9 Ornaments of jet, amber and bone

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Ornaments of jet, amber, bone and stone provide a small window onto the less utilitarian aspects of life on the dune. Jet must have washed ashore quite frequently, considering the number of unworked blocks, pieces of production waste and unfinished beads found at the site. The entire production sequence is represented. Amber was a rarer commodity. Two bone beads accompanied a small child as burial gifts.

9.1 Introduction

Some of the most fascinating artefacts found at the Schipluiden site are beads and pendants of jet, amber, quartzite and bone (fig. 9.1). The presence of such ornaments along with semi-finished products indicates that the site was not just briefly visited. People evidently spent enough time here to manufacture these ornaments, as well as to loose or discard them. The study of the ornaments can therefore lead to a better understanding of the role of the site in the settlement system. The use of non-local raw materials for the ornaments indicates external contacts, either in terms of special expeditions intended to procure the material, reflecting the extent of mobility of the occupants, or in terms of exchange with neighbouring groups. Ornaments also tell us something about the people who wore the beads and pendants, as they reflect aspects of the bearer's identity.

9.2 Materials and selection

A total of 37 jet artefacts were found, with a total weight of 212 grams (table 9.1). The jet objects include not only finished objects, but also raw materials, blanks and unfinished products, representing the different stages of production. Amber was found less frequently: only 17 artefacts, with a total weight of only ten grams. Other ornaments are a pendant made on a flat piece of quartzitic sandstone and three bone beads.

Figure 9.1 Some of the finished beads and pendants made of amber, jet and bone, together with an unfinished stone pendant.

	jet				amber			
	trench 10 pilot		total excavation		trench 10 pilot		total excavation	
excavated volume (m^3)	10	60	80	1000	10	60	80	1000
collected by hand in Units	–	2	–	32	–	1	–	10
idem from pit fills		–		1		–		–
total	–	*2*	–	*33*	–	*1*	–	*10*
4 mm sieve	2	–	4	–	–	–	7	–
4 mm sieve, extrapolated	–	12	–	50	–	–	–	88
Totals, recovered	*4*	–	*37*	–	*1*	–	*17*	–
Totals, extrapolated	–	*14*	–	*83*	–	*1*	–	*98*

Table 9.1 Composition of the sample of amber and jet ornaments. The extrapolations show the number of ornaments missed as a result of partial sieving.

The amber and jet were initially treated as part of the lithic assemblage, but were later identified as representing a separate category of semi-precious stone used for ornaments rather than implements. Because the objects of jet, and especially those of amber, are so small, the 4-mm sieve residues of the samples from all the trenches were examined for the presence of these materials. Only four jet finds were recovered from the sieve residues, two from samples from trench 10. Extrapolation of this figure to the entire excavated area suggests that a total of 46 jet artefacts were overlooked during the excavation, *i.e.* more than 50%. This proportion is even greater in the case of amber artefacts. A total of ten pieces of amber were recovered by hand and seven artefacts were encountered in the sieve residues. Extrapolation of this number to the entire excavated area suggests that a total of 81 amber artefacts (*i.e.* 89%) were missed during the excavation. These calculations show that the numbers of amber and jet artefacts were probably quite similar, the amber artefacts only having considerably smaller dimensions than the jet artefacts. All the amber and jet artefacts were examined, irrespective of their size.

The number of bone beads is very small (N=3); one was collected by hand, the other two were found in one of the graves (see section 5.3.1). An unfinished pendant of quartzitic sandstone was also collected by hand. All in all, the described sample may be regarded as representative in qualitative terms, but not in quantitative terms. Of a calculated total of 185 beads originally present on the site, 58 were recovered; the other 127 were overlooked as a consequence of the partial (8%) 4-mm sieving procedure. The number of beads recovered from pilot trench 10 shows that this calculation should be considered a rough estimation rather than an accurate indication.

9.3 Methods

All the ornaments and the pieces of jet and amber without manufacturing traces were studied. Among the variables considered in the study are raw material, type, manufacturing traces, fracture patterns and metrical attributes. All the beads and pendants of amber and jet, including the semi-finished products, were also examined under a stereomicroscope (enlargements of 10-160×) and a metallographic microscope (enlargements of 100-560×) in order to study the manufacturing traces and detect wear patterns indicative of how the beads and pendants were worn.

9.4 Raw materials

9.4.1 Amber

Amber is a fossil resin, often displaying fossil inclusions of plant particles and insects. The colour varies from yellow via orange to dark red. All the amber found at Schipluiden is of the orange, translucent variety, except for one pendant, which is made of yellow, opaque amber. Amber has a very low specific gravity and is therefore readily transported by the sea. It occurs naturally in primary positions in Tertiary deposits along the southern shores of the Baltic Sea, and most of the Dutch amber is indeed of Baltic origin, but was collected on the northern beaches of the Netherlands.

