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Hunters become farmers early: Neolithic B and middel Neolithic A

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THE
PREHISTORY
OF THE
NETHERLANDS

VOLUME 1

Edited by

L.P. Louwe Kooijmans



The Prehistory of the Netherlands

Volume I

Edited by

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Note on the dates used in this book

Dates before 50,000 are based on various physical dating techniques, other than radiocarbon, and expressed as 'years ago'.

Dates in the period 50,000-10,000 years ago are based on uncalibrated radiocarbon dates and expressed as 'years ago' or 'years BP' (= Before Present).

Dates in the last 10,000 years are based on calibrated radiocarbon dates and expressed as 'years BC'. Only these dates can be equated with calendar or solar years.

See chapter 1, section 'periods and dates' for the principles of radiocarbon dating.

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Leendert Louwe Kooijmans

4900-3400 BC

INTRODUCTION

The end of the Bandkeramik culture was followed by a long period for which we have less complete and less abundant evidence of the activities of the farmers on the loess. Our understanding of the northern communities, on the contrary, is constantly improving, thanks especially to the evidence from the wetland sites in the western coastal plain.

This long period was characterised by a high degree of interaction and exchange: the exchange of goods and, inevitably, also knowledge and ideas. The influence of the 'southerners' in the north is clearly visible in the archaeological record: the hunter-gatherers gradually borrowed the farmers' material equipment, including their pottery, axes and querns, and augmented their subsistence system with crop cultivation and stock keeping. This has been called the 'Neolithisation process'. To what extent these contacts were conversely responsible for the drastic changes that took place in the farming settlements on the loess is difficult to say, but they were certainly an influential factor.¹

As recently as the 1950s our knowledge of this entire period was still exclusively based on evidence from sites on the loess in Belgium and the German Rhineland; the only site known in the Dutch part of the loess belt were the Rijckholt flint mines. The northern plain was *terra incognita*, except for the site of Hüde I on the peat surrounding lake Dümmer.² The following survey is based entirely on discoveries and research over the past forty years.

Almost all of our knowledge of this period is based on settlement sites and on stray finds which can be dated to this period on typological grounds, in particular

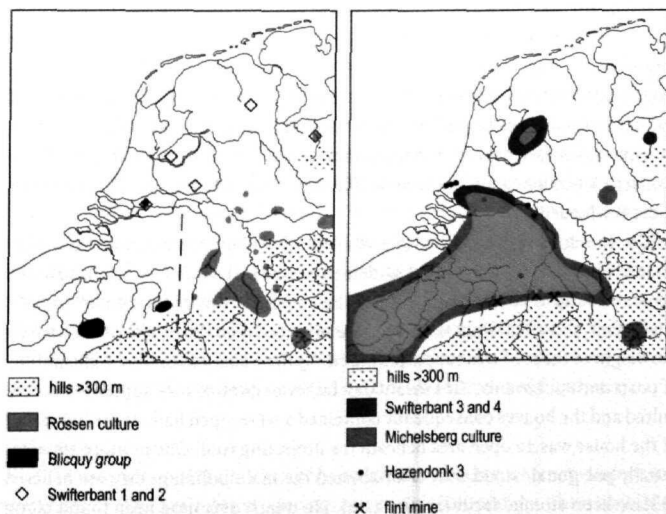


fig. 12.1
Distribution of the various culture groups during the Early Neolithic B (left) and the Middle Neolithic A (right) in the Netherlands and its environs.

axes. There are no visible monuments, no hoards and only very few burials. The flint mines are spectacular exceptions.

In the following sections the available evidence will be discussed according to geographical regions. We will first consider the farmers of the Rössen and Michelsberg cultures in the loess zone and their cultural developments. Next, we will concentrate on their interaction with the occupants of the southern sands, after which we will conclude with the Swifterbant culture of the delta and the northern part of the Netherlands (fig. 12.1).

FARMERS IN THE LOESS ZONE: THE RÖSSEN AND MICHELBERG CULTURES

Chronology and geography

A chronological sequence has been set up for the lower Rhine region on the basis of stylistic changes in the pottery, which are observable over a much wider area. This sequence comprises the Rössen and Michelsberg cultures, both of which have been divided into phases (fig. 10. 3). Each of these phases is represented by one or more settlements that have been investigated in large-scale excavations. The scarce evidence available for the Netherlands can be placed in this Rhineland sequence.³

Belgium lies outside the area of the Rössen culture. In the period in question the *Groupe de Blicquy* developed in Belgium. Settlements of this group have been found in Hainault, but also in the Hesbaye, in the surroundings of Liège (Darion, Vaux-et-Borset), not more than 25 km from the westernmost Rössen settlement of Maastricht-Randwijck. The two cultural regions hence seem to be separated by a fairly sharp line. It is tempting to assume that this line separates two communities with distinct identities.⁴

By the Middle Neolithic this distinction had disappeared. The Michelsberg culture is the successor of both the Rössen culture and the *Groupe de Blicquy* of the Belgian loess zone.

Settlements

Rössen

Around 4900 BC occupation at all the *Bandkeramik* settlements came to an abrupt end. In the Rhineland the settlements of the succeeding *Grossgartach* phase lie in the same territories, but at different locations. They were fortified with earthworks and large V-sectioned ditches comparable with those known from the last phase of the *Bandkeramik*.⁵

Rössen settlements consisted of a small number of longhouses, arranged fairly close to one another. Many of the settlements were surrounded by a palisade. The houses were up to no less than 53 m long and tapered towards their ends.⁶ In technical terms, these buildings were far more advanced than those of the *Bandkeramik*: the weight of the roof was supported mainly by the walls, which were built entirely of posts and split beams. This meant that far fewer internal roof supports were required and the houses consequently contained a wide, open hall. At the broad end of the house was an open area beneath the projecting roof. One or more annexes, usually polygonal, stood near to or abutted the main building; they are believed to have been storage facilities (fig. 12.2). No quarry pits have been found along

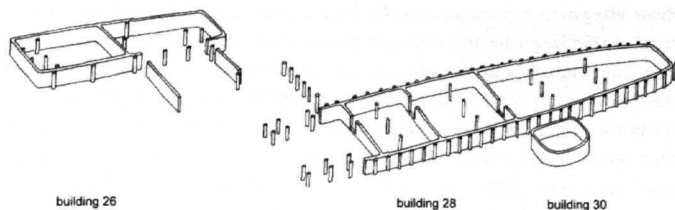


fig. 12.2

Perspective view of a Rössen house plan with two annexes at settlement Inden 9 on the Aldenhovener Platte (Germany) to the east of south Limburg. Including its forecourt, the large house (No. 28) had a length of 44 m and, we assume, will have had room enough to accommodate several households or possibly an extended family.

the walls; the clay for the walls was probably obtained from some large clusters of pits that have come to light at the peripheries of the settlements. Within the settlement were cylindrical pits, presumably used as silos or storage pits for cereals. The settlements were consequently smaller, less open and more compact – and hence easier to defend – than those of the previous period. The ditches and palisades with which they were often surrounded show that defence was indeed an important consideration, probably because of mutual rivalry and threats.

The structure of the settlement and the settlement system differed markedly from those of the preceding *Bandkeramik*. The settlements were shifted more frequently: each settlement represents only a few generations of houses, spanning at most 150 years. This could mean that the occupants went in search of new soils for their crops more frequently. Secondly, the Rössen settlements cover a somewhat larger distribution area, comprising not only the left bank of the Rhine, but also the floodplain and the right bank and the sandy soils further north; a few Rössen settlements have even been found in the valleys of the Eifel. This reflects greater flexibility in the choice of environments for agricultural activities. The former marked distinction between small and large houses has disappeared. The Rössen longhouse appears to be the counterpart of the cluster of houses of the *Bandkeramik* settlements, in which case it may be interpreted as the dwelling of several nuclear families or of one extended family. At Bochum-Hiltrop the plan of a longhouse was documented, with a length of 64 m and an adjoining enclosure measuring 38 x 48 m which was surrounded by a sturdy fence. Here the entire (village) community may have lived together in one building.⁷

Until recently, no remains whatsoever of the successors of the large *Bandkeramik* community had been found in southern Limburg, in spite of the intensive surveys conducted in this area.⁸ In 1987, however, digging activities at Maastricht-Randwijk brought to light the remains of a settlement, which was investigated in a rescue excavation in 1988 before the site was built over. The settlement lay in the valley floor of the Meuse, on the lowest river terrace, at a point where the terrace was transected by a small gully. Owing to fluctuations in the local water level the site had been severely eroded, but it had ultimately been covered with a layer of clay, which had preserved what then still remained: the bottom parts of seven round pits with diameters of 1-2 m. The pits appeared to have been storage pits; they yielded typical settlement refuse (pottery, flint, querns, carbonised grain), which showed beyond doubt that this was an 'ordinary' permanent settlement.⁹ This discovery seems to have partly solved the problem concerning the successors of the *Linearbandkeramik* communities in southern Limburg: apparently they built their settlements on valley floors, where settlement remains are only very rarely discovered. But why they moved away from the Graetheide plateau is still a mystery.

Michelsberg

With the emergence of the Michelsberg culture the settlement system underwent new changes. The agricultural communities in Belgium and the Rhineland, like

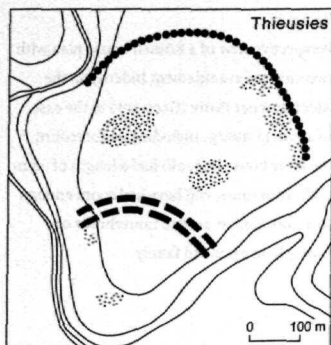


fig. 12.3

Schematic plan of the 'central site' of the Michelsberg culture at Thieusies, Hainault (Belgium). Two successive palisades (dotted lines) and two ditches protected a projecting area.

those elsewhere in Western and Northern Europe, began to construct 'central sites'. These are enclosures with dimensions of up to several dozens of hectares surrounded by flat-bottomed wide ditches and banks built from the earth dug from the ditches, some accompanied by substantial palisades of split tree-trunks.¹⁰ The ditches were interrupted by narrow entrances. Some of these entrances were rebuilt several times, indicating that the enclosures were used for long periods of time. They were situated on hilltops, in areas enclosed by deep meanders (fig. 12.3), at the foot of hills or even at locations without distinct geomorphology, for example on the Aldenhoven plateau.¹¹

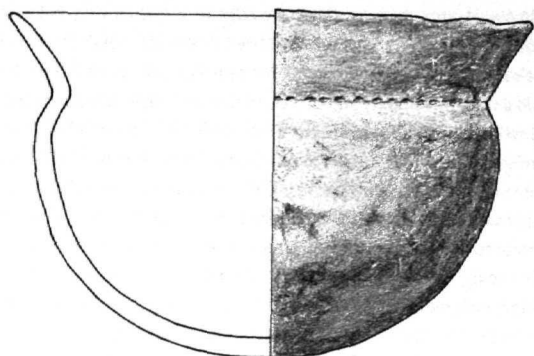
The function of these 'causewayed enclosures' or 'interrupted ditch systems' has been, and still is, the subject of much discussion. In some countries (Great Britain, Denmark) evidence has been found which indisputably indicates that they were used primarily for some ritual purpose, involving unusual forms of burial.¹² All that can be said about the monuments in the Lower Rhine Basin and Belgium is that they were not settlements, but central sites that were used by larger social units, such as tribes or subtribes, and that they had a multiple, complex function. On account of their size, the many finds they have yielded and their high chances of discovery (also on aerial photographs!) they dominate the archaeological record.

