather voluminous. All this (intense preparation, repeated rejuvenation, incomplete knapping of cores) led to a considerable loss of raw material, which testifies a rather uneconomic use of the flint. This is all the more remarkable given the fact that the good quality flint used at Oeudeghien is not local but originates from southern outcrops situated around Mons. Altogether more than 20 kg of this flint has

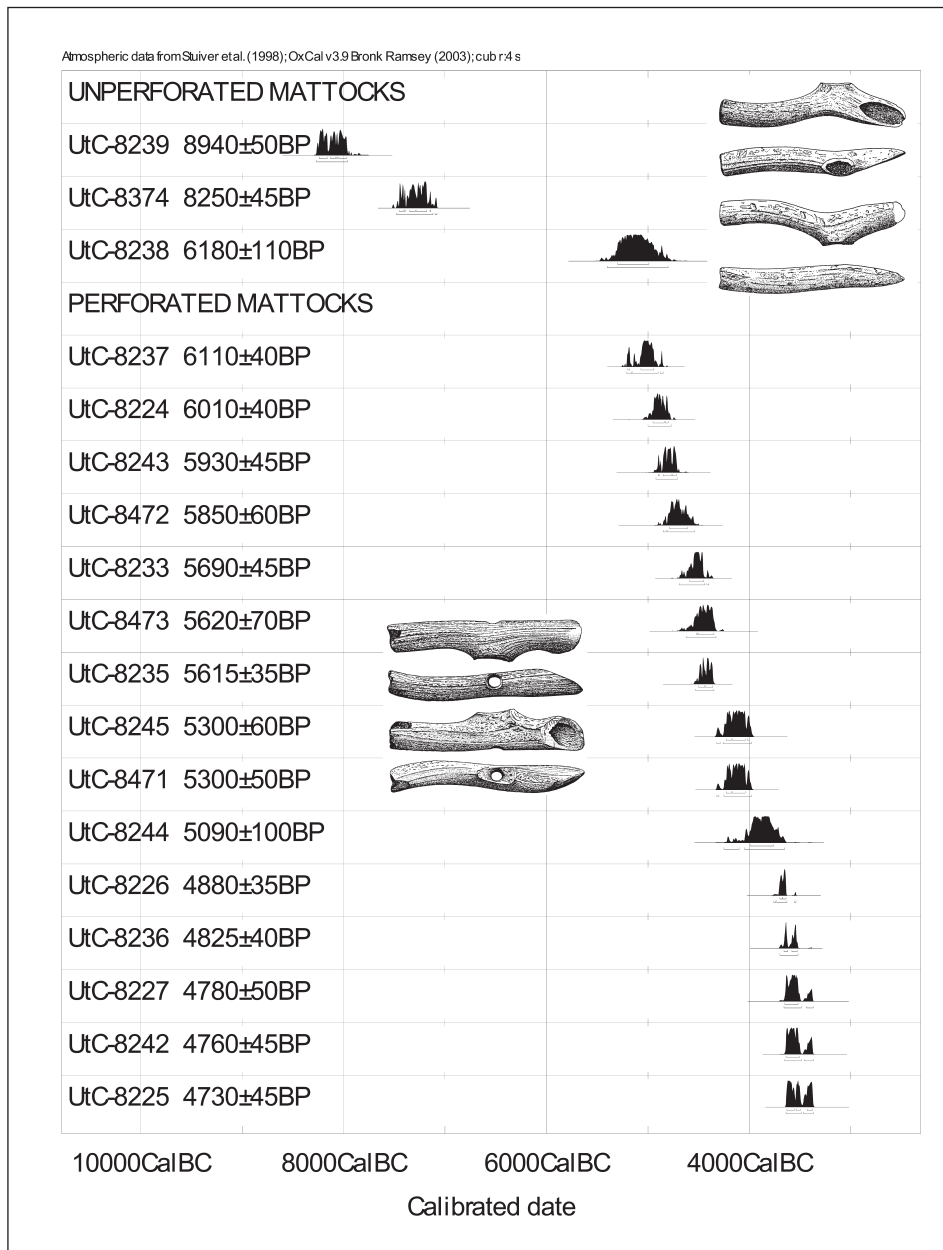


Fig. 2 Calibrated radiocarbon dates of perforated and unperforated antler beam mattocks from the Scheldt floodplain (Crombé / Van Strydonck / Hendrix 1999).

been transported over a distance of 25-30 km, probably as massive flakes rather than complete nodules. This behaviour does not correspond at all with that of Mesolithic hunter-gatherers but rather resembles LBK practices (Cahen / Caspar / Otte 1986; Allard 2005). The former usually used local flint, even if it was of inferior quality; in addition when Mesolithic hunter-gatherers transported non-local, exotic raw materials, it is generally restricted to very low amounts. Furthermore, Mesolithic exotic raw materials are usually intensively exploited with a minimal loss of material. In contrast, the LBK is known to have transported flint nodules in considerable amounts over distances of tens of kilometres in order to be worked on the settlements in a wasteful way. LBK influences are also detectable in some tools from Oeudeghien, e.g. a borer which perfectly matches LBK examples. On the other hand the armatures, consisting of three trapezes, are clearly

of Mesolithic signature. Despite the absence of absolute dates, the site of Oeudeghien might thus reflect an initial stage in the neolithisation of indigenous people in the immediate vicinity of an area settled by LBK farmers.