There are three ways in which amber may have made its way to the coasts of the Wadden Islands and the province of Noord-Holland. In the first place, nodules of Baltic amber occur in Saalian boulder clay deposits, some of which lie in the North Sea Basin. Amber nodules may have been washed out of those deposits and deposited on the beaches of the Wadden Islands and, to a lesser extent, those of Noord-Holland. Secondly, amber nodules may also have been washed out by marine transgressions in the Baltic area. Those nodules will subsequently have been transported to the North Sea coasts of Denmark, the Netherlands and eastern England by sea currents. And thirdly, some of the amber may also derive from lignite deposits dating from the Pliocene in the north of the Netherlands and Germany (Huisman 1977). In the past, amber was to be found on the northern shores of the Netherlands in considerable quantities, allowing some people to make a living out of collecting it. Even today, amber can still be picked up on the Wadden

Islands (Waterbolk/Waterbolk 1991). Whether any amber was to be found near Schipluiden is difficult to say. The fact that amber was found in such small quantities (and in the form of finished objects only) indicates that it was a rare commodity, which was either incidentally picked up on the beach or obtained through exchange with Neolithic communities further north.

9.4.2 Jet

Jet is a carboniferous rock, akin to lignite, cannel coal and oil shale. It was used as fuel, but it can also be readily shaped into ornaments because of its softness and because it can be polished to a fine gloss. In mineralogical terms jet is defined as "a hard coal-black variety of lignite usually found in isolated masses in shale and representing coalified fragments of coniferous wood" (Pollard *et al*. 1981, 140). It is formed in areas where layers of plant matter cannot decompose because they are cut off from water. Instead, a process of carbonisation sets in, which may result in two kinds of jet: a soft variety in which annual rings are still visible (a sedimentary rock) and a hard variety (metamorphic rock), in which the plant cells have been completely compressed (Muller 1987). The hard jet displays a conchoidal fracture, whereas the soft variety is layered and has horizontal fracturing planes. The differences between jet, cannel coal, lignite and oil shale essentially lie in the ratios of the carbon and mineral contents. Analysis of several British samples has shown that jet has a very high organic content (approx. 80%). The organic content of cannel coal is 76%, that of carbon and lignite 66.7%, while that of oil shale varies from 8.7 to 37.9% (Pollard *et al*. 1981, 140).

Jet still occurs on the other side of the North Sea, along the east coast of England in Jurassic Lias deposits in North Yorkshire. Other sources are the Jurassic Poseidon slate that outcrops in southern Germany in the Frankish and Schwabian Alps (Muller 1987). Huisman (1977) noted the occurrence of *Bruinkoolhout* in the same Pliocene lignite deposits in the northern parts of the Netherlands and Germany in which he also encountered small lumps of amber. He argued that pieces of this material may have been washed out of these extensive deposits in tidal channels of the North Sea and subsequently deposited on the coasts. Quite a few fairly large jet artefacts were found at Schipluiden, including several large pieces of jet without manufacturing traces and some semi-finished products. The fact that several semi-finished products were discarded without further efforts to turn them into finished products suggests that this resource was not scarce. It should be borne in mind that the specific gravity of jet is 1.18 (Pollard *et al*. 1981), facilitating transport by sea. The jet may therefore derive from the Yorkshire deposits, having been transported by currents in the North Sea, but another source in for example the Normandy coast, cannot be ruled out Attempts have been made to source jet: Muller (1987) claims that the ratio of the aluminium, silicon and sulphur contents is diagnostic of different sources of jet. However, Pollard and others (1981) noted considerable variation in the elements assumed to be diagnostic in sourcing jet and dismissed the possibility of sourcing.

9.4.3 Stone and bone

The other ornaments include a flat piece of quartzitic sandstone with an incomplete perforation and three bone beads. The quartizitic sandstone was probably obtained together with the other stones (chapter 7).

The two tubular bone ornaments were made on a hollow long bone of a bird. The third bead was produced on an ear bone of *Sus scrofa/domesticus*.

9.5 Production and use of ornaments

9.5.1 Jet beads (tables 9.2-3)

The entire production sequence of the jet beads is represented in the Schipluiden assemblage, from chunks of raw material to highly polished beads (figs. 9.2-4). It is generally assumed that flint blades were used to cut blocks of jet to a size close to the intended size of the beads. Four used zones on flint artefacts show traces resembling those observed on flint tools used to cut jet in experiments (chapter 7). One rectangular block was found to contain a circumferential groove made with a flint blade. For some unknown reason the block was never cut in half (no. 3622, fig.9.3). Some of the jet has a laminated structure, which will have made it possible to split the blocks to the required thickness. This is only possible with soft, less jetonized pieces.

The blanks thus obtained were then either further sawn into shape, as can be inferred from cutting marks on the edges, or they were perforated first. All observed perforations were made with a solid drill, which resulted in a typical 'hour-glass'-shaped perforation (fig. 9.3). The perforations were made from the two opposite aspects, with the two halves meeting each other in the narrow bit in the middle. The perforations all show circular scratches, indicating that the drill was somewhat irregular, with protrusions. The perforations were most probably made with flint borers. Use-wear traces on some of the flint borers found at

		N=	min.	max.	mean
length	mm	37	0,8	43	5,85
width	mm	37	0,7	33	4,65
thickness	mm	37	0,2	16	2,59
weight	grams	37	0,1	45	5,73

Table 9.2 Jet artefacts, descriptive statistics.

type \ modification	not modified	flaked	complete perforation	partial perforation	perforation and polish	saw marks	indet.	totals
disc-shaped bead	–	–	2	–	2	–	–	4
tubular bead	–	–	1	–	2	–	–	3
prefabricated bead	–	–	5	4	–	7	–	16
flake	1	–	–	–	–	–	–	1
not modified	11	–	–	–	–	–	1	12
not applicable	–	1	–	–	–	–	–	1
Totals	*12*	*1*	*8*	*4*	*4*	*7*	*1*	*37*

Table 9.3 Jet ornaments, type versus traces of modification.