So far, 'ordinary' settlements have largely escaped our notice, either because they are smaller or because they have suffered slope erosion or have become buried beneath colluvial deposits. Several settlements have been discovered in surveys, but only few have been excavated. Consequently, we know very little about Michelsberg houses or settlement layout. At Thieusies (Belgium) the plans of small, rectangular houses were recorded and at Mayen (near Koblenz in Germany) the features of small square huts with a sunken floor and a central roof support were unearthed. Quite spectacular are the large plans of Mairy (near Sedan, French Ardennes).¹³

No Michelsberg earth works has so far been found in southern Limburg, but more and more sites of this culture are being identified there. Large amounts of flint datable to the Middle and/or Late Neolithic have been found on a number of loess-covered valley spurs in the eastern part of this area. A Michelsberg site was excavated in the Klinkers quarry on the Caberg, to the north of Maastricht, in 1989. Owing to slope erosion little more than a few assemblages had survived, but it was clear that the settlement had not been surrounded by ditches. The early Michelsberg settlement remains in the valley of the Meuse at Maastricht-Vogelzang show that valley floor settlement location continued into this later period.¹⁴

Burials

So far, no cemeteries from this period have been found in the loess zone. The only noteworthy burial is a Blicquy grave that was found at Darion (Hesbaye). The silhouette of the deceased, who had been buried in crouched position on his/her side, was outlined in the floor of the pit. Powdered red ochre appeared to have been scattered across the pit. The deceased had been accompanied by a typical Blicquy vessel and no fewer than eight of the slate bracelets that are characteristic of this group.¹⁵



Material culture

Pottery

The earliest Rössen or 'Grossgartach' pottery did not evolve from the late Linearbandkeramik earthenware found in the Lower Rhine Basin, but shows stylistic affinities with the pottery of the late Bandkeramik Hinkelstein group of the upper Rhine plain.¹⁶ That must hence have been a dominant area. So the pottery styles may be seen to reflect these social relationships.

The pottery is of excellent quality: it is hard, thin-walled, smoothly finished and very regular in shape. Unlike the pottery of the Bandkeramik, it comprises a wide range of functionally different types. This typological differentiation was to become even more pronounced in the phase of the 'evolved Rössen' ware. The earliest Rössen ware comprises for example globular beakers, (cooking) pots, storage vessels, dishes, pedestal bowls, flasks and strainers. New is the frequent use of a spatula with two teeth for the impression of decorative patterns of impressions, which were filled with a white paste (plate 17B). These patterns formed a marked contrast with the vessel's black surface. The linear decoration has given way to a form of decoration consisting of filled bands and repeated squares and triangles arranged in panels. The 'evolved Rössen' ware differs in that it comprises new types and the decoration is arranged in larger panels. In the 'Bischheim' phase, finally, the lavish decoration gradually disappeared until only a single row of impressions remained.

In Belgium in this period, the *Groupe de Blicquy* evolved from the local late Bandkeramik ware. The vessels have uniform shapes; they are tempered with crushed burned bone (like the Limburg ware) and are often overall decorated with zigzag motifs arranged in panels. The contrast between fine, decorated ware and coarse, undecorated vessels that characterised the Bandkeramik pottery has disappeared.¹⁷

The pottery of the Michelsberg culture is a direct continuation of the preceding Bischheim ware. In the absence of decoration, the chronological and geographical classifications of this pottery are based entirely on morphological developments and are hence less refined and more difficult to use. Lünig¹⁸ set up a sequence comprising five phases (MK I-V). MK I is rare and in fact differs little from 'undecorated Bischheim' ware. It was in the next phase that the 'classic Michelsberg' ware was developed. This Michelsberg II pottery is characterised by tulip-shaped beakers, large jars with pierced lugs, storage pots with flaring rims and a coarsely smeared surface, spoons and flat discs ('baking trays').¹⁹ It has a wide distribution area, covering parts of Belgium and extending to the Paris Basin. In 1994-'95 pottery from this early period, datable to around 4100 BC, was excavated at

fig. 12.4

Wide round-bottomed beaker characteristic of the earliest phase of the Michelsberg culture from the Maastricht-Vogelzang settlement. Scale 1:2.

fig. 12.5

Michelsberg toolkit made from mined flint of the Rijckholt variety found at the settlements on the Kraaienberg near Groot-Linden (1-3, 5) and Gassel (4, 6, 7), 120 km north of the flint mines. Besides these tools imported from a distant source there were also small flakes made from flint which the occupants picked up on the Meuse terraces in the settlements' immediate vicinity. 2/3 of actual size.

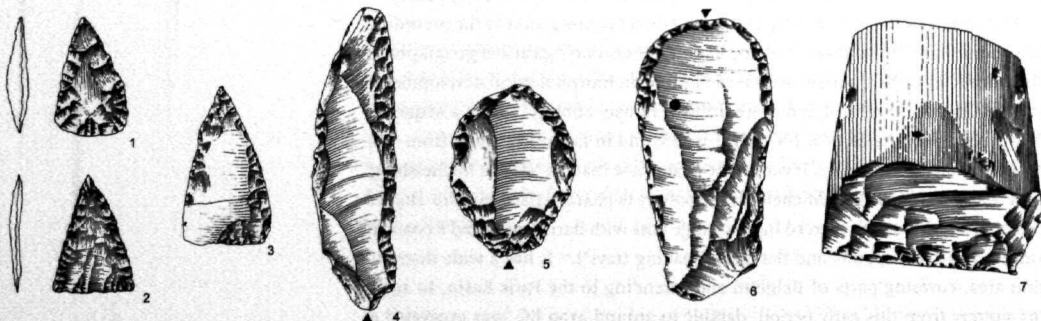
1-3 points

4 piercer

5 scraper made on a flake

6 end-scraper made on a blade

7 axe fragment



Maastricht-Vogelzang, at a site along the edge of a former gully where a large number of pots, including misfires, had been discarded. Characteristic are wide bowls with round bases and relatively low, projecting rims (fig. 12.4). Flint flake axes found among the pottery and the use of flint as temper point to relations with Belgium, while large blades made from the distinctive brown/white banded flint from Romigny-Léhry, near Reims, betray contacts with communities living in the Paris Basin some 200 km away (plate 29).²⁰ At a contemporary site at Koslar near Aachen this same flint was found in association with some unusual pottery types, namely decorated vase supports, a characteristic of the French Chasséen.²¹

The following, late Michelsberg (MK III) phase is characterised by considerable regional differentiation. In the loess zone a classic lower Rhine group and a northern French/southern Belgian Chasséo-Michelsberg group have been distinguished.²² MK IV and V are of more limited geographical significance; they have not yet been encountered in the lower Rhine region.

Flint

At the same time that the pottery was undergoing this conspicuous stylistic development changes were also taking place in the flint industry: in the types of raw materials used, the basic technology and the typology of the tools.²³

From the very beginning of the Grossgartach phase onwards the Rössen communities exploited a new source of flint: the eluvial deposits of Rullen in the Voer region. This flint is recognisable by yellow patches and orange veins, caused by iron oxides absorbed from the soil. It may well be that a special value was ascribed to this flint (plate 17A). Half of the artefacts were however still made from colluvial flint of the Rijckholt type. The basic technology and most of the tool types were still the same as in the Bandkeramik period. The only new elements are the large, triangular point types and the obliquely truncated blades.

Conspicuous elements in the flint industry of the Blicquy group are very fine, long, thin blades. They were used to manufacture various types of burins, an uncommon tool type in the Neolithic.²⁴

Great changes took place in the flint industry at the beginning of the Michelsberg culture. For the first time use was made of flint that had been obtained from shaft mines (feature E). Tool manufacture focused on the production of axes and (very) large blades, on which the typical Michelsberg tool kit was made: large perforators, Spitzklinge and various types of end scrapers. Large flakes were used to produce heavy, round 'horse-shoe scrapers' (fig. 12.5). Many of the arrow points are triangular, fairly thick and asymmetrical when viewed from the side, but very fine, long, leaf-shaped points were also produced.²⁵

Flint was mined at many other places in the chalk region besides at the two

aforementioned sites. Some of the mined flint cannot be distinguished from the Rijkholt flint (the flint from Mheer and Banholt for example), whereas other flint types, for example those from the Lousberg near Aachen, Simpelveld and Valkenburg, show very distinctive features.²⁶ The mines that yielded some of the flint types encountered in the settlements have not yet been found, for example those in the Belgian Hesbaye that yielded a light grey flint. Some types (in particular that from Lousberg) were exploited most intensively in a later phase of the Neolithic, but started to be used at a much earlier date already (fig. 15.7).

Until recently it was assumed on simple functionalistic grounds that the excessive use of flint and the extraordinarily large sizes of the tools (compared with those of the preceding and succeeding periods) were related to a substantially increased demand for flint tools required for felling trees and crop cultivation. However, this argument no longer seems tenable. In the period of the *Bandkeramik* and Rössen cultures blade tools of quite small dimensions had been satisfactory, while people in the Late Neolithic even managed very well with a distinctly narrow range of small tools. Moreover, only very little land was actually taken into cultivation on the loess and it was not until the end of the Neolithic, in the Beaker period, that large clearances started to be created in the forests.²⁷ The opinion that is finding more and more acceptance nowadays is that the main reason why people went to such great efforts to mine flint from the mother rock and made predominantly conspicuous, large tools is that they attributed a symbolic value to this specific flint. Whether this interpretation is correct or not, the fact remains that large tools are a distinctive feature of the Michelsberg culture. Via exchange, large quantities of mined flint were distributed over a wide area, extending up to the Dutch delta and the Münster basin in the north and to Hessen and incidentally even Lake Constance in the south. This distribution area can be seen to reflect a sphere of interaction extending beyond that represented by the various pottery styles.²⁸

Axes

In the period discussed in this chapter different types of axes, made from varying types of stone, were used for different purposes. These axes reflect important developments in stone technology.²⁹

At the end of the *Bandkeramik* the technique of perforating stone, i.e. of providing adzes with a shaft-hole, was developed. These shaft-holes were probably made with the aid of a bow-operated hollow drill of bone or wood, using water and sand as grinding agents.³⁰ The tenacious types of stone that were used to produce the axes could also be sawn with the aid of thin plates of sandstone. At the end of the *Bandkeramik* flat adzes started to be perforated perpendicular to their cutting edge. From the Grossgartach phase onwards heavy, thick adzes were perforated transversely, parallel to the cutting edge, to obtain perforated 'shoe-last celts'. In the evolved Rössen phase, finally, the asymmetric cross-section disappeared and a new kind of tool, called a 'perforated wedge' (fig. 12.6),³¹ started to be produced. The damage suffered by these heavy 'wedges' shows that they were used to split tree-trunks. We assume that the majority of these tools, which were made from exotic types of stone such as amphibolite, basalt and selected types of quartzite (phtanite, lydite), were manufactured elsewhere and made their way into the Netherlands via exchange. But a rare find from the Rössen settlement of Maas-tricht-Randwijck shows that some were produced locally. This site yielded a piece of diabase or diorite collected from the local river gravels, hammered into shape and provided with two deep saw cuts: a blank for two (perforated) Rössen wedges, one large and one small. Apparently a corner of the stone had broken away in an

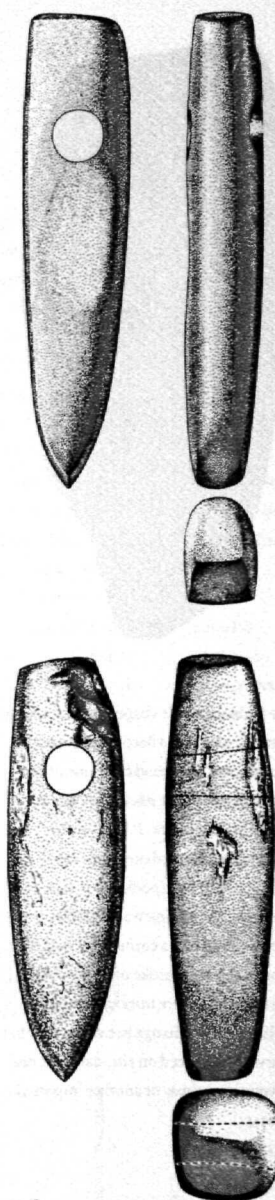


fig. 12.6

Perforated amphibolite wedges, which Swifterbant people obtained from the Rössen communities living in the loess zone. Scale 1:3.