The presence on numerous LBK sites of Mesolithic microliths and artefacts in Wommersom quartzite is also often referred to as possible evidence of contact between both communities. However, judging by the typology many of these microliths (microliths with flat retouch, crescents, etc.) most likely belong to earlier Mesolithic occupations of these sites, thus representing residual material. Even when trapezes are found the strict contemporaneity with the LBK occupation remains uncertain, since trapezes occur over a very long time span, from the 7th till the 5th millennium cal BC. The same caution holds for artefacts in Wommersom quartzite. The presence of this particular raw material, which was exploited by Mesolithic hunter-gatherers sometimes on an intensive basis from the 9th millennium probably until the end of the 5th millennium cal BC (see below), is mainly attested on LBK settlements situated nearby the outcrop, i.e. around the city of Tienen. At the LBK sites of Overhespen and Wange along the Kleine Gete about 10 % of the lithic industries is made of quartzite (Lodewijckx / Bakels 2000). In the more distant Hesbaye area the frequency drops considerably; usually only isolated finds, mainly tools, are reported here (Jadin / Cahen 2003). However, it remains unclear whether these finds are really contemporaneous with the LBK occupations, as diagnostic artefacts are almost completely missing. The few diagnostic specimens, which refer to the Middle as well as to the Late Mesolithic, are not conclusive. Furthermore, so far no typical LBK tools in Wommersom quartzite have been reported, suggesting that this raw material was not really knapped by LBK farmers themselves. Even if we would admit that some Wommersom artefacts are contemporaneous with the LBK occupation, the data do not allow determining what these artefacts really represent. Are we dealing with artefacts made by indigenous people within the LBK settlements or on camp-sites surrounding the LBK settlements? In the latter case the Wommersom artefacts could be interpreted as exchanged objects, while in the former case they might indicate the uptake of local hunter-gatherers in the LBK societies. Of some importance here is the discovery at the LBK settlement of Oleye Al Zepe (Jadin / Cahen 2003) of a pit which yielded a few Wommersom artefacts together with some small fragments of bone-tempered pottery. Unfortunately the fragments are too small to allow further identification (Limburg pottery? Blicquy pottery? ...).

The first half of the 5th millennium cal BC

At the transition from the 6th to 5th millennium cal BC contact between Neolithic communities and surviving hunter-gatherers probably increased, reaching further than the immediate loess border and locally involving exchange of materials and/or (technological) knowledge.

Typical Neolithic objects such as perforated polished tools (shoe-last adzes or *Breitkeile*) and Neolithic pottery are now found further away from the Neolithic core areas. Finds of bone-tempered pottery indicate expeditions by members belonging to the Neolithic Blicquy-tradition as far as the North Sea coast, e.g. at Kerkhove (Crombé 1986) and Melsele (van Berg et al. 1992) in the Scheldt valley and Hardinxveld (Louwe Kooijmans 2001) in the Rhine-Meuse delta area. Perforated stone tools were even distributed further, mainly in a north-northwestern direction as far as the northern Netherlands and even southern Scandinavia (Verhart 2000; Klassen 2002). Surprisingly, hardly any *Breitkeile* have been found diffused to the west of Belgium. In this area, however, another phenomenon was developing at that time: the emergence of the first perforated antler beam mattocks or T-shaped mattocks. Although antler beam mattocks were already in use in western Belgium, in particular in the Scheldt valley, over a very long time they were only furnished with a shaft hole from 5100/5000 cal BC onwards (Crombé / Van Strydonck / Hendrix 1999) (fig. 2). The