Schipluiden show that they were indeed used on mineral material (chapter 7). One large reamer shows traces closely resembling those observed on the experimental jet drill (fig. 9.2; see also chapter 7). Interestingly, the makers of the beads in some instances misjudged the positions of the two halves of the perforation and had to abort their work (no. 3565). This suggests that the material was not scarce and that the occupants had ample jet to work with. On the other hand, viewed from the perspective of two and a half centuries of use, only small quantities of jet were discarded or lost at the site.

The last manufacturing stage involved the further grinding of the bead into its final shape and the finishing of the perforation. The grinding may have been done with one of the grinding stones included in the lithic assemblage (chapter 8). Experiments have shown that jet can be quickly ground and polished to an intended shape, resulting in a very bright, smooth polish on a grinding stone made of fine sandstone. Only one small grinding stone with some bright patches of polish bears some similarity in wear traces to the experimental jet polishing stone. The archaeological polish is however somewhat 'flatter'. It may be that the grinding stones were multifunctional and that they were also used to polish the much harder flint axes. This would have obliterated or at least modified the jet working traces.

In the last stage of the production process the perforation was finished and smoothed. As described above, the initial perforations were made before the object was cut into its

Figure 9.2 Production of jet beads: raw material, roughouts, production waste and some of the flint implements displaying traces interpreted as resulting from cutting or drilling jet or an unidentified mineral material.