Top: thick perforated *Schuhleistenkeil* (with an asymmetric cross-section) found near Bargererfscheidenveen, to the southwest of Emmen.

Bottom: *Breitkeil* (with a more or less symmetric cross-section) from Megen, to the north of Oss.

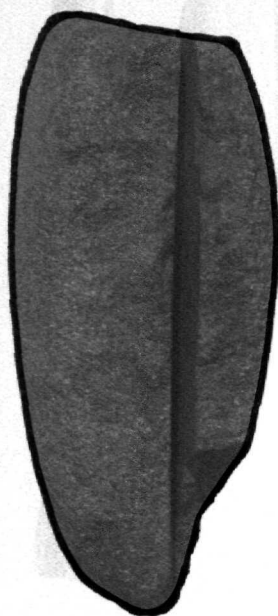


fig. 12.7

Large diabase pebble shaped by hammering.

The stone, which has deep saw cuts on two sides, was recovered from one of the settlement pits of the Rössen culture at Maastricht-Randwijck. It is assumed to represent an intermediate phase in the manufacture of two (perforated) axes or wedges. The sawing was evidently discontinued when a corner of one of the intended products broke off. This blank shows that axes were not exclusively distributed via exchange networks, but that some were produced on site, using stones that were in one way or another imported.

Scale 1:4.

attempt to split the blank, after which it was discarded, even though it could still be used (fig. 12.7).³²

These heavy perforated wedges disappeared in the Michelsberg period. They were replaced by simple stone axes made of blades, which were inserted into a socketed handle. The earliest of these axes, made from quartzitic stone types, are found in Rössen context. Around the transition to the Michelsberg period an important technical innovation took place: the extremely hard flint started to be polished. This was done with the aid of quartzite grinding stones, probably using sand and water as grinding agents. Small, portable grinding stones were used, but also immobile large blocks of quartzite, such as the large grinding stones known at Slenaken (plate 16B).³³ The flint axes show great diversity in their shapes, but they are all variants of the 'western type', with an oval cross-section, sometimes with flattened sides, and a pointed or wide, thin butt. As the many thousands of axes that have come to light are all stray finds, very little can be said about their cultural context; nor can they be accurately dated.

Besides the axes of local flint and other types of local stone there are also axes made from exotic types of stone, in particular green jadeite (plate 20A), which occurs only in the western Alps. The first 'battle axe' – the 'flat hammer axe', whose shape appears to have been inspired by copper prototypes from southeast Europe – also dates from the Michelsberg period.³⁴ All the evidence indicates that great value was attached to such axes; they may be regarded as showpieces and hence as status markers. They were preferably manufactured from exotic stone types and were obtained via exchange networks. Great attention was paid to their design and finish.

Other indications of social differentiation among the Rössen communities, besides axes, are pendants and strings of beads made from shells. No such shell ornaments have however been preserved in the decalcified soils of the Low Countries. Ornaments that have survived in this region are the aforementioned slate bracelets of the Blicquy group.

Conclusion

The fifteen centuries discussed in this chapter saw constant changes in the material culture of the farming communities of the loess zone. Periods of very gradual developments alternated with phases of more or less abrupt changes, which appear to reflect social disturbances: a first crisis at the transition from the *Bandkeramik* to the *Grossgartach* phase, a second at the *Bischheim-Michelsberg* transition and a third at the end of the latter period, when the causewayed enclosures went out of use.

So far, archaeologists have failed to explain the cause of the relatively abrupt transition from the *Bandkeramik* to the *Grossgartach* culture. The fortifications suggest that this transition involved threats and armed conflicts, but we do not know whether they were the consequences of tensions between different *Bandkeramik* communities or between *Bandkeramik* and other communities. What we do know for certain is that the successors of the *Bandkeramik* people had an entirely new 'culture', including pottery of a southern (*Grossgartach*) style, more defensively organised settlements, a wider range of site locations and a different range of crops.³⁵

The *Grossgartach-Rössen-Bischheim* period was a time of very gradual developments, while the transition to the Michelsberg culture was again marked by fairly drastic changes. The crisis appears to have been less acute, but its outcome

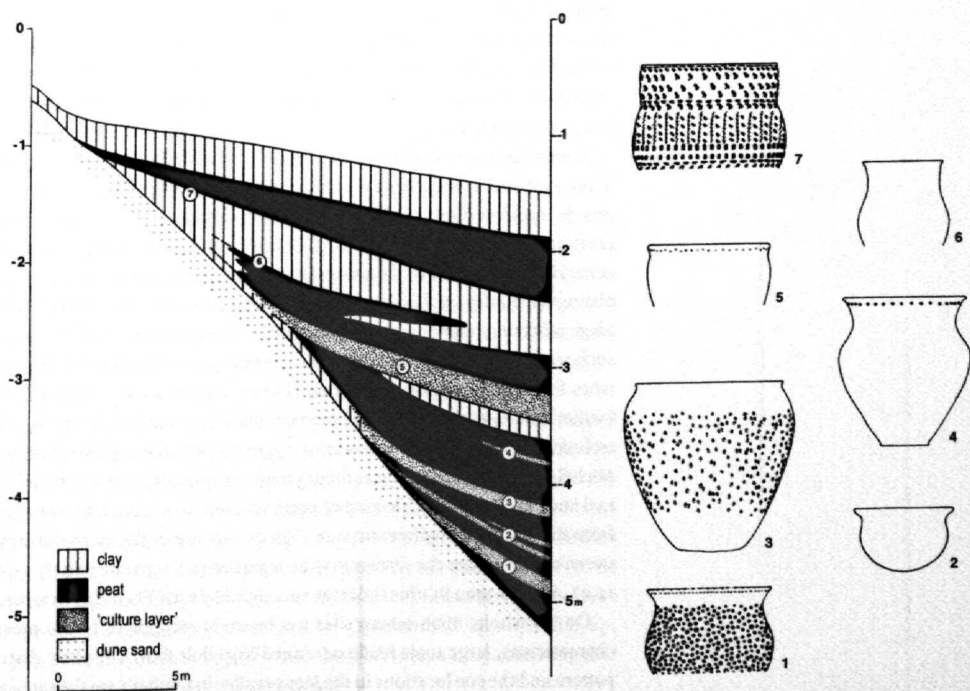
was a new society with a different culture, characterised by central sites, a new pottery style, shaft mining and the attribution of a greater value to the flint that was obtained at such great effort, and new (rare) prestige goods, such as axes of jadeite, Romigny-Léhry flint and hammer axes. The regional styles distinguishable within the Michelsberg pottery could reflect the emergence or intensification of regional organisations, such as tribal associations. The area covered by these styles, for example, has similar dimensions as the Mesolithic Wommersom quartzite distribution area, for which a similar interpretation has been suggested. The causewayed enclosures can be seen to represent smaller social units within this area. No such social hierarchy appears to have existed in earlier periods. If one of the purposes of these central sites was defence, they imply an increase in the scale of armed conflict. Tribal warfare, either of a ritual nature or in the form of raiding, must have been endemic from the beginning of the Neolithic, if not earlier. We should not expect to find many other indications of such warfare besides modest, incidental fortifications and sporadic evidence of violent death in graves. The only – but very significant – indications of tribal warfare found in the Lower Rhine Basin are the fortified sites and the ‘battle axes’, that is, if that is indeed what the unusually shaped hammer axes were.³⁶

The last crisis, finally, which marks the transition from the Middle Neolithic A to B, around 3400 BC, was characterised by a conspicuous break in cultural developments and the replacement of old traditions over large parts of Northwest Europe.

fig. 12.8

The Hazendonk, one of the Late Glacial river dunes in the Alblasserwaard region, was used as a settlement site at least seven times in the Neolithic. The rising groundwater level and constant deposition of peat and fluvial sediments led to the gradual burial of the dune's slopes, and the dune consequently became progressively smaller and lower. The refuse of the successive occupation phases has survived in seven occupation levels in the natural Holocene stratification dating from 4000 to 2200 BC.

No.	culture	date
7	late Bell Beaker	2200 BC
6	Vlaardingen 2b	2600-2500
5	Vlaardingen 1b	3200-3000
4	Vlaardingen 1a	c. 3400
3	Hazendonk 3	3700-3600
2	Swifterbant phase 3	3900-3800
1	Swifterbant phase 3	c. 4000



THE SANDS OF THE SOUTHERN NETHERLANDS: NORTH-
WEST MICHELBERG AND HAZENDONK 3

Chronology and settlements

We assume that the sands to the north of the loess were still occupied by hunter-gatherers at the beginning of this period. The excavations carried out in the Meuse Valley Project, especially those in the Merselo region near Venray, have shown that their remains consist of flint assemblages comprising the products of a simple flake industry for which locally collected gravel flint was used, and small blades made on imported, southern types of flint and Wommersom quartzite. By this time the typically Mesolithic microlithic element had almost completely disappeared. Future research will hopefully show whether these assemblages are to be ascribed to the earliest phase of the Swifterbant culture or whether they are to be classed as a separate group.³⁷

From several small assemblages containing Rössen pottery and flint that have been found on the sandy soils, within a zone extending to about 25 km outside the loess region, we know that the Rössen farmers also exploited these areas, just like their predecessors had done.³⁸ The most obvious interpretation is that these assemblages represent the remains of cattle herders' camps or small hunting stations. At Echt-Annendaal, in the Roer region, such a site was located at the upper slope of a valley, from where the occupants had a good view across the valley of the Vlootbeek. Bandkeramik and Michelsberg pottery showed that the site was also used in previous and later periods, which implies a marked continuity in the settlement system.³⁹ The activity area of the Rössen people did not extend beyond that of their Bandkeramik predecessors. The few findspots that have been found outside this activity area point to longer expeditions or to exchange with the local population. That such exchange indeed took place, even with people living far away, is apparent from the perforated Rössen axes that have been found in some quantities across the entire north German plain and even in Denmark, i.e. in the areas of the Swifterbant and Ertebølle cultures. Although these tools must have been of great value to the Rössen farmers, it was apparently fairly easy for the hunters to obtain possession of them.⁴⁰