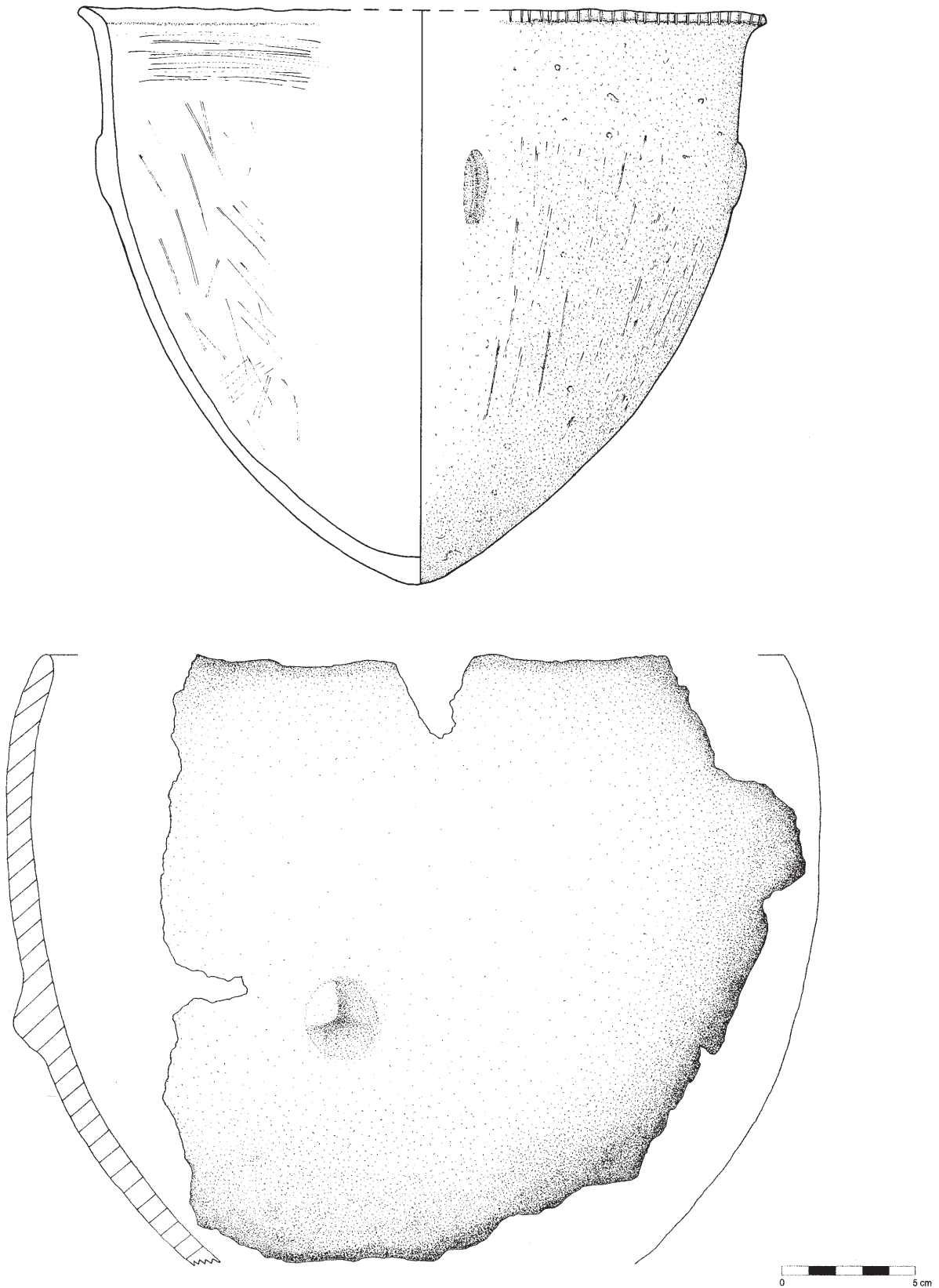


Fig. 3 Two Swifterbant vessels excavated at the Deurganckdok sites in the lower Scheldt valley.