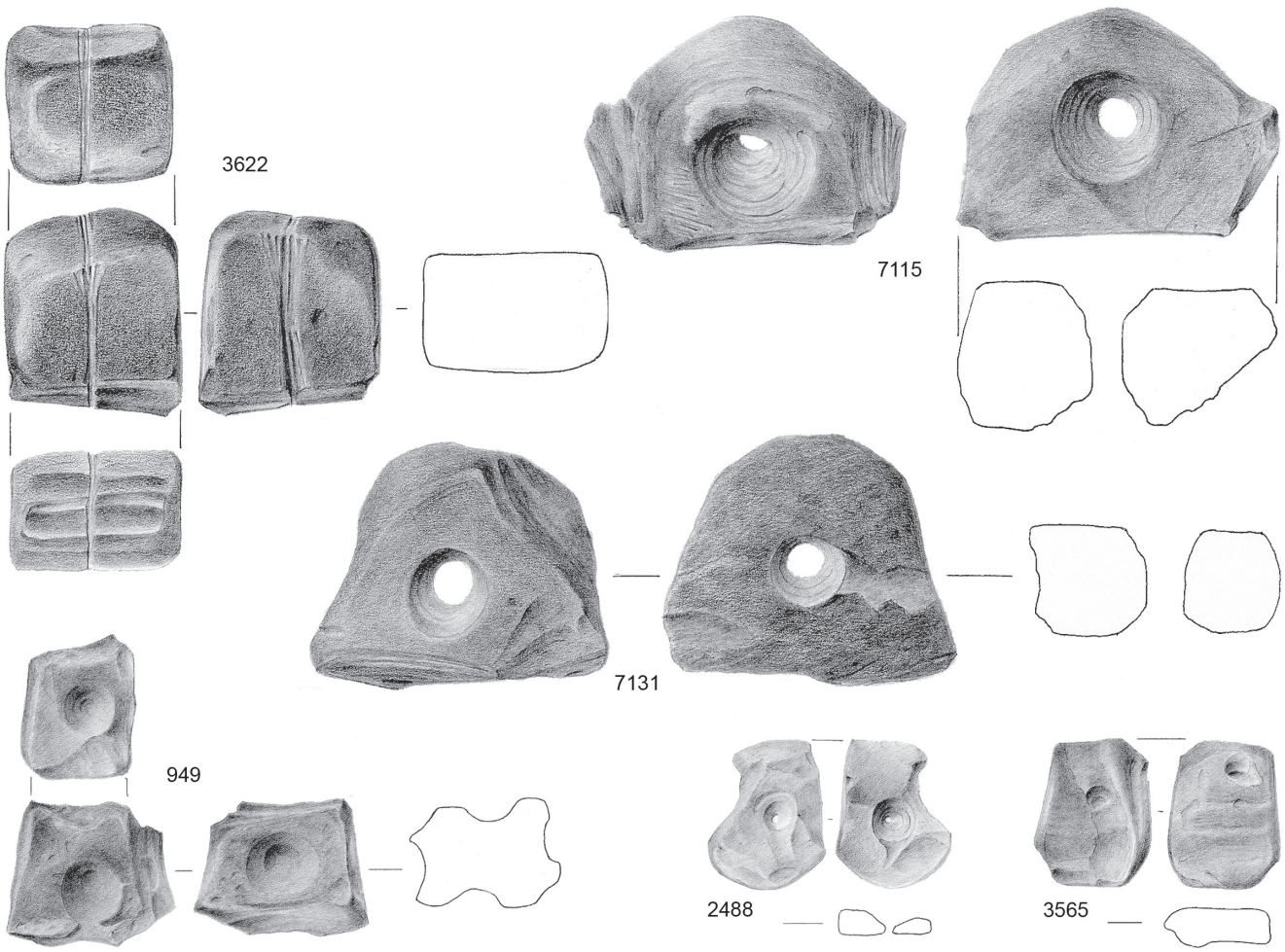

Figure 9.3 Production waste formed in jet bead manufacture (scale1:1).
top rows: block of jet showing cutting marks and 'hour-glass' perforations in roughouts
bottom row: incomplete perforations

final shape, and they still showed circular scratches from the flint borer. The finished beads all have a very regularised perforation, although traces from the 'hour-glass' perforation are still visible. It is not clear how the perforation was smoothed. Some silicious plant matter such as rough horse tail (*Equisetum hyemale*) may have been pulled through the perforation to smooth the circular scratches. This plant is highly abrasive and is known to have been used for polishing steel pans in bygone days.

Only seven finished beads were found – three tubular and four disc-shaped (fig. 9.4). The size of these two types of beads was standardised, especially that of the disc-shaped variety, which has a uniform diameter of 1.7 cm (±1.6-1.8 cm). The length of the tubular beads shows more variation – from 1.4 to 2.1 cm with a mean of 1.8 cm. It could not be determined whether the beads were worn on a string or sewn onto clothing. Some of the jet beads show signs of wear along the rim of the perforation, suggesting that they were suspended on a thread, but in none of the cases is the rounding very pronounced. One tubular bead shows an extremely well developed polish (no. 3436). This may be due to a long period of use. This bead shows no signs of damage; we may assume that it was lost.

9.5.2 Amber beads and pendants (tables 9.4-5)
Amber has a hardness of 2-2.5 on Moh's scale and can therefore be easily worked with flint. It has a homogeneous structure, does not possess fracturing planes and displays a conchoidal fracture, allowing it to be flaked into a rough shape. It is however very brittle. Amber was not found in

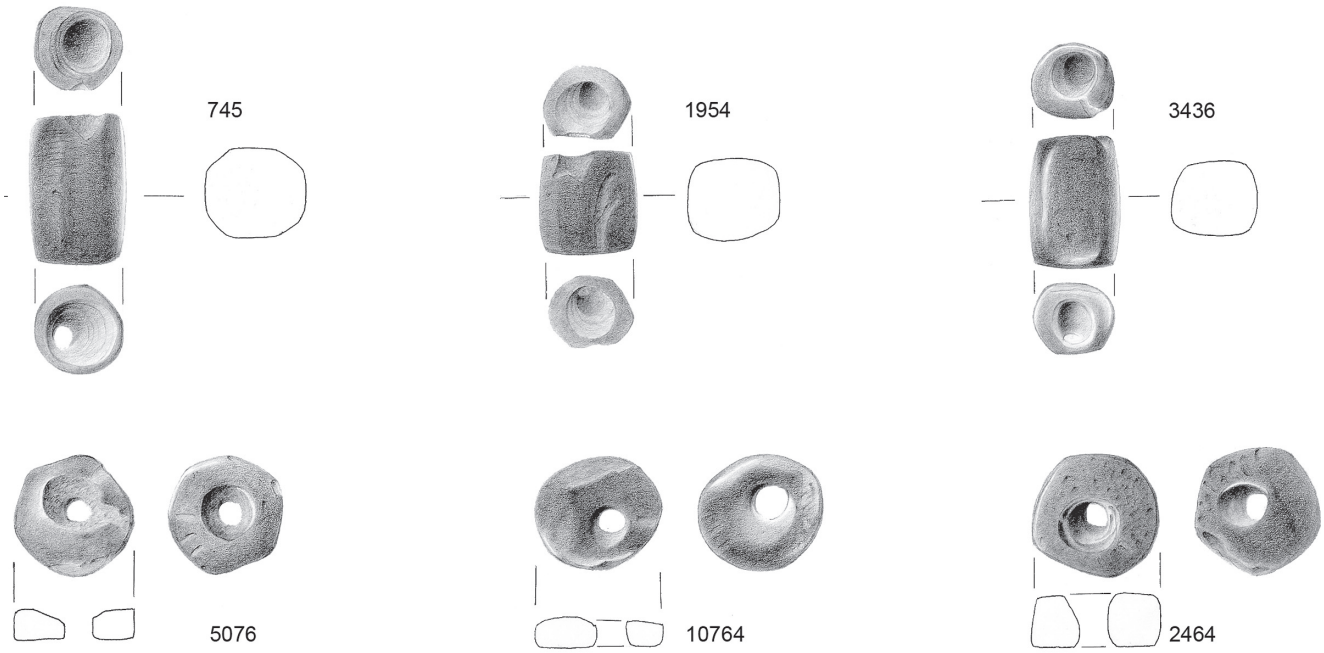

Figure 9.4 Jet beads (scale 1:1).
top row: tubular beads
bottom row: flat, cylindrical beads

such large quantities at Schipluiden as for instance at the late Neolithic site of Aartswoud, where the entire production process of amber ornaments was represented (Piena/Drenth 2001). At Schipluiden only finished beads, pendants and unmodified material were found (fig. 9.5).