Major changes took place in the course of the Michelsberg period: the native hunter-gatherers underwent a cultural transformation, the outcome of which was the northwest group of the Michelsberg culture, a truly Neolithic group. Of great importance for the chronology of this period is the stratigraphic sequence at the Hazendonk near Molenaarsgraaf, where three successive assemblages were distinguished (fig. 12.8). That of Hazendonk 1 (4000 BC) is a Swifterbant assemblage reflecting relations with the Bischheim group. Further evidence supporting such relations was provided by a small assemblage showing Bischheim characteristics found at Ven-Zelderheide, near Gennep. Hazendonk 2 (3800 BC) is also a Swifterbant assemblage, which however contains a number of typologically and technically different vessels that must originate from the northwest group of the Michelsberg culture. The Hazendonk 3 remains (3600 BC), finally, include an original and easily recognisable kind of pottery which, we assume, must have evolved from the preceding Swifterbant ware. But on account of the many differences between the two styles the former may be regarded as a separate pottery group (fig. 12.9). Around 3400 BC this style was succeeded by early Vlaardingentypes.⁴¹

On the whole, Michelsberg sites can be easily recognised by the presence of characteristic, large tools made on mined Rijckholt flint. The sites' distribution pattern and the site locations in the Meuse valley in Limburg are the same as those

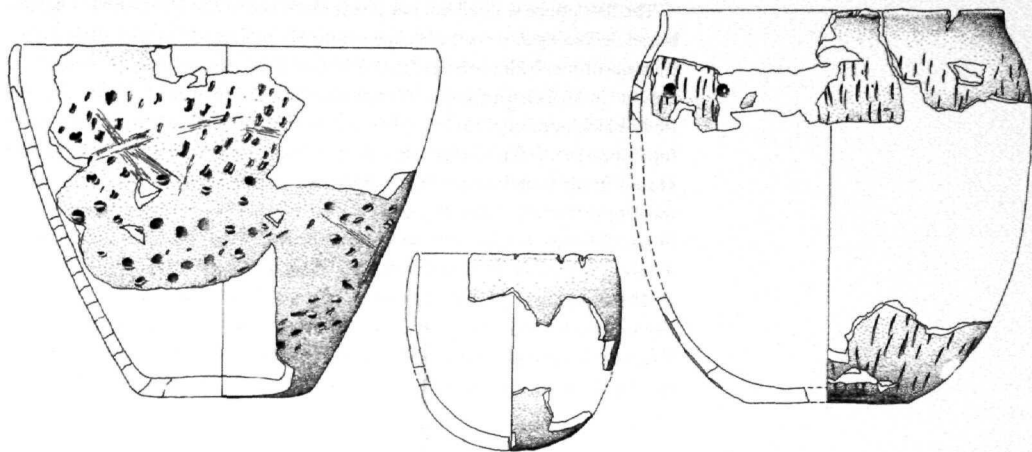


fig. 12.9

Pottery from the Hazendonk, Hazendonk 3 occupation level, assumed to represent the last development of the southern group of the Swifterbant culture, c. 3600 BC. Characteristic are the bucket shapes, the 'wobbly bases', the coiled build-up and the simple wall decoration comprising fields filled with various impressions and grooves. Scale 1: 4.

of the Late Mesolithic, but differ from those of the Bandkeramik and Rössen farmers.⁴² Much of our information on the sandy soils comes from the buried sites in the region between Grave and Cuijk, which yielded pottery in association with flint and stone tools. Even more evidence has been obtained at the lowland sites in the west of the Netherlands, i.e. Hazendonk, Wateringen, Rijswijk and Ypenburg.⁴³

The northwest Michelsberg group covered an area extending into the Münster basin and up to the river district in the central part of the Netherlands.⁴⁴ A small number of Hazendonk 3 sites have been recorded in the southern part of the Netherlands and in the adjacent parts of Belgium. In that phase the southern part of the delta, up to the North Sea coast, is incorporated in the southern sphere of influence.⁴⁵

Material culture

The pottery of the northwest Michelsberg group comprises a distinct range of types, in which many 'classic' Michelsberg elements are scarce or altogether absent. Characteristic of this pottery are sharply carinated wide bowls, sometimes with one or two rows of pin-pricks at the carination, for which exact counterparts are known in the contemporary Early Neolithic Grimston bowls in Britain. Typical Michelsberg vessels are large pots with roughened walls and collared rims and vessels of fine earthenware with wide necks, carefully finished thin rims and smooth inside and outside surfaces. In some respects, however, this pottery differs from the 'Michelsberg proper' known from the loess zone. For example, it does not include clay discs and spoons, and the 'functional types' are less striking.

The pottery of the Hazendonk 3 assemblages consists largely of bucket-shaped pots tempered with crushed white quartz, sometimes mixed with grog. The vessels have rough walls and were built from thick, poorly joined coils of clay. Many of the pots were found to have broken along the joints between the coils. A large proportion (approx. 30%) of the pottery is decorated with impressions made with finger tips, fingernails or various objects, extending over the entire surface of the pot with the exception of narrow bands at the base and beneath the rim. Some show deeply incised sets of lines. This form of 'decoration', without motifs, applied to pots of all sizes, can be regarded as a form of rustication, resembling that found on the storage pots of the previous phase.

The flint artefacts of all the northwest Michelsberg and Hazendonk 3 assemblages, including those in the delta, comprise the products of a simple flake industry made on small flint pebbles derived from river gravels and the aforementioned imports in Michelsberg style. We recall that the assemblages of the previous period had included imported bladelets and tools made on blades. The small flakes (up to 4 cm) show little retouch; few tools were made on those flakes. The number of tools made from (mined) Rijckholt flint varies considerably, from a few specimens to remarkably large numbers. Noteworthy are the frequent occurrence of broken flint axes and their use as flake cores. All the dated assemblages containing such axe fragments fall between 4100 and 3400 BC.⁴⁶

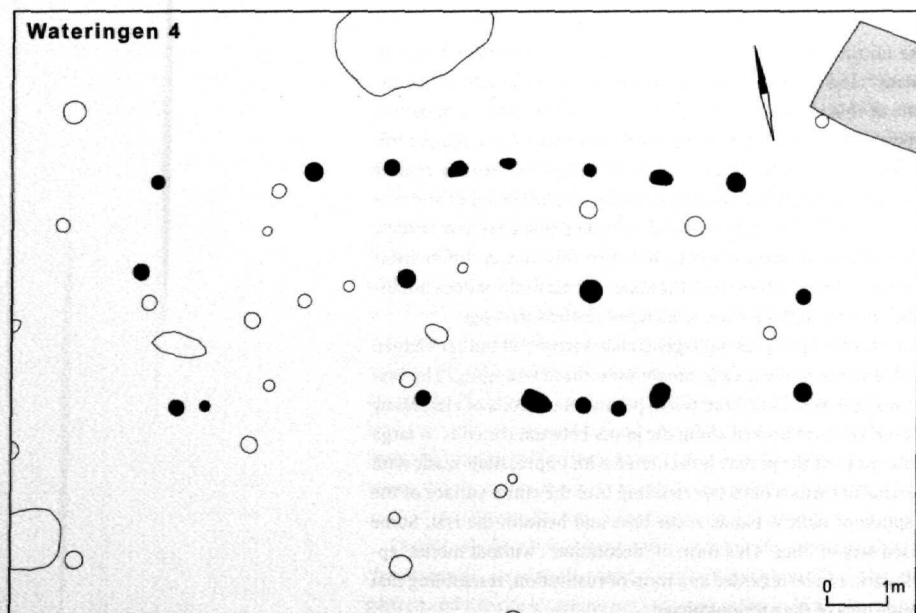
The occurrence of small fragments of querns together with heavy, faceted hammer stones made on quartzite derived from river gravels in Michelsberg and Hazendonk 3 contexts at Kraaienberg and Gassel, respectively, indicates that these communities consumed cereal products, which implies that they grew crops.

Way of life

In the sandy region in the south of the Netherlands the transition from the Mesolithic to the Neolithic consequently coincided with the early phase of the Michelsberg culture. It is however still unclear to what extent the occupants of this area switched to a farming way of life. The locations of the sites in the Meuse valley in Limburg provide no clues in this respect. From the quern fragments and the sickle gloss on some of the flint tools we know that crop cultivation was practised. On the whole, microwear analysis of flint tools has revealed no fundamental differences in activities between the sandy soils and the loess, which is an argument for assuming that the lifestyles of the occupants of the two regions were very much the same.⁴⁷

Very interesting are the Hazendonk 3 sites that were discovered in the coastal

fig. 12.10
Small two-aisled house plan of the
Hazendonk 3 group found at the Wateringen
4 settlement on a low coastal dune in the
coastal area of South Holland. Scale 1:100.



district in 1993; they are the oldest sites known in that region.⁴⁸ The evidence obtained at the sites is very similar. The occupants lived on low dunes, along whose edges they dug pits, possibly to tap the fresh water in the dune. At Wateringen the plan of a small, rectangular house was recorded (fig. 12.10). The Ypenburg site yielded a spectacular cemetery (feature F). The bone spectra showed that the occupants had combined cattle keeping with hunting (red deer) and fowling (aquatic birds). This evidence supports the suggestion that the Michelsberg and Hazendonk 3 settlements along the margins of the river district between Grave and Cuijk were pasturing camps.⁴⁹ More in general, the evidence for agriculture found at these coastal settlements strongly suggests that the occupants of the southern part of the Netherlands had by this time switched to a farming way of life. However, they apparently continued to use the river dunes in the peat region – in particular the Hazendonk – as bases for hunting and fishing. This clearly shows that they are to be seen as the heirs to the native Swifterbant culture.