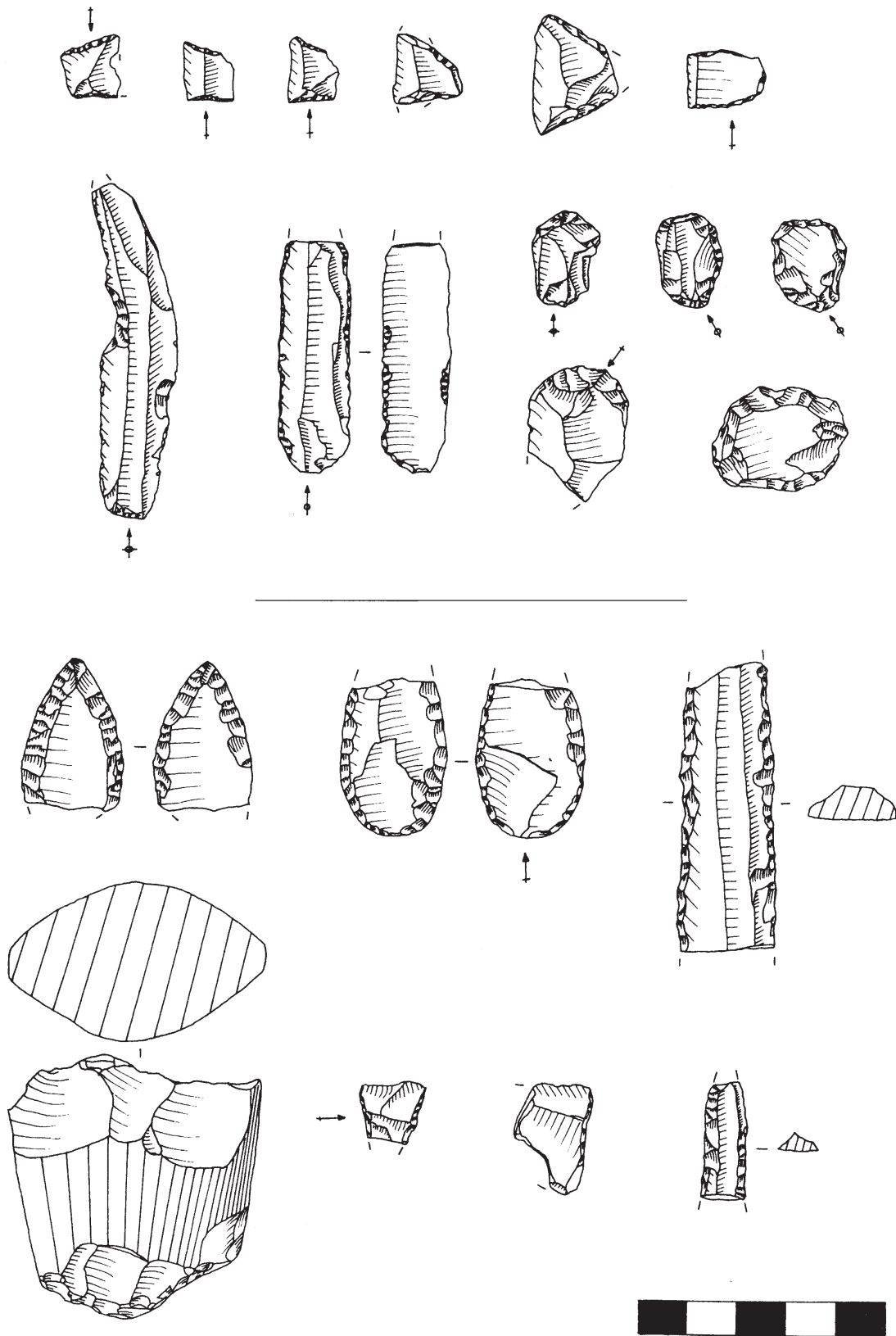


Fig. 4 Comparison of the lithic toolkit of the Swifterbant phase (upper) and Michelsberg phase (lower) from the Deurganckdok sites in the lower Scheldt valley.

oldest AMS-dated specimens are unperforated⁸ (so-called *ontschorsers* or *pelloirs*) and are dated to the Boreal period, while the first perforated examples appear at the transition from the 6th to the 5th millennium cal BC. This is surprisingly synchronic with the first appearance of the perforated stone tools, which are dated in the loess area to the Final LBK/Hinkelstein (Farruggia 1992, 95-102). Hence, one may ask whether local hunter-gatherers started to perforate their antler mattocks, almost three millennia after the invention of this tool type, under the influence of nearby Neolithic communities. Or, is it mere coincidence that both Mesolithic and Neolithic people started to perforate their wood-working tools around the same time⁹? In any case, the few T-shaped mattocks found in Late LBK contexts, e.g. at Liège Place Saint-Lambert, point towards an increasing contact with and/or an assimilation of local hunter-gatherers.

The second half of the 5th millennium cal BC

Around the middle of the 5th millennium cal BC or even a little earlier, the influence of Neolithic societies on the local hunter-gatherers became stronger. At that time pottery appears for the first time in hunter-gatherer contexts. In particular in the lower Scheldt valley several wetland sites have yielded Final Mesolithic flint and faunal assemblages associated with pottery of clearly local manufacture (Crombé et al. 2002; Crombé 2005; in press). The latter is characterised mainly by S-shaped vessels and cylindrical to ovoid vessels with an upstanding shoulder/rim. Bowl-shaped pots also occur but are less frequent (**fig. 3**). Bases vary from rounded to sagging to pointed. Decoration is limited mostly to impressions or incisions on the top of the rim (*Randkerbung*) and small circular to oval knobs, the latter only perforated incidentally. Other decoration motifs, such as perforations under the rim or body decoration, are rather rare. This early pottery is built out of coils; the tempering consists predominantly of grog, sometimes combined with plant remains. Stylistically this Final Mesolithic pottery of the lower Scheldt valley is closely related to Swifterbant pottery, typical of the delta area of the western and northern Netherlands (Raemaekers 1999).