A blank can be produced from a nodule of amber in two ways: by flaking and by cutting. One artefact shows negatives formed in flaking. No cut marks were observed on the pieces of amber. Our own experiments showed that amber can be quite easily cut with flint tools, providing it does not contain too many internal cracks causing it to crumble under the pressure of the blade. Amber can also be cut with a thread (Hirsch 1987), evidence of which was observed on some of the amber beads found at Aartswoud (Piena/Drenth 2001). No such marks were observed on the Schipluiden amber though. Maybe the subsequent polishing process obliterated cutting marks.

Most of the perforations in the amber ornaments were made in a different way than those in the jet beads, using a hollow rather than a solid drill, which resulted in cylindrically shaped holes. This was clearly visible on one piece in which part of the plug at the bottom end of the perforation had survived (no. 7352). The perforations were completely smooth, indicating that the drill had a regular surface. Flint borers were evidently not used to drill these

		N=	min.	max.	mean
length	mm	15	0.6	11.0	2.03
width	mm	15	0.4	1.7	0.97
thickness	mm	15	0.4	1.0	0.68
weight	grams	17	0.0	1.8	0.59

Table 9.4 Amber artefacts, descriptive statistics.

modification / type	flake	flaked	complete perforation	partial perforation	perforation and polish	totals
pendant	–	–	3	–	–	3
bead	–	–	2	–	4	6
prefabricated	–	1	–	–	–	1
not modified	4	–	1	1	–	6
not applicable	1	–	–	–	–	1
Totals	*5*	*1*	*6*	*1*	*4*	*17*

Table 9.5 Amber ornaments, type versus traces of modification.

Figure 9.5 Amber beads and pendants, together with a piece of unmodified amber and a flint drill showing traces formed in contact with an unidentified mineral material.

amber beads and pendants. Hollow bird bones could perhaps have been used as drills. An exception is the one yellow amber pendant in the assemblage (no. 9096, fig. 9.6). This ornament has an irregularly shaped perforation, which was clearly made from two directions as the two halves do not quite meet. The perforation is also scratched, suggesting that it was made by means of a solid flint drill.

The number of finished amber ornaments is small: six beads and three pendants. The beads are almost round, and therefore differ from the tubular and flat disc-shaped jet beads. They are on the whole very small, with a mean length of only 1.26 cm (table 9.4). The pendants are irregularly shaped and vary in size from only 1 cm to 3.1 cm. Most of the amber beads show wear traces along the rim of the perforations, indicating that they were worn on a string. Four beads had broken in half, one of them recently.

9.5.3 Bone beads

Two tubular bone beads were found (no. 8091, fig. 9.7), both of them in grave 6, an inhumation of a young child (section 5.3.1). They were recovered from the fill of the pit and may be regarded as grave goods.[1] The beads were made on a hollow long bone of a bird. A similar type of bone, showing cut marks and fractures, was encountered amongst the worked bone. Cut marks are visible on the two beads, indicating that the bone was cut into smaller parts. The marks on one of

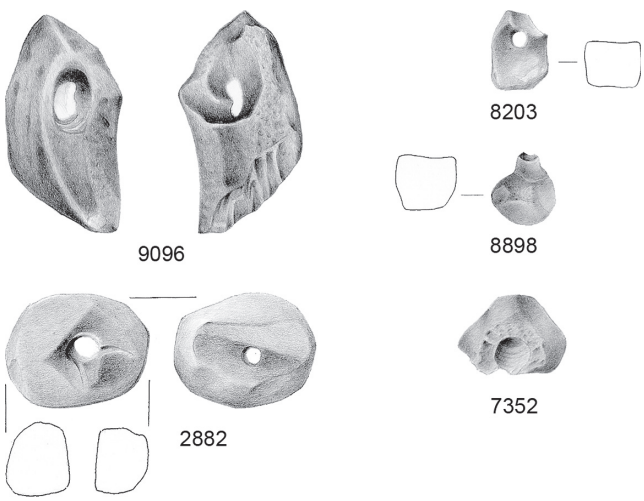

Figure 9.6 Amber beads (7352 with incomplete perforation) and pendants (scale 1:1).

the beads show that the bone was incised from two opposite directions, after which the part intended for the bead was broken off. The sharp end was subsequently ground to a smooth finish. There are no indications of a perforation. Most probably the bone was hollow and the bead could be strung without any further work. Attempts to see whether the beads could be refitted to one another or to the broken long bone with cut marks were unsuccessful.

The other bone bead (no. 8462, fig. 9.7) was made on an ear bone. Some of the holes are natural. There is one perforation, but it is difficult to follow its trajectory because it bends. Ear bones contain natural perforations and have a complex labyrinthine structure. The bead shows extensive polishing due to wear. It was probably discarded because it was worn through at the point where it was highly polished, which had resulted in an extra 'hole'.