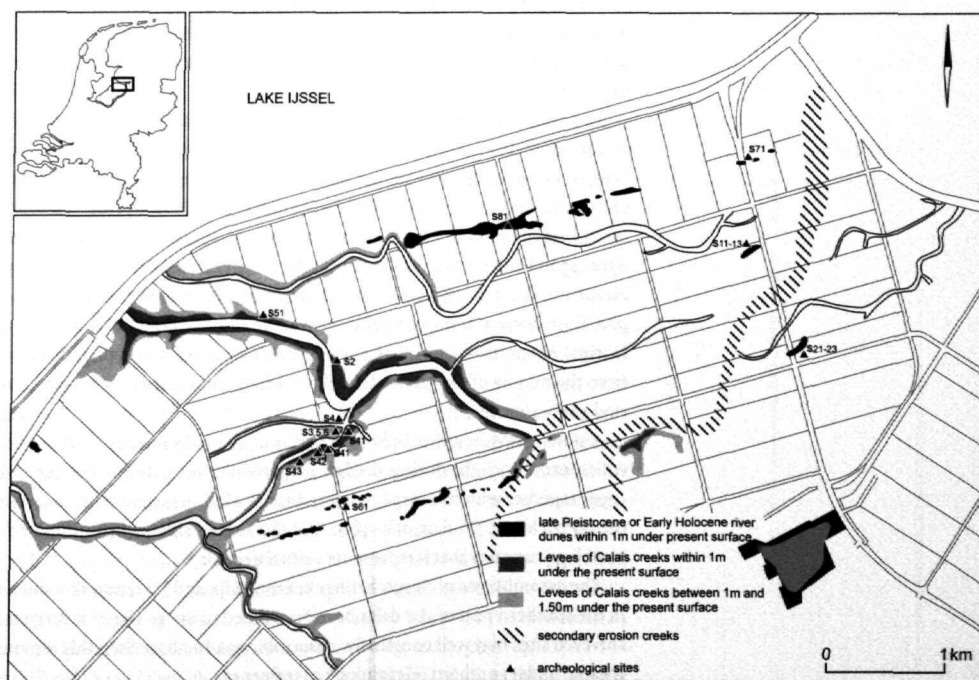
THE NORTHERN LOWLAND PLAIN: THE SWIFTERBANT CULTURE⁵⁰

Chronology and geography

Our knowledge of the Swifterbant communities in the northern part of the plain is based largely on evidence obtained from sites on the Holocene deposits and the odd wetland site outside that area, in particular Hûde I on the shore of lake Dümmer. The sites in the delta lie predominantly in the zone of marshes, lakes and freshwater tidal creeks, where preservation conditions are of course much better than in the more dynamic ecological zones like the fluvial clay regions and the

fig. 12.11

Palaeogeography of the northern part of Flevoland around 4000 BC based on the results of a soil survey. Settlements of the Swifterbant culture were found on the tops of former river dunes and on levees of freshwater creeks. Scale 1:50,000.



coastal plain. The sites cluster in two regions: the IJsselmeer basin and the Alblasserwaard region. In the IJsselmeer basin the process of sedimentation came to an end when the IJsselmeer came into existence in historical times. Later on, when large parts were reclaimed, the river and creek deposits of Calais II age became accessible for archaeological research. Settlement sites on levees and dune tops have been excavated at Swifterbant, in the north of the Flevoland polder (fig. 12.11 and plate 18B).⁵¹ In the south of the Noordoostpolder large-scale research has been carried out in plot P14, where a boulder clay outcrop capped by coversand bordered what was in prehistoric times the lower course of the Vecht (fig. 10.5).⁵²

In the western part of the river district a total of 61 sites covering the period 5500-2500 BC were discovered on 20 of the 25 surveyed river dunes; 31 of those sites date from the period discussed in this chapter (fig. 10.8).⁵³ Many more settlements must still lie buried beneath the surface because the sea level – and consequently also the groundwater level and the old land surface – was then between 7 (at first) and 4 m lower than it is today (see feature D).

No Swifterbant sites are known on the upland (with the exception of Hüde I on lake Dümmer). That will be due mainly to the poor recognisability of the flint artefacts, which do not include proper type fossils. In the northern part of the Netherlands only a few assemblages in stream valleys have been identified as Swifterbant sites on the basis of pottery or tools of bone or antler.⁵⁴

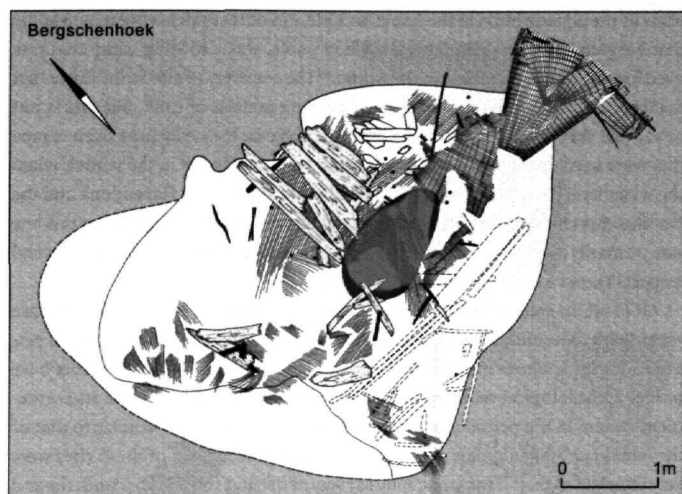
The Swifterbant culture has been divided into four phases (Sw 1-4) on the basis of some stylistic changes in the pottery, stratigraphic evidence and the absolute ages of assemblages found in the IJsselmeer basin. The majority of the sites, including those on the levees of the Calais II creek system in Flevoland, date from a relatively short period: 4350-3950 BC. This 'classic' phase has been classed as Sw 3.⁵⁵

The succeeding Sw 4 phase is best known from the research in plot P14 in the Noordoostpolder (fig. 10.5). There, along the bank of a former meander of the Vecht, three successive layers were found to contain both Swifterbant pottery and early TRB pottery dating from shortly before 3400 BC, which has for the time being been termed 'pre-Drouwen'. There are numerous parallels between this ceramic and the younger pottery of Hüde I. A small assemblage of the same date was found at Nagele (also in the Noordoostpolder).⁵⁶

Sw 1 and 2 were distinguished exclusively on the basis of stratigraphic evidence and absolute dates. The transition from a Late Mesolithic to Early Swifterbant has been well-documented by the excavations at Hardinxveld (feature D). These early phases are, moreover, represented by the oldest pottery from Hüde I and by a few assemblages found in Flevoland and the Noordoostpolder for which ¹⁴C dates of 4500-4300 BC have been obtained. At the Hogevaart site in the southern part of Flevoland, comprising a coversand elevation along the former course of the Eem, pits, flint, pottery and (burned) bone were found at a depth of about 6 m below Normal Amsterdam Level. Their stratigraphic position shows that they must date from the middle of the 5th millennium. Radiocarbon dates concentrate in the period 4800-4600 BC.⁵⁷

A noteworthy, early earthenware find is a pot, unfortunately without its base, which came to light during dredging operations near Bronneger (Drenthe) in 1990, together with two large red deer antlers. Carbonised remains encrusted on the pot yielded a ¹⁴C date of c. 4800 BC. The remarkable composition of this assemblage suggests that it represents a ritual deposit.⁵⁸

The assemblages of Bergschenhoek, Brandwijk and Hazendonk 1 and 2 found in the southern part of the delta have been dated to Sw 3. The oldest layers at the surveyed sites may well contain Sw 1 assemblages. In phase Sw 4 this region clearly came under southern (Hazendonk 3) influence.



- peat
- clay (formerly open water)
- ▨ bundles of reeds
- ▤ planks

fig. 12.12

Plan of the small winter camp at Bergschenhoek, c. 4200 BC. The peat ground was reinforced with reed bunches, remains of an old fish trap and planks from a discarded dug-out canoe. Scale 1:60.

Settlements and way of life

The Swifterbant settlements in the delta lay at the mouths of the major rivers, on top of semi-submerged dunes, on the levees of creek systems or on the shores of lakes (plates 18B, 19A). Reconstructions of the former landscape suggest that the choice of these locations was not dictated by agricultural interests, but this is only partly confirmed by the botanical and zoological evidence. Almost all the Swifterbant phase 3 sites yielded carbonised cereal remains (including chaff), but it is unlikely that this cereal was grown locally. The proportion of domestic animals represented in the bone spectra varies from 0% (Bergschenhoek) and about 10% (Hazendonk) to 50% (Swifterbant-S3). Apparently the occupants found pastures for their cattle even in the swamps, or else on the salt marshes in the wider surroundings. The substantial differences in subsistence activities between the sites in the different environments raise questions concerning the function of these wetland sites: were they occupied on a permanent or a temporary, possibly seasonal, basis, and how did they relate to the settlements in the upland? These are, in other words, questions concerning the 'settlement system'.⁵⁹

The settlements are not very large. Most vary from 500 to 3000 m². In this respect they do not differ from those of the Late Mesolithic De Leien/Wartena group.⁶⁰ From stratigraphic evidence, the thickness of the occupation layers and ¹⁴C dates we may infer that the individual sites were not occupied for much longer than a century, although locations that were particularly suitable for occupation, such as the river dunes, were often re-occupied. Within these periods the sites were used intermittently or continuously. The pollen diagrams of Hazendonk show true landnam phases, each followed by a regeneration phase. Although some evidence suggests that the occupants of Swifterbant S3 occasionally left their site for one or more seasons, the superimposed hearths point to permanent occupation, possibly even to the existence of permanent huts. But no huts could be reconstructed from the hundreds of posts found at the site. The site appeared to have been raised from the hundreds of posts found at the site. The site appeared to have been raised with bundles of reeds as a countermeasure against floodings.⁶¹ Evidence indicating the use of bundles of reeds for the same purpose was found in combination with superimposed hearths at Bergschenhoek, too (fig. 12.12, plate 19A).

It is difficult to say in which season or seasons the sites were occupied. On the

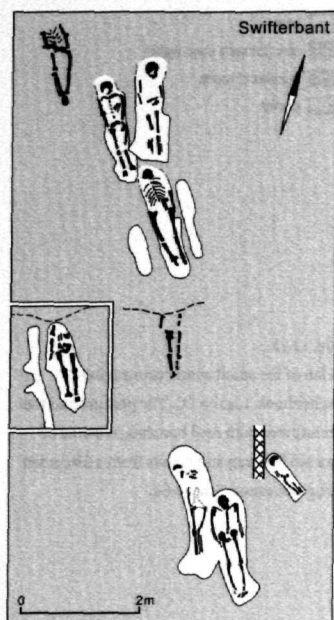


fig. 12.13

The Swifterbant settlement S2, situated on a relatively broad levee, comprised several burials constituting a small cemetery, which means that people must have lived there for quite some time, either at the site itself or at some other site in the vicinity, for it is not clear whether the occupation and the burials were synchronous.

basis of the aquatic birds in the faunal sample and other evidence we may assume that Bergschenhoek, which lay among bog pools, was a fowling camp that was used for short periods of time in the winter.⁶² The cemetery of site S2 indicates that the levee sites of Swifterbant were used for long periods of time, but that is not to say that they were occupied on a permanent basis: they may have been camps that were used throughout the summer and were abandoned in the winter, when the water level rose. The heavy reliance on beaver and otter at Hazendonk and the fact that this changed very little until the end of the Neolithic suggest that this site was primarily a hunting camp.⁶³ The same can be said of Hude I, which in several respects shows a striking similarity to Hazendonk.⁶⁴

All in all, in spite of the pottery, the axes and the cattle, the wetland sites are remarkably 'Mesolithic'. This will be due largely to their function within a settlement system whose more permanent and more agricultural components have poorer archaeological visibility. The evidence for subsistence patterns and settlement system in the period around 4000 BC is in many respects similar to that of the later Vlaardingen group. This suggests that the occupants of these sites were very attached to their traditional, familiar way of life and stuck to that until the end of the Neolithic. But we should bear in mind that this period is less well-documented than the later Vlaardingen period because much evidence has disappeared owing to erosion, while other remains are inaccessible due to the thickness of the overlying sediments.