It is still a matter of debate as to from whom these Swifterbant hunter-gatherers received their knowledge of pottery manufacturing. Initially in the 1970s the origin was sought in the Ertebølle Culture of southern Scandinavia and Northern Germany. According to de Roever (1979) Swifterbant pottery is perhaps more variable, but it can nevertheless be attributed to the same ceramic tradition. This ultimately led to the interpretation of Swifterbant as the Dutch Ertebølle. In 1997, however, Raemaekers pointed out major differences between Swifterbant and Ertebølle pottery, suggesting that a direct affiliation was most improbable. One of the major differences is the total absence of clay lamps, typical of Ertebølle. On the other hand, bowl-shaped pots, typical of the Belgian Swifterbant Culture, do not occur within the Ertebølle inventory (Crombé / Perdaen / Sergeant 2005, 57). Based on morphological similarities, in particular the presence of pointed bases, others (Hogestijn / Peeters 1996, 111-112) have discussed a possible connection with La Hoguette pottery. This model, too, is hampered by numerous points of divergence between both pottery traditions, e.g. in the decoration and tempering. Furthermore, a direct influence from La Hoguette pottery on Swifterbant pottery is difficult to explain, given the considerable time gap between both pottery traditions¹⁰.

Nowadays most scholars believe that the knowledge of pottery production was passed from contemporaneous Neolithic cultures of the loess area through contact. According to Raemaekers and Gehasse (Raemaekers 1999, 139-141) the pottery of the Rössen Culture, dating approximately between 4700 and 4500 cal BC, was the most likely inspiration for Swifterbant pottery. De Roever (2004, 157) now considers Swifterbant pottery to be a mixture of Ertebølle (pointed bases) and Rössen/Bischheim (decoration) elements, while Crombé et al. (2002, 704; Crombé 2005, 57) have recently emphasised the similarities with the ceramics of the Blicquy/Villeneuve-Saint-Germain Culture and the Großgartach Culture, dating approximately between

4950 and 4650 cal BC. All these Neolithic cultures provide good parallels for certain Swifterbant decoration methods, in particular for the *Randkerbung* and applied perforated as well as unperforated knobs, typical of early Swifterbant pottery. In addition, Neolithic pottery offers close morphological similarities, for example for the S-shaped vessels (Rössen influence) and bowl-shaped vessels (Blicquy/VSG influence). However, no parallels for the pointed/conical bases, typical of the Swifterbant pottery, have been found within these Neolithic traditions. Except for Blicquy pottery, Neolithic ceramics are round- or occasionally flat-based. Only a small number of Blicquy pots have a slightly conical, thickened base. Still, the closest parallels for the pointed bases of Swifterbant pottery are to be found within hunter-gatherer cultures of north-northeastern (Baltic) Europe, e.g. Ertebølle, Narva, Neman (Timofeev 1998). Whether we should interpret this as a proof of a direct derivation from these northern indigenous traditions remains at present difficult to verify. Contrary to other scholars (e.g. Hallgren 2004; Dolukhanov et al. 2005), we believe that the absolute chronology of most Baltic ceramic cultures, in particular the date of appearance of the first pottery, is still too uncertain as a result of dating problems related to the old wood effect in charcoal samples and the reservoir effect in food crust samples (Fischer / Heinemeier 2003). As long as these problems are unsolved it will be difficult to fully understand the relationship between these distant pottery areas.

Besides the introduction of pottery, the Neolithic influence remains very discrete in the indigenous traditions of the 5th millennium cal BC in western Belgium. Apart from the introduction of a few splintered pieces (*pieces esquillées*), used as wedges for splitting bone and/or wood, no obvious Neolithic elements seem to appear in the lithic traditions of the local hunter-gatherers (Crombé / Perdaen / Sergant 2009). Similarly on an economic level no significant changes can be observed. Judging by the scant subsistence evidence Swifterbant people of the lower Scheldt valley continued to live according to Mesolithic standards, i.e. from hunting (mainly wild boar and red deer), fishing (almost exclusively of freshwater fish, such as roach, rudd, bream, etc.), and gathering of wild plants and fruit (hazelnuts, wild apples, sloe plums, acorns, berries from hawthorn, etc.) (Bastiaens et al. 2005; Van Neer / Erynck / Lentacker 2005). Except for one single cereal grain belonging to bread wheat, no evidence of domestication has been found so far. Although the discussion of local cereal production in the Swifterbant Culture is still continuing (Bakels 1986; Raemaekers 2003; Crombé / Vanmontfort 2007), this unique cereal find should be interpreted as an exchanged item. It was most likely acquired through contact with southern or southeastern Neolithic groups, e.g. Rössen/Cerny or Michelsberg Cultures, occupying at that time almost the entire loess area (Jeunesse / Lefranc / Denaire 2004; Vanmontfort 2004). Interaction with Neolithic societies to the south during the second half of the 5th millennium cal BC is proven very convincingly by a find from the Cerny cemetery of Vignely in the French Seine valley (Jeunesse 2000). Here a child grave was found which, besides typical Cerny pottery, also yielded a point-bottomed pot with *Randkerbung* decoration, which resembles remarkably well Swifterbant pottery from the Scheldt valley, discussed in this paper.