9.5.4 Stone ornament

One small, flat, round pebble of quartzitic sandstone (no. 4072) shows a partial perforation (fig. 9.7) – an incomplete 'hour-glass' perforation. It is not clear why the perforation was made from one side only and never finished. No traces of wear are observable. The pendant or bead measures 2.3 × 2.4 cm.

9.6 Spatial patterning

The spatial distribution of the beads and pendants, semi-finished products and unmodified pieces of jet and amber does not reveal any activity areas. The jet finds were recovered over the greater part of the excavated area, with the beads concentrated along the southeastern dumping zone (fig. 9.8). The same holds for the flint tools showing traces formed in working jet or mineral substances that could not be further specified. There may be one exception and that is a find recovered from trench 12 consisting of two pieces of jet accompanied by one flint tool with use-wear traces resembling those observed on experimental jet-working implements and one with traces from contact with a mineral substance. This concentration may represent an area where jet ornaments were produced.

The amber finds show the same spatial pattern (fig. 9.8). Apart from the two bone beads that are assumed to be grave goods, all the objects seem to have been either lost or discarded.

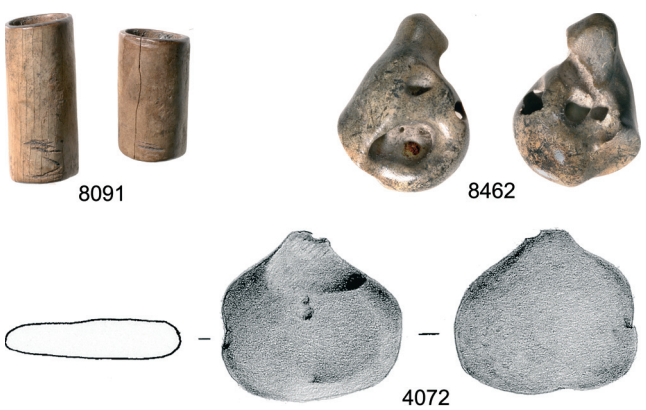

Figure 9.7 Bone beads and an unfinished stone pendant (scale 1:1).

9.7 Phasing

It is impossible to ascertain any diachronic differentiation. Quite a few of the finds concerned derive from Unit 20 and cannot be attributed to a specific phase. A very small number of ornaments were found in features and layers dated to the earlier occupation phases. No pieces of jet or amber can be attributed to phase 1, only one was dated to phase 2a, seven to phase 2b and fifteen to phase 3 (all of them from Unit 11). The phase 2b remains include one jet bead and one amber pendant, while the remains dated to phase 3 comprise two jet beads, an amber bead and an amber pendant. Comparison of the percentages of finished ornaments of jet and amber from phase 2b (29%) and phase 3 (26%) and the total percentage (28%) indicates that the relative quantities of waste and final products remained constant. Most of the remains however clearly date from the later phases of occupation, in contrast to the general find ratios.

9.8 Conclusions

Beads and pendants of amber and jet are common at Neolithic sites. They were not encountered at the late Mesolithic sites of Hardinxveld-Giessendam, nor at Hoge Vaart. However, they have been found at sites of the later Swifterbant culture. At Swifterbant S2 the head of the skeleton of an adult man was adorned with amber beads. Near the man's right ear was a pendant of pierced stone and on his chest a pendant made on a wild boar's tooth (Deckers *et al.* 1980). At Swifterbant S2 some perforated flat quartzite pebbles were collected, one with an incomplete perforation very similar to that found at Schipluiden. This site also yielded a large pendant of jet (Deckers *et al.* 1980). The megaliths of the Funnel Beaker Culture yielded numerous amber beads and, in smaller quantities, also jet beads. A good example is the site of the demolished *hunebed* at Glimmeres in the province of Groningen (G2), where 70 amber beads were found (Brindley 1986). Ornaments have also frequently been encountered at sites of the Vlaardingen group. Voorschoten yielded half of a jet bead with crudely bored holes made from two sides. Interestingly, the two halves of the 'hour-glass' perforation do not meet very well in this bead either (Glasbergen *et al.* 1967), as also observed in the case of a few of the jet objects found at Schipluiden. Leidschendam