Burials: the cemeteries of Swifterbant and P14

Three cemeteries were discovered near the settlements in the northern part of Flevoland, two on top of dunes (S11 and S21-23) and one on the levee of a wide creek (S2, fig. 12.13).⁶⁵ The cemetery in plot S2, which was excavated in its entirety, comprised nine graves. In plot H46 the two ends of a 200-m-long dune top were investigated. Seven and six graves were unearthed at the northern (S21) and southern (S22) ends, respectively. It is not clear whether they represented the two ends of a single, elongated cemetery or two separate, small cemeteries. These graves are our only source of information on the burial rites in the period discussed here. The deceased had all been buried on their backs, in extended position. This tradition betrays the Swifterbant group's Mesolithic origins. The deceased included men, women and children, which shows that the Swifterbant settlements were occupied by complete households. We may moreover conclude that these sites were important, stable elements in the settlement system. There are modest indications of social differentiation. One woman in the cemetery of S2 had for example been buried with a few small amber beads, while a man had an ornament consisting of large perforated pieces of amber on his forehead, a perforated flat pebble in or near his right ear and a boar's tooth with several perforations on his chest (plate 18A). The amber may have been found in the Netherlands – along the coast or in ice-pushed Tertiary clay in the eastern part of the country – but the larger lumps may also have been 'imported' from Denmark.⁶⁶

A small cemetery came to light in P14, too. Three or four of the graves may date from phase Sw 4. They contained the remains of deceased who had been buried on their backs, in extended position, without grave goods. The graves also yielded evidence for the secondary burial of older skeletal remains, in particular skulls.⁶⁷

In addition to these formal burials in a separate cemetery, fair amounts of dis-articulated human remains were also found inside the settlements at Swifterbant. They probably point to some different treatment of the dead which did not com-

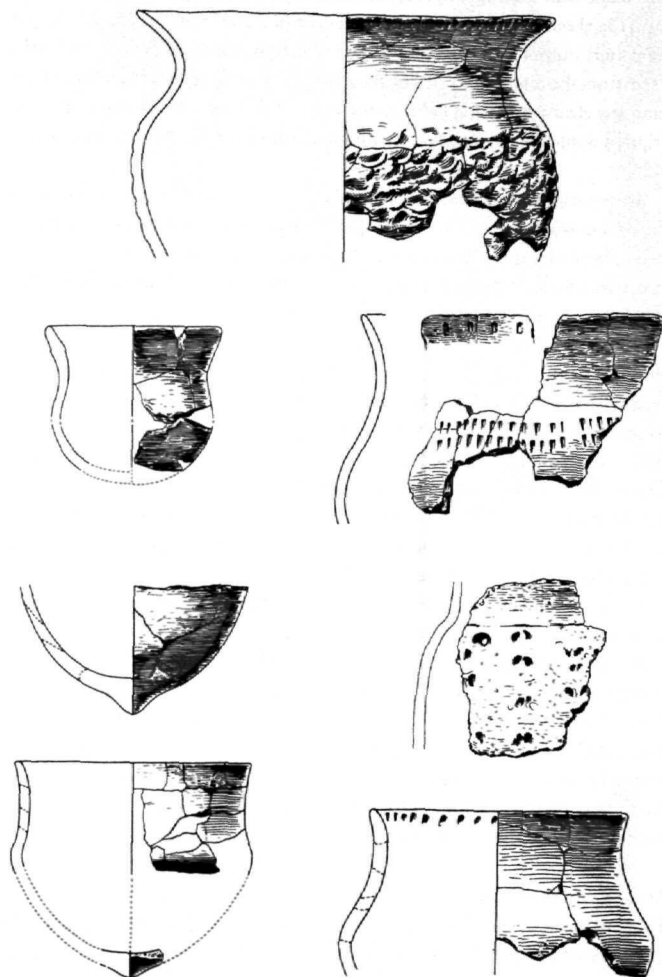


fig. 12.14

Pottery from the Swifterbant settlement S3, representing the 'classic' phase of the Swifterbant culture, around 4100 BC. The pointed bases and flaring rims are typical of this phase, but the simple shoulder decoration is known mainly from the IJsselmeer area. Scale 1:5.

prise interment. Of course, this does not necessarily hold for the milk teeth, which may simply have been lost when they were replaced by permanent teeth.

Material culture

Pottery (fig. 12.14)

Although the pottery of the Swifterbant culture was probably inspired by that of the Rössen and Michelsberg communities, there are considerable differences between the two. The Swifterbant pottery comprises only one type, with an S-shaped profile and a tall, widely flaring rim, which was often notched with the aid of a spatula. The pots have a globular body and pointed or round bases, some with a bump of clay. The clay was tempered with short parts of plants or with finely crushed crystalline rock. The pots were built from thin coils of clay. Some of the pots show a modest form of decoration comprising rows or scatters of impres-



fig. 12.15

The flint of the Swifterbant sites (in this case site S2) in the IJsselmeer basin shows clear evidence of its Late Mesolithic origins in the small, regularly shaped blades and the broad trapezes. Actual size.

- 1 end-scraper
- 2 borer
- 3 double scraper
- 4 broad trapeze

sions made with the finger tips, spatulas or some pointed instrument, in particular on the shoulder, but sometimes extending over the entire surface of the pot. The pottery ranges from fine, thin-walled vessels to coarse, thick pots, and varies in size from the dimensions of a beaker to those of a storage vessel, without there being any clear connection between the size of the vessel and its fabric. This description applies to the 'classic' Swifterbant ware from the period around 4100 BC.⁶⁸

The pottery that was produced in phases Sw 1 and 2 seems to have been quite similar, but we do not know enough about it to be able to distinguish any differences. The most conspicuous types among the pre-Drouwen pottery of phase Sw 4 are collared flasks and (funnel) beakers decorated with incised vertical lines on the belly.⁶⁹

Flint (fig. 12.15)

On the basis of the study of the flint from Swifterbant S2 in particular we may assume that the flint tradition was a direct continuation of that of the Late Mesolithic.⁷⁰ The technique focused on the production of fairly small, regularly shaped blades with a maximum length of only 6 cm. The range of tools was very limited, including only long and short end scrapers, borers and small symmetrical trapezia. At first sight, the tool kit seems to resemble that of the pre-Michelsberg sites in the southern part of the Netherlands, but no comparative study has yet been carried out.⁷¹ We do not know to what extent this Mesolithic micro-blade tradition continued in phase Swifterbant 4.

A noteworthy feature of the southern Swifterbant sites on the river dunes, for example that of Brandwijk, is that their flint traditions show more affinities with those of the southern Netherlands. They moreover all yielded artefacts made from flint mined at Rijckholt, indicating that they formed part of the exchange network of that flint type.⁷² The combination of Swifterbant pottery and flint from southern Limburg is the first indication that in the southern part of the Netherlands the northwest Michelsberg group was indeed preceded by a Swifterbant phase.

Axes and other heavy implements

The start of the production and use of polished axes can be dated to the phase Sw 3 of the Swifterbant culture on the basis of the absence of fragments of such axes at Hogevaart and the presence at Bergschenhoek and at later sites. Characteristic of this period are axes with a round or oval cross-section and a pointed or rounded butt, which were made from quartzitic stone using the hard-hammer technique.⁷³ In addition, various types of perforated axes were imported from the Rössen communities in the south. Flint axes with a pointed butt are known from settlements from phase Sw 3 onwards.

The discovery at Hazendonk of a broken biconically perforated pebble hammer shows that such hammers were still being used in this period. Biconically perforated pointed implements were also used.⁷⁴

The conspicuous absence of (fragments of) querns links these sites with Mesolithic sites and distinguishes them from most Neolithic settlements. This is a clear indication that the consumption of cereal products – and consequently the cultivation of cereals – was of subordinate importance.

Bone and antler (fig. 12.16)

Only a few bone and antler tools have been found at the settlements in the delta, but nevertheless sufficient to give us some idea of the types of tools that were manufactured from these raw materials. That antler was also a very important raw ma-

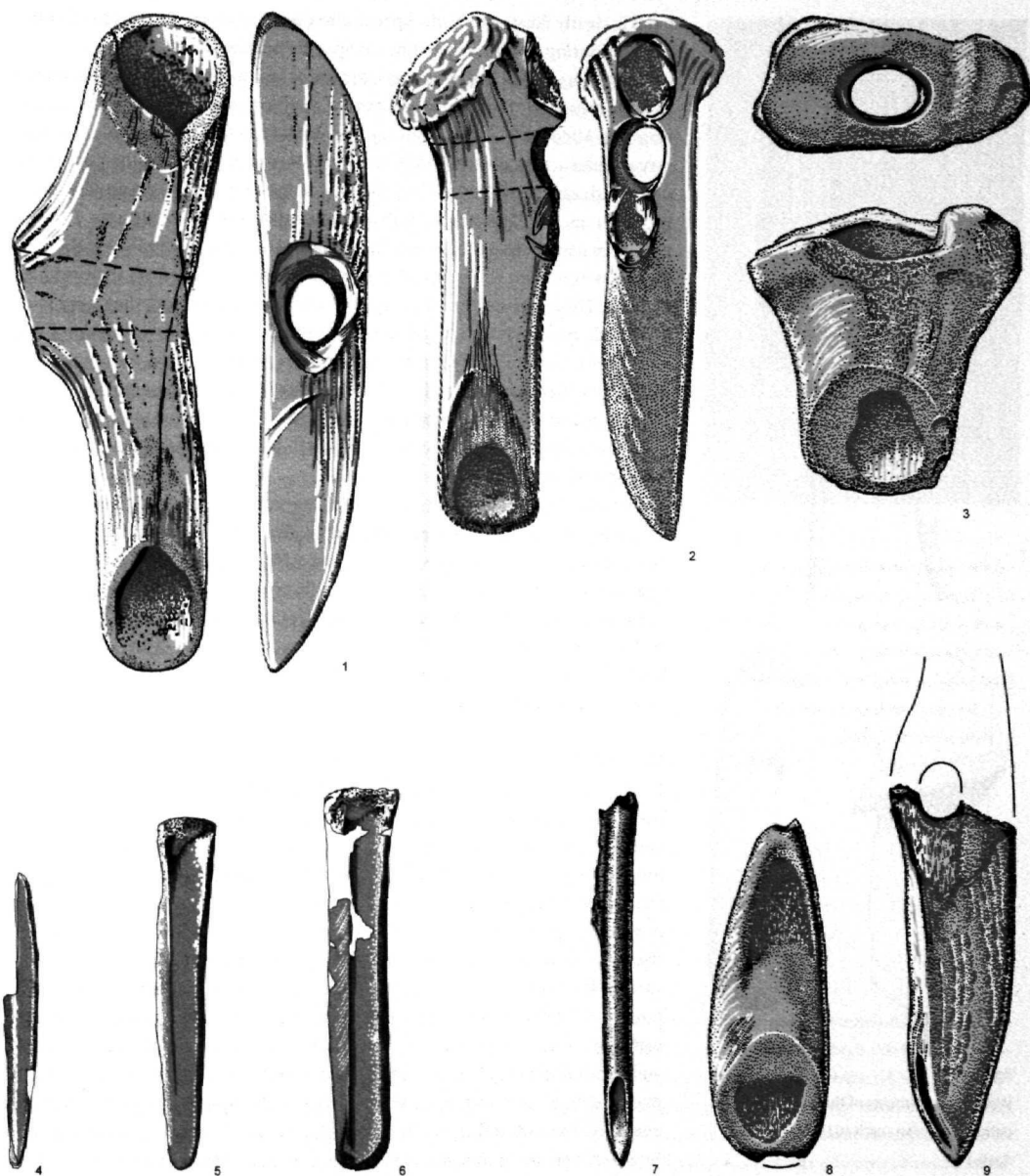


fig. 12.16

Bone and antler tools dating from the Middle Neolithic A found at various sites. Scale 1:2.