The start of the 4th millennium cal BC

Near the end of the 5th millennium cal BC the influence of Neolithic cultures had for the first time a drastic impact on hunter-gatherers still surviving in the sandy lowlands of northern Belgium. Radical changes in the material culture occurred, due to increased influence or colonisation from the Michelsberg Culture. Important changes can be observed in both the lithic and ceramic inventories. New tool types appeared, such as leaf-shaped and transverse arrowheads, polished axes, and broad regular blades, as well as imported high quality flint, partly originating from the flint mine sites in the loess area (**fig. 4**). At the same time, typical Final Mesolithic tools and raw materials (for example Wommersom quartzite) seem to disappear completely.

Important morphological and technological changes also occurred in the pottery. New Michelsberg/Hazendonk 2/3-inspired vessels were introduced, made of clay tempered with mainly crushed flint (in the west) or quartz (in the east). Due to a too limited number of radiocarbon dates this transition in the material culture cannot yet be dated precisely or securely. Nevertheless, the available dates strongly suggest that the shift occurred most probably shortly before or after 4000 cal BC. This is in agreement with dates from other north-west European countries, where similar material changes have been observed, for example in southern Scandinavia (Fischer 2002) and Northern Germany (Hartz / Heinrich / Lübke 2002; Hartz / Lübke 2004).

Whether the economy also changed in a radical way at that time remains unclear so far. The presently available data do not allow us to date the appearance of the first domesticated animals or plants in the sandy lowlands of northern Belgium. So far the only »sandy« site which yielded evidence of domesticated animals is Melsele-Hof ten Damme. In a mixed layer small burnt fragments of cattle and pig – alongside wild game – were collected. Although these have not yet been dated directly, they definitely must be older than the final sealing of the layer during the first half of the 3rd millennium cal BC. It is very tempting to link these bones with the apparently youngest occupation event of the site, which is represented by a (storage?) pit covered with bark, some leaf-shaped arrowheads, and flint-tempered pottery. This occupation phase is dated by two bark samples from the pit to the first half of the fourth millennium cal BC and is probably related to a Michelsberg Culture occupation.

Conclusion

In conclusion we can state that there is evidence, although not always very convincing, which points at increasing contact and interaction between local hunter-gatherers living along the western fringe of the loess area and the earliest farming communities. During the LBK phase, contact and exchange was probably still restricted mainly to the LBK core areas and their immediate periphery and most likely did not reach far to the west. Locally these contacts induced the assimilation and/or acculturation of indigenous hunter-gatherers. In the course of the 5th millennium cal BC expeditions by Neolithic groups reached further west as far as the North Sea coast, leading to possible transmission of technological knowledge (pottery manufacturing techniques and perforating of wood-working tools) and exchange of goods and materials such as cereals. Near the end of the 5th millennium cal BC this culminated in an almost complete neolithisation of Belgium, a neolithisation which resulted either from an overall acculturation of indigenous hunter-gatherers or a colonisation of Neolithic farming groups, namely those belonging to the Michelsberg Culture.

Annotations

- 1) Van Strydonck et al. 1995; Crombé / Groenendijk / Van Strydonck 1999; Van Strydonck / Crombé / Maes 2001; Crombé / Van Strydonck 2004.
- 2) Numerous excavations of Roman settlements in NW Belgium (Merendree, Velzeke, Wielsbeke, Asse, etc.) have yielded polished axes, mostly in complete state of preservation, which were deposited in ditches, post-holes, or pits.
- 3) For a detailed discussion see Gronenborn (1990) and Allard (2005, 236-238).
- 4) The main difference between the Danubian-like points and the *flèches de Belloy* is the retouch: the latter generally display a steep retouch while the former are characterised by an oblique to sometimes flat retouch. Also, the base of *flèches de Belloy* is generally straight to slightly concave, whereas Danubian-like points usually have a pronounced hollowed base. In addition there appears to be a difference in dimension: the Danubian-like points are generally smaller, but this observation demands further and more detailed examination. Contrary to the Danubian-like points, the *flèches de Belloy*, as well as the *triangles de Fère* and the *flèches de Dreuil* (Fagnart 1991), are to be considered as further evolutions of Mesolithic trapezes, the *trapèzes évolués*.
- 5) In this layer remains of at least two Mesolithic occupation events have been attested: one at the start of the Late Mesolithic and another at the end. It is currently difficult to assess whether the LBK point found in layer 3.3 was found *in situ* as there are indications of possible erosion and displacement of material. In addition, in the above lying horizon 4.2 several sherds belonging to a decorated LBK pot have been found.
- 6) There is an ongoing PhD research by Erick Robinson (Sheffield University) which deals with the morphological, metrical, and technical variability among asymmetrical triangular armatures both in LBK and Mesolithic contexts in northern France, Belgium, and the southern Netherlands.
- 7) This type of arrowhead is also present within the Belgian and Dutch LBK-areas but in lower frequencies and mainly in the initial occupation phases (Allard 2005).
- 8) The hypothesis that the older unperforated mattocks are unfinished tools is contradicted by the presence of clear use wear traces on some of these implements.
- 9) The technique of perforating organic tools was already known among hunter-gatherers long before the 5th millennium cal BC. There are numerous finds of perforated bone and antler tools, e.g. antler base mattocks, etc., dating back to the Early Mesolithic. Against this it is very strange that perforated antler beam mattocks have not been found from earlier contexts.
- 10) There is still discussion about the absolute dating of the first appearance of Swifterbant pottery. The oldest dates so far are situated around 5000/4900 cal BC. Most of these old dates, however, have been obtained from food crust samples from potsherds and might be affected by a reservoir age due to the processing of fish. For the Belgian samples fish effect has already been demonstrated by means of chemical analyses (Craig 2005; Crombé in press), but the Dutch samples still need to be analysed further. Hence, the Belgian Swifterbant pottery currently cannot be dated prior to 4500/4550 cal BC (Van Strydonck / Crombé 2005).