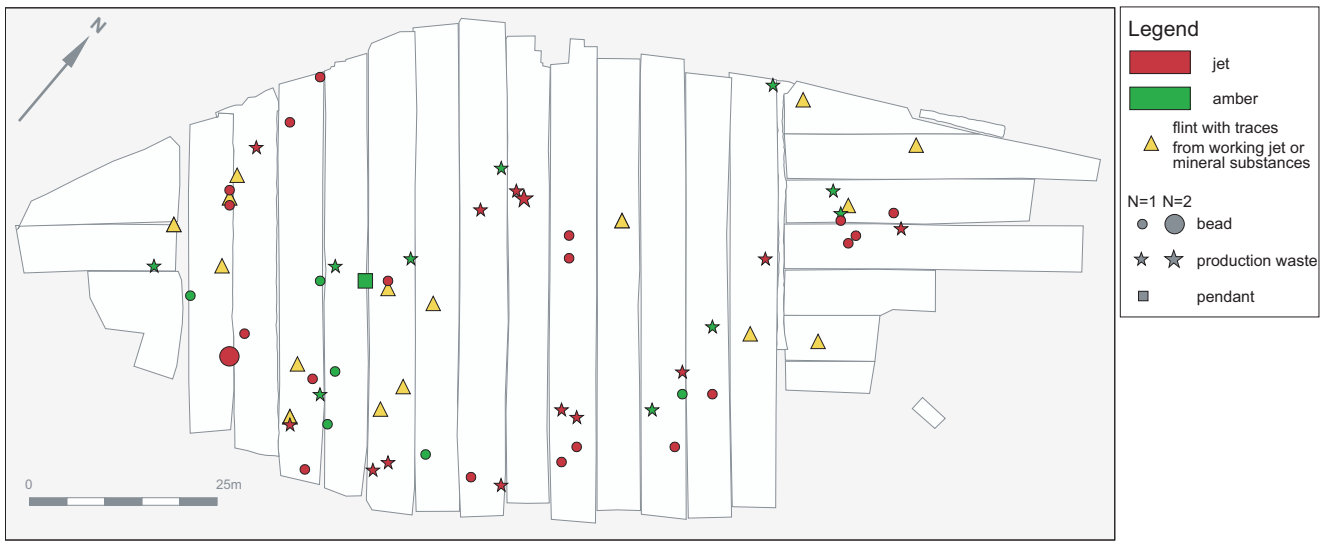

Figure 9.8 Findspots of the jet and amber ornaments and the flint tools used on mineral substances.

produced two broken jet beads and one small piece of amber (Glasbergen *et al*. 1967), while the type site of Vlaardingen yielded a couple of amber beads and a piece of unmodified amber (Glasbergen *et al*. 1961). At Vlaardingen a perforated dog tooth was recovered and at Hekelingen I a perforated canine of a brown bear (Modderman 1953). No such perforated teeth were found at Schipluiden or at any other sites of the Hazendonk-3 group. Assemblages from later Beaker times such as those of Artswoud and Mienakker also contain numerous beads made predominantly of amber (Piena/Drenth 200; Bulten 2001). Amber beads have been found in Bronze Age burial contexts, too (Butler 1990).

Ornaments of jet and amber have also been recovered at contemporary sites such as Wateringen 4 and Ypenburg. At Wateringen 4 one jet bead came to light (Molenaar 1997). Some of the deceased buried in the cemetery of Ypenburg were adorned with amber and jet beads. In one burial two jet beads were found near the skeleton's shoulder; they were presumably sewn onto an item of clothing. Near the head of another body were three amber beads. A small bone ring had been placed around the finger of a five-year-old child (Koot/Van der Have 2001). Inland sites from the same period, such as Het Vormer, on the contrary yielded no ornaments.

The production sequence of amber beads has been demonstrated elsewhere (Piena/Drenth 2001). Jet beads are usually isolated finds and very few semi-finished beads have been found. At Schipluiden, however, the entire production sequence of jet beads is represented by the artefacts: from unmodified blocks of raw material to highly polished beads, including all the intermediate stages in the form of disregarded blanks and semi-finished beads. The production of amber beads is less clearly defined at Schipluiden. Both unmodified raw material and finished beads have been found, but the intermediate stages are not represented, with the exception of one flaked piece. Maybe this material was less readily available than jet, and greater effort was therefore made to avoid or repair mistakes during production.

Jet and amber may have been picked up on nearby beaches and do probably not reflect long-distance contacts of the site's occupants. The fact that jet was relatively frequently used to produce ornaments probably implies that this material was more commonly available than amber. This is further corroborated by the fact that the proportion of amber that was turned into ornaments is higher than that of jet: nine of the seventeen amber artefacts are finished products (53%), whereas the total of 37 jet artefacts includes only seven ornaments (19%). This indicates that amber was treated in a less careless fashion than jet. In historical times, amber was to be found more commonly along the coasts further north, in the northern part of Noord-Holland and in the other northern provinces; this may also have been the case in the Neolithic, which would explain why the number of amber objects relative to jet objects at Neolithic sites increases in a northerly direction.

It is difficult to say what meaning we should attribute to the fact that beads were produced locally on the dune. What does this mean in terms of group composition? Although (semi-industrialised bead production was often in the hands of men (Roux 2000), beads may well have been produced on

a small scale for the household by women, too. The number of mistakes made especially in the manufacture of jet beads, including the misjudging of the positions of the two halves of an 'hour-glass' perforation by approximately 3 mm, may even suggest that children were allowed to practice their skills on pieces of jet, which, presumably, were easy to obtain. If this is correct, it would support the supposition that Schipluiden was inhabited by complete social entities, encompassing men, women and children.

All of the beads and pendants described here will have served as ornaments for the occupants. Whether they were combined on a string or were worn sewn onto clothing is difficult to determine, though the position and extent of wear in the perforations provide some clues. One jet bead (no. 2464) was asymmetrically worn, suggesting that this particular bead was sewn onto something. Most of the beads show rounding around the circumference of the perforation, suggesting that they formed part of a string of beads. The perforations of the pendants are on the contrary asymmetrically worn. The two bone beads in the child's grave show no traces of wear.