- | | |
|--|-------------------|
| 1 double T-shaped axe | sites: |
| 2 base axe | 1-2 Spoolde |
| 3 socketed axe made from the radius of a domestic ox | 3 Swifterbant |
| 4 bone awl | 4-6 Hazendonk |
| 5, 6 chisels made from metatarsals | 7-9 Bergschenhoek |
| 7 awl made from the long bone of a large bird | |
| 8 axe blade made from red deer antler | |
| 9 beam axe, red deer antler (broken) | |

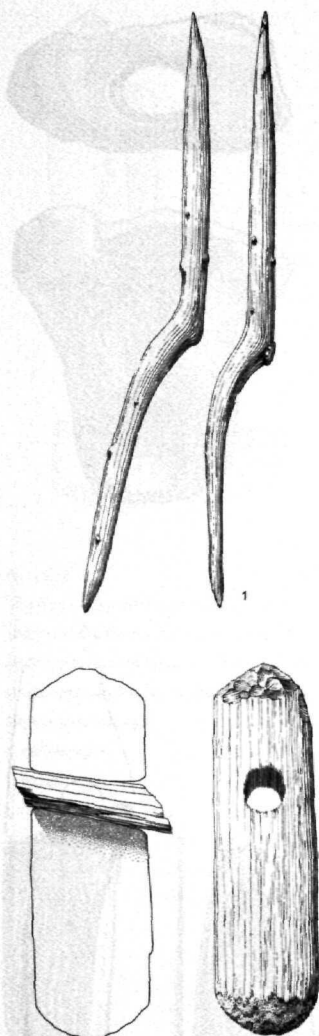


fig. 12.17

Wooden implements of the Swifterbant culture have also survived in wet contexts. Scale 1:4.

- 1 Bergschenhoek, two parts of eelspears
- 2 Hazendonk, phase I, wooden hammer made of apple wood with part of its ash handle preserved

terial is clearly illustrated by the spectacular discovery of several dozens of antler artefacts during dredging operations at Spoolde near Zwolle.⁷⁵

The beams of the antlers of red deer were used to produce what are known as 'base axes' and 'T-shaped axes'. Axes of the former type were in common use from the Middle Mesolithic until the end of the Neolithic. T-shaped axes were very popular across the whole of Central and Northern Europe in the 5th millennium. A third type of axe has the brow ridge as handle and the cutting edge made on the beam. We also know of imitations in antler of stone blade axes. In a few rare cases parts of the wooden handles of these axes have survived: 13 of the 96(!) T-shaped axes from Hüde I had been preserved with (remains of) their wooden handles. These handles were made from willow or alder wood; they were fairly short and remarkably thin. The finds from Spoolde represent a wide range of tool types and the waste formed in the manufacture of those tools. Although some earlier and later material might have been mixed up in this assemblage, it does seem to reflect some special activity carried out at one or more sites, but exactly what that activity was, is not clear. One possibility is the manufacture of canoes from tree-trunks.⁷⁶

The articular ends of heavy, long bones were used to manufacture socketed axes, a tool type that was developed early in the Mesolithic. Knives were made from ribs. The metapodials of red deer – the most solid bones available – were systematically used as raw materials for the manufacture of chisels and awls. The awls made from bird bones reflect a similar efficient and selective use of bone. These antler and bone industries are in every respect continuations of the earlier Mesolithic traditions, insofar as the latter are known to us. They continued in the succeeding Vlaarding period.⁷⁷

Wood and rope (fig. 12.17)

Thanks to their excellent preservation conditions, the wetland sites have also provided a glimpse into the skilful use of wood. We may assume that wood was in common use as a raw material in this period. Roughly sharpened posts have been found at Hüde, Swifterbant and Bergschenhoek. The fill of a creek at Swifterbant 3 yielded two carefully finished ends of axe handles made from hazel and ash wood. A wooden hammer of apple wood and part of its ash handle were found among the remains of level I at Hazendonk and a 4.6-m-long part of a tree-trunk canoe came to light at Hüde I.⁷⁸ At Bergschenhoek an old canoe made from a heavy alder tree-trunk had been broken into pieces and reused to make a platform. Near the camp were a number of wooden arrow shafts, a pair of stakes with sharpened ends and two conspicuous branches sharpened at both ends, which may have formed part of eelspears or leisters. Lengths of rope of different thicknesses made from entwined fibers were also found embedded in the clay. The most spectacular finds, however, were three almost complete fish traps and a series of fragments of traps (plate 19B; fig. 12.18).⁷⁹

Ornaments

Modest ornaments were found at Swifterbant, both among the settlement remains and in the graves: pieces of jet, small and larger pieces of amber, flat quartzite pebbles and canine teeth of predators and dogs. These teeth, which were pierced, had been worn as beads or pendants or they had been sewn onto clothing. The range of ornaments is a little wider than that of the preceding Mesolithic, but it does not differ markedly from that of the later Vlaarding group.

CONCLUSION

In conclusion, the period discussed above can be geographically characterized as an era in which two markedly different communities were confronted with one another. On one side were the sedentary farmers on the loess soils, whose roots lay in Central Europe, on the other were the more mobile native communities with an economy based on gathering, fishing and hunting. For a long time these communities were divided by a fairly sharply defined frontier, which first extended along the northern perimeter of the loess zone and later shifted to the southern margin of the river district.

In chronological terms it was a transitional period, a long phase of incomplete and hesitant 'Neolithisation'. This process took the most time to the north of the major rivers, where it was not yet completed by the end of this period. The communities to the south of the river district were apparently in closer contact with the farmers of the loess zone; they switched to the Neolithic way of life at an earlier stage. On the grounds of their pottery and their use of mined Rijckholt flint they can be classed as 'Michelsberg', while the sickle blades and fragments of querns to some extent classify them as 'agricultural'. At some stage the (Swifterbant) communities living on the river dunes were incorporated in the 'Rijckholt flint network' (Brandwijk). They ultimately developed a new pottery style of their own (Hazendonk 3). However, they continued to use the river dunes in the same way as their predecessors had, i.e. as bases for hunting and fishing.

Major social changes were however also taking place among the agricultural communities on the other side of the 'frontier'. These changes were not gradual developments but crises, involving drastic transformations in the communities' culture. It is tempting to associate some, if not all, of these changes with the confrontation, contacts and exchange of knowledge with the northern native population, although we cannot specify these contacts in any greater detail. The outcome was a 'Neolithic' that was apparently acceptable to the native population of large parts of Northern Europe, from Great Britain to southern Scandinavia, but oddly enough not to the occupants of the region between the Rhine and the Elbe.⁸⁰



fig. 12.18

One of the Bergschenhoek fish traps. Detail of the funnel-shaped entrance, showing that the osiers were tied together in the coils of an unknotted rope, which was evidently twisted from fibres during the manufacturing process. The photo shows the staggered transition between two coils. See also plate 19B.

NOTES

- 1 For surveys focusing on this problem see Bakels 1992a; Louwe Kooijmans 1993b, 1998.
- 2 Many short reports, specialist articles and monographs have been published on the excavations of Hüde I. For preliminary reports see Deichmüller 1969; pottery and synthesis: Kampffmeyer 1983, 1991; flint: Stapel 1988; subsistence: Hübner et al. 1988.
- 3 Dohrn-Ihmig 1983a and Jürgens 1979 for the Rössen sequence, Lünig 1968 for the Michelsberg sequence.
- 4 Blicquy-sites: Cahen/Docquier 1985, Caspar et al. 1993, Jadin et al. 1989, Jadin/Cahen 1992. Although the authors assume that Blicquy and the Bandkeramik are contemporary phenomena, as suggested by the ¹⁴C dates, they are here discussed as though they succeeded one another. The available evidence allows this far less complicating option. Randwijk: Louwe Kooijmans 1988.
- 5 Associations: Stehli 1974, 1989a for the synchronism of the final phase of the Bandkeramik and the Grossgartach phase; site locations: Schweltnus 1985; earth works: Langweiler 10-12 (early Grossgart-

ach) measured approx. 5000 m² and was surrounded by a 3-m-wide and 2.5-m-deep V-sectioned ditch; Hambach 260 (late Grossgartach) measured approx. 7000 m² (Dohrn-Ihmig 1983a).

- 6 See Dohrn-Ihmig 1983a, 18-43 for a survey of Rössen settlements and house construction. Rössen settlements are still modelled on the settlement of Inden 1, which was excavated almost in its entirety: Lünig 1982b, Abb. 11, 12. For various settlements on the Aldenhoven plateau see *Bonner Jahrbücher* 171-182 (1971-1982): Untersuchungen zur neolithischen Besiedlung der Aldenhovener Platte 1970-82.
- 7 K. Brandt 1967. This site apparently consisted of a single, isolated house.
- 8 The chance of Rössen sites being discovered at surface level is fairly small because they comprise far fewer pits filled with remains and consequently fewer finds come to light in ploughing. However, in the lignite mining area, where nothing escapes attention, Rössen sites were found to outnumber Bandkeramik sites (Schweltnus 1985).