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Zusammenfassung / Abstract / Résumé

Kontakte und Austausch zwischen den ersten Bauern und letzten Sammler-Jägern in Belgien während des sechsten und fünften Jahrtausends cal BC

Neue Forschungen im Schelde-Tal im nördlichen Belgien haben gezeigt, dass zwischen den ersten bäuerlichen Gemeinschaften der Löss-Zone (Mittelbelgien) und den letzten Sammler-Jägern der sandigen Tiefländer (Niederbelgien) ein zunehmender Austausch bestand. Dieser Austausch begann in den LBK-Kernzonen aus welchen er sich während des 5. Jahrtausends cal BC nach Westen bis zur Nordseeküste ausweitete. Diese Kontakte führten entweder zum gegenseitigen Austausch von Objekten (Breitkeile, Getreide, T-Äxte) oder zum Transfer technologischen Wissens (etwa zur Pfeilspitzen- und Keramikherstellung). Zum Ende des 5. Jahrtausends haben diese Kontakte zur fast vollständigen Neolithisierung Belgiens geführt.

Contact and interaction between early farmers and late hunter-gatherers in Belgium during the 6th and 5th millennium cal BC

Recent research in the Scheldt valley of northern Belgium has demonstrated increasing interaction between the first farming communities of the loess area (Middle Belgium) and the late hunter-gatherers of the sandy lowlands (Lower Belgium). Interaction started in the LBK core areas, from which during the 5th millennium cal BC it expanded further west as far as the North Sea coast. These contacts led to either exchange of objects and raw materials (Breitkeile, cereals, antler beam mattocks) or transfer of technological knowledge (e.g. projectile and pottery manufacturing) in both directions. By the end of the 5th millennium cal BC it resulted in an almost complete Neolithisation of Belgium.

Contacts et échanges entre premiers agriculteurs et derniers chasseurs-cueilleurs en Belgique au cours des 6ième et 5ième millénaires cal BC

Les recherches récentes menées dans la vallée de l'Escaut dans le nord de la Belgique ont mis en évidence une interaction croissante entre les premières communautés agropastorales de la région lœssique (Moyenne Belgique) et les derniers chasseurs-cueilleurs des zones sableuses (Basse Belgique). Cette interaction prend naissance dans les zones nucléaires du Rubané à partir desquelles elle s'étend vers l'ouest jusqu'à la côte de la Mer du Nord au cours du 5ième millénaire. Ces contacts conduisent soit à des échanges d'objets et de matières premières (herminettes, céréales, haches en bois de cerf) soit à des transferts de savoir-faire technologique (p.ex. la fabrication d'armatures ou de céramique) dans les deux sens. Il en résulte la néolithisation quasi complète de la Belgique vers la fin du 5ième millénaire cal BC.

(traduit de l'anglais par Karoline Mazurié de Keroualin)

NEUERSCHEINUNGEN

M. Street · N. Barton · Th. Terberger (eds)

Humans, Environment and Chronology of the Late Glacial of the North European Plain

Proceedings of Workshop 14 (Commission XXXII) of the 15th U.I.S.P.P. Congress, Lisbon, September 2006

The volume »Humans, Environment and Chronology of the Late Glacial of the North European Plain« assembles papers presented during a workshop for the 15th Congress of the »Union International des Sciences Préhistoriques et Protohistoriques« held in Lisbon in September 2006. The workshop was organised under the remit of U.I.S.P.P. Commission XXXII which focuses on the »The Final Palaeolithic of the Great European Plain«, and the present volume continues the series of conference proceedings that have been published at regular intervals during the past decade. This most recent contribution underlines the geographical spread and chronological depth of research into this topic, with papers ranging from those on the British Isles to the eastern Baltic and from the Paris Basin to southern Scandinavia, and covering a period of time extending from the late Magdalenian to the early Mesolithic.