Personal ornaments are generally believed to reflect social identity (*e.g.* Newell *et al.* 1992). Most of the beads found at Schipluiden cannot be considered intentional depositions, but were probably discarded or, incidentally, lost. This means that beads and pendants were taken along when the site was abandoned, worn as they habitually were. The only exception concerns the two bone beads that were buried as grave goods in a child's grave. The fact that these two beads show no traces of wear indicates that they were considered the child's personal ornaments, to be taken along to the afterlife. Bone ornaments may have been chosen specifically for child burials, because the only bone ornament found at Ypenburg likewise adorned a child. Unfortunately, the small number of beads found at the various sites makes it impossible to determine whether there were any differences between the groups in terms of personal ornaments. Generally speaking, flat quartzite pebbles, disc-shaped or 'barrel-shaped' amber beads, irregularly shaped amber pendants (their size depending more on the size of the available raw material) and disc-shaped jet beads seem to have been used from the early to the late Neolithic. Many of them have been found in burial contexts. The only perceptible difference is a predominance in the use of amber in the north and in that of jet in the south. This can probably be attributed to the relative availability of jet and amber, respectively.

notes

1 The beads were not found *in situ* in grave 6, but in the removed sand of the fill.

References

Brindley, A.L. 1986. Hunebed G2: excavation and finds, *Palaeohistoria* 28, 27-92.

Bulten, E.E.B. 2001. Het barnsteen van de laat-neolithische nederzetting 'Mienakker': Een onderzoek naar de bewerking van barnsteen in een nederzetting van de Enkelgrafcultuur. In: R.M. Heeringen/E.M. van Theunissen (eds), *Kwaliteitsbepalend onderzoek ten behoeve van duurzaam behoud van neolithische terreinen in West-Friesland en de Kop van Noord-Holland. Deel 3 Archeologische onderzoeksverslagen,* Amersfoort (Nederlandse Archeologische Rapporten 21), 471-481.

Butler, J.J. 1990. Bronze Age metal and amber in the Netherlands I, *Palaeohistoria* 32, 47-110.

Deckers, P.H./J.P. de Roever/J.D. van der Waals 1980. Jagers, vissers en boeren in een prehistorisch getijdengebied bij Swifterbant, Z.W.O.-jaarboek 1980, 111-145.

Glasbergen, W./J.A. Bakker/E.C.L. During-Caspers *et al.* 1961. De neolithische nederzettingen te Vlaardingen. In: W.Glasbergen/W. Groenman-van Waateringe (eds), *In het voetspoor van A.E. van Giffen*, Groningen, 41-65.

W.Glasbergen/W. Groenman-van Waateringe/ G.M. Hardenberg-Mulder 1967. Settlements of the Vlaardingen culture at Voorschoten and Leidschendam, *Helinium* 7, 3-31.

Hirsch, K. 1987. Bernsteinverarbeitung in der Jungsteinzeit, *Archäologische Informationen* 10, 185-193.

Huisman, H. 1977. Over het voorkomen van bruinkoolhout en barnsteen in de ondergrond van Noord-Nederland en Noord-Duitsland, *Grondboor en Hamer* 5, 154-160.

Koot, H./B. van der Have 2001. *Graven in Rijswijk. De steentijdmensen van Ypenburg,* Rijswijk.

Modderman, P.J.R. 1953. Een neolithische woonplaats in de polder Vriesland onder Hekelingen (eiland Putten) (Zuid-Holland), *Berichten van de Rijksdienst voor het Oudheidkundig Bodemonderzoek* 4, 1-26.

Molenaar, S. 1997. Stone. In: D.C.M. Raemaekers *et al.* Wateringen 4: a settlement of the Middle Neolithic Hazendonk 3 group in the Dutch coastal area, *Analecta Praehistorica Leidensia* 29, 143-191.

Muller, H. 1987. *Jet*, London.

Newell, R.R./ D.Kielman/T.S. Constandse-Westermann/ W.A.B van der Sanden/A.L. van Gijn 1992. *An inquiry into the ethnic resolution of Mesolithic regional groups: a study of their decorative ornaments in time and space*, Leiden.

Piena, H./E. Drenth 2001. Doorboorde sieraden van de laat-neolithische site Aartswoud, gem Opmeer. In: R.M. van Heeringen/E.M. Theunissen (eds). *Kwaliteitsbepalend onderzoek ten behoeve van duurzaam behoud van neolithische terreinen in West-Friesland en de Kop van Noord-Holland. Deel 3 Archeologische onderzoeksverslagen*, Amersfoort (Nederlandse Archeologische Rapporten 21), 433-463.

Pollard, A.M./G.D. Bussell/D.C. Baird 1981. The analytical investigation of Early Bronze Age jet and jet-like material from the Devizes Museum, *Archaeometry* 23, 139-167.

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Roux, V. 2000. *Cornaline de l'Inde*. Éditions de la Maison des sciences de l'homme, Paris.

Waterbolk, H.T./H.T. Waterbolk 1991. Amber on the coast of the Netherlands. In: H. Thoen/J. Bourgeois/F. Vermeulen/Ph. Crombé/K. Verlaeckt (eds). *Studia Archaeologica: Liber Amicorum Jacques A.E. Nenquin*, Ghent, 201-209.