- 9 Louwe Kooijmans 1988; Oude Rengerink 1991; Bakels 1990b, Bakels et al. 1993b.
- 10 Vermeersch 1987-'88 mentions ten such monuments in Belgium, of which the one at Thieusies (Vermeersch/Walter 1980) is probably the best documented.
- 11 On the Aldenhoven plateau: Inden 9 (Kuper et al. 1975), Kreuzweingarten (Bakels 1992, 75) and Jülich (Amtmann/Schwellnus 1987).
- 12 For causewayed camps in general see Thomas 1991.
- 13 Vermeersch 1987-'88; Vermeersch/Walter 1980.
- 14 Brounen 1988, 1995b; Thanos 1995; Schreurs 1992, 1994.
- 15 Jadin et al. 1989; Jadin/Cahen 1992.
- 16 Dohrn-Ihmig 1983a, 6-17.
- 17 Cahen/Docquier 1985.
- 18 Lüning 1968.
- 19 In general, the German terminology is used: Tuffenleisten, Schlickrauhung, Schöpfer.
- 20 Brounen 1995b.
- 21 Koslar 10: Lüning 1978, 317.
- 22 Louwe Kooijmans 1980, 172-198.
- 23 For surveys see: Fiedler 1979. Various factors make it very difficult to date the many surface assemblages: the number of diagnostic artefact types characteristic of a particular culture is very small, the types were usually used for a longer period of time and very many assemblages are mixed or they are contaminated with younger or older remains. For a discussion of these problems see: Lohr 1972-'77; Wansleeben 1987.
- 24 Cahen/Docquier 1985. A beige-chocolate flint which could be mined at Baudour in the Hainaut was preferred for the long blades and the burins (id. 103-108). The burins that have been found in Belgian Michelsberg contexts (Vermeersch 1987-'88) may have been derived from these tools.
- 25 Many of the points were made on flakes with a pronounced bulb of percussion. The large blade tools are the most conspicuous, but on the whole, the technology seems to have focused on the production of flakes. For the Michelsberg flint industry and the use of flint see: Schreurs 1992, 1994 and forthcoming.
- 26 Valkenburg flint: Brounen/Ploegaert 1992, Brounen et al. 1993; Brounen 1995; Lousberg; Weiner 1980; Gronenborn 1992.
- 27 Clearances: Kalis 1988; Kalis/Meurers-Balke 1988.
- 28 For the organisation of mining and the distribution of flint, see feature E. Blades of Rijckholt flint have been found in Neolithic contexts at great distances from the mines, for example on Lake Constance. A similar 'interaction sphere', overlapping that of the Rijckholt flint, is that of the conspicuous brown-banded Romigny-Léhry flint (Polman 1993).
- 29 The Netherlands has no tradition of comprehensive axe studies. For surveys see: K.-H. Brandt 1967; Hoof 1970; Schut 1987, 1991.
- 30 The string of the bow of a bow-operated drill was twisted round the (vertical) drill. The drill could then be set in motion by moving the bow to and fro. Such drills are known from ethnographic sources. The only archaeological evidence for such drills consists of bored cylinders.
- 31 The German terms for these tools are: Plattbolzen, hohen durchlochte Schuhleistenkeil und durchlochte Breitkeil (Van der Waals 1977).
- 32 Oude Rengerink 1991.
- 33 Modderman 1960-'61. A second specimen was found in 1983 at Mechelen, also in the Geul valley.
- 34 Schut (1987, 47) mentions five flachen Hammeräxte from the Netherlands; Schut et al. 1987; Brandt 1971.
- 35 Bakels 1990b; Bakels et al. 1993.
- 36 See also feature J and the discussion in Jadin/Cahen 1992.
- 37 Merselo-Haag: Wansleeben/Verhart 1995. Assemblages like those of Ede-Frankeneng (Schut 1988) and Melsele (Van Berg et al. 1991) may date from this period. In the case of Ede there are only typological arguments; in the case of Melsele the association with (Late) Mesolithic flint is not entirely certain. De Roever (1986) disputed such a relation for Swifterbant S11. Even older is the claim regarding the pottery of Weelde-Paardsdrank (Huyge/Vermeersch 1982). On the one hand the Mesolithic substrate in the southern part of the Netherlands (Rhine basin group) differs from that to the north of the major rivers (northwest group), on the other hand this difference seems to have largely disappeared by the end of the Mesolithic. Moreover, the earliest assemblages found on the river dunes in the Alblasserwaard, dating from c. 4200 BC, show clear Swifterbant characteristics.
- 38 Bloemers 1972; Hinz 1974, 197-199, 215; Schut 1987, 55; Lüning 1982b, Abb. 3; Louwe Kooijmans 1993b.
- 39 Brounen 1985.
- 40 Van der Waals 1972.
- 41 Louwe Kooijmans 1976a, 1967b, 1993b; Ven-Zelderheide: Mooren 1993; The study by Raemaekers et al. 1997 has led to a drastic revision of, in particular, the interpretation of the Hazendonk 2 assemblage as presented here. The new evidence shows that it is not correct to refer to the northwest Michelsberg group as 'Hazendonk 2'.
- 42 Wansleeben/Verhart 1990, 1995, Verhart 2000.
- 43 Hazendonk: Louwe Kooijmans 1993a, Zeiler 1991; Wieringen: Raemaekers et al. 1997; Rijswijk: Koot 1994, 16-21; Ypenburg: zie intermezzo F.
- 44 Münster Basin: Coesfeld, Osterwick (Willms 1982; Wilhelmi 1972) and Nottuln (Eckert 1986); Cuyk region: Kraaienberg (Louwe Kooijmans/Verhart 1990). Belgian sites: Lüning 1968.
- 45 Hazendonk 3: Het Vormer (Louwe Kooijmans 1980), Gassel (Verhart/Louwe Kooijmans 1989), Grave (Verhart 1989), Meeuwen (Belgian Limburg, Creemers/Vermeersch 1989) and at some sites in the Meuse valley, as far south as southern Limburg.
- 46 The earliest assemblage containing Rijckholt flint is the Swifterbant 2 assemblage of Brandwijk (4100 BC, Van Gijn/Verbruggen 1992). This flint type appears to have gone out of use by the time of Vlaardingen 1a (Hazendonk, 3500 BC). The use of broken axe fragments as a raw material is a conspicuous feature of the later Vlaardingen assemblages.
- 47 Schreurs 1992, 1994, forthcoming; see also Bienenfeld 1988.
- 48 Raemaekers et al. 1997; Koot 1994; Koot/Van der Have 2001.
- 49 Verhart/Louwe Kooijmans 1989, 108.

- 50 Kampffmeyer (1991) and Gehasse (1995 quoting Ten Anscher forthcoming) speak of a 'Hüde-Swifterbant culture'.
- 51 Many specialist articles have been published on Swifterbant; a series of 'Swifterbant Contributions' in *Helinium* (1976-'85), a series of final reports in *Palaeohistoria*. The most important are: Ente 1976, Casparie et al. 1977, Meiklejohn/Constandse-Westermann 1978, Constandse-Westermann/Meiklejohn 1979, Deckers 1979, De Roever 1979, Van der Waals 1977, Zeiler 1986, 1987, 1991, Van Zeist/Palfenier 1981. For a summary, see Deckers et al. 1980.
- 52 Ten Anscher/Gehasse 1993; Gehasse 1995; Ten Anscher forthcoming.
- 53 Verbruggen 1992a, 1992b, forthcoming Three of the sites date from before 4900 BC, 27 are from later periods, mainly the period of the Vlaardingen group.
- 54 For example De Gaste and Heemse (Van der Waals 1972).
- 55 Hogestijn (1990) previously proposed the terms 'Dronten phase' (= Sw 3) and 'Nagele phase' (= Sw 4). We have used the sequence set up by Ten Anscher (forthcoming; see also Gehasse 1995, 199), which is based largely on ¹⁴C dates and signs of (weak) influences: Rössen, Bischheim, Michelsberg and TRB, respectively. Ten Anscher emphasises the absence of stylistic changes in the Swifterbant pottery itself and the intersite variability.
- 56 Hogestijn 1990; Ten Anscher forthcoming
- 57 Hogestijn et al. 1995; Hogestijn/Peters 2001. Part, at least, of the fragmentary pottery may be classified as 'Swifterbant'. No data are yet available on agricultural aspects.
- 58 Kroezenga et al. 1991. The two antler beams were still attached to parts of the frontlet. The ¹⁴C dates were published a year later: OxA-2908 5890 ± 90 BP for the encrusted remains and OxA-2909 5720 ± 90 and OxA-2910 5970 ± 90 for the antlers (Lanting 1992).
- 59 See also chapter 14. For reconstructions of the landscape see Van der Woude 1981; Ente 1976.
- 60 Louwe Kooijmans 1993a, 88; Newell 1973. The existence of the postulated De Leien/Wartena group is now a matter of debate. It has been found that flake axes encountered in mixed assemblages in the Meuse valley can be associated with the Michelsberg culture. Moreover, many large flint scatters are to be regarded as palimpsests, formed over many centuries or even millennia of use of a particular site. An example is the scatter of Koningsbosch (Van Haaren/Modderman 1973).
- 61 Van der Waals 1977; Van Zeist/Palfenier 1981.
- 62 Louwe Kooijmans 1986, 1987; Clason/Brinkhuizen 1993. The site was originally interpreted as a camp on a floating peat island, but serious mechanical and stratigraphic objections have arisen against this interpretation. It is more likely that the site lay on the shore of a pool and that the peat was torn away from the shore at some later date. This would mean that the site may have been used for a longer period of time and that it may also have been larger. Some finds from Schiedam and an antler axe from Krimpen aan de IJssel probably come from similar sites (Louwe Kooijmans 1974, 19, 36).
- 63 For the evidence and detailed interpretations see chapter 14; Zeiler 1986, 1987; Bakels 1981; Louwe Kooijmans 1993a.
- 64 The bones of domestic animals account for no more than 5% of the faunal remains. Other similarities between the two sites are the wetland location, the size (approx. 2000 m²), the very long period of use, the combination of local and 'imported' objects, of both pottery and flint. Taphonomic differences have however resulted in different archaeological records. Kampffmeyer 1983, 1991; Hübner et al. 1988.
- 65 Meiklejohn/Constandse-Westermann 1978; Constandse-Westermann/Meiklejohn 1979.
- 66 Waterbolk/Waterbolk 1992.
- 67 Ten Anscher/Gehasse 1993, 36-37. A settlement and a cemetery with 10 individuals in 8 graves was excavated in 1997 at Urk-E8, Noordoostpolder (Peters/Peters 2001). Radiocarbon dates show a wide range, but all remains have a terminus ante quem of 3400 BC on palaeogeographical (water level) arguments.
- 68 De Roever 1979; Kampffmeyer 1983. Hüde I yielded vessels with pointed and round bases made from local clays, which closely resemble the pottery of Swifterbant, but also several Rössen and Bischheim beakers made from loess.
- 69 Ten Anscher/Gehasse 1993; Ten Anscher forthcoming; Hogestijn 1990.
- 70 Deckers 1979.
- 71 For example Merselo-Haag (Wansleeben/Verhart 1995), Weelde-Paardsdrank (Huyge/Vermeersch 1982). The assemblages of Brandwijk and Hazendonk I comprised a small proportion of blades.
- 72 Van Gijn/Verbruggen 1992.
- 73 The German terms are: Walzenbeile, Felsrundbeile and Felsovalbeile. See K.-H. Brandt 1967, Schut 1987, 1991; Fokkens 1991a, 91-97.
- 74 Geröllkeule and Spitzhauen, respectively. For a discussion of their functions see chapter 8. Hulst/Verlinde 1976, 1979.
- 75 Spoolde: Clason 1985; a smaller, but nevertheless comparable assemblage was found at Donkerbroek-Zwembad, Friesland in 1933 (Fokkens 1991a, 97, 197, site 268).
- 76 Assemblages of a similar composition and size were found in settlement contexts at Ringkloster (late Ertebølle, Andersen 1973) and Hüde I (Deichmüller 1969).
- 77 Hazendonk: Van den Broeke 1983; Bergschenhoek: Louwe Kooijmans 1985, 1987; Swifterbant: Clason 1985.
- 78 Swifterbant: Casparie et al. 1977; Hazendonk: Louwe Kooijmans 1985; the ¹⁴C date of the Dümmer canoe is 4895 ± 80 BP = c. 3600 BC (Kampffmeyer 1991, 63-64).
- 79 Bergschenhoek: Louwe Kooijmans 1985, 1986, 1987. For eelspears see Meurers-Balke 1981.
- 80 These considerations are discussed in greater detail in Louwe Kooijmans 1998. Raemaekers 1999 discusses the part played by the Swifterbant group in the Neolithisation process.