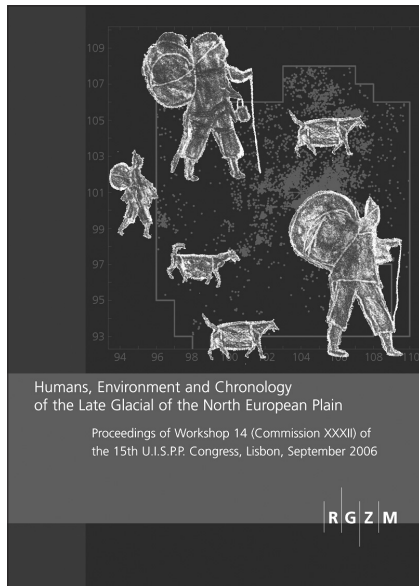
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Die ältesten kupferzeitlichen Bestattungen mit Dolchbeigabe

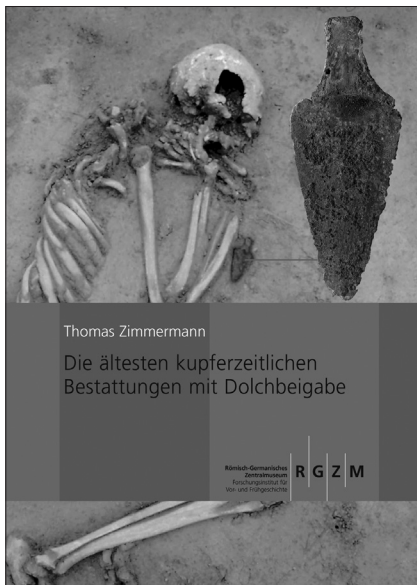
Archäologische Untersuchungen in ausgewählten Modellregionen Alteuropas

In vorgeschichtlicher Zeit nimmt der Dolch eine hervorgehobene Stellung innerhalb der Nahkampfaffen ein, deren älteste datierbare Vorformen in Vorderasien bis in das 9. Jahrtausend v.Chr. zurückreichen. Ab der zweiten Hälfte des 3. Jahrtausends v.Chr. spielt der Dolch schließlich im Rahmen der endneolithisch/kupferzeitlichen »Glockenbecherepoche« (Mitte 3. Jahrtausend v.Chr.) im Vorfeld der »klassischen« Frühbronzezeit (spätes 3. und frühes 2. Jahrtausend v.Chr.) eine zentrale Rolle beim Grabritus.

Diese Studie erfasst und analysiert geschlossene Einzelgrabbefunde Mitteleuropas mit Silex- oder Metaldolchbeigabe des 3. Jahrtausends v.Chr. Um sich dem Problemkomplex umfänglich zu nähern, werden auch die frühesten Belege zweischneidiger Stichwaffen Ost- und Südosteuropas, Westkleinasiens sowie dem prädynastischen Ägypten in ihrem grabrituellen Umfeld mit berücksichtigt. Neben der Diskussion chronologischer Aspekte dieser Bewaffnungssitte steht die Frage nach der Genese und Verbreitung formaler und technologischer Traditionen der Dolche im Zentrum. Dies führt zu sozialgeschichtlichen Überlegungen, inwiefern der Dolch generell als statusbildendes Zubehör verstanden werden darf.



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Mit der Entdeckung des Mannes im Eis 1991 wurde die Geschichte der Archäologie um eine bemerkenswerte Episode reicher. Selten gelang es, eine derart große Forschergemeinschaft weltweit zu bündeln, um den Fundkomplex zu ergründen. Noch 18 Jahre später beschäftigen sich Medizin, Natur- und Geisteswissenschaft mit dem Schicksal eines Mannes, der vor 5300 Jahren in den Ötztaler Alpen einen gewaltsamen Tod erlitten hat. Auch das archäologische Programm lässt noch viele Wünsche offen. So gesehen ist die Edition des vorliegenden Bands von Markus Egg und Konrad Spindler, der die umfassende Vorlage der Ausrüstung und Kleidung beinhaltet, eine ungemein wichtige und vertiefende Ergänzung zu den bisher getroffenen archäologischen Aussagen.



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Seit einigen Jahren besteht am RGZM der Forschungsschwerpunkt »Eliten«. Hier wird besonders das Phänomen der Prunkgräber untersucht. In einer Zwischenbilanz werden nun vor allem die Bereiche der Metallzeiten und des frühen Mittelalters vorgelegt. Die Studien erlauben, Entwicklungen aufzuzeigen und somit die Frage nach dem »Aufstieg und Untergang« zu diskutieren. Es zeigt sich dabei ein facettenreiches Bild, doch werden auch »Konstanten« erkennbar. Sie deuten an, dass Macht schon in vor- und frühgeschichtlichen Gesellschaften auf vier wesentlichen Säulen ruhte: einer ökonomischen, sozialen, religiösen und militärischen.

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