Universiteit Leiden
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Louwe Kooijmans, L.; Hamburg, T.; Smits, L.; Grünberg, J.M.; Gramsch, B.; Larsson, L.; ... ; Meller, H.

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Burial and non-burial at Late Mesolithic Hardinxveld (NL)

Leendert Louwe Kooijmans, Tom Hamburg and Liesbeth Smits

Zusammenfassung

Bestattung und Nicht-Bestattung beim spätmesolithischen Hardinxveld (NL)

Menschliche Überreste an den Basislagern von Hardinxveld sind in verschiedenen Stadien und unter unterschiedlichen taphonomischen Bedingungen erhalten geblieben, was neue Informationen zu einem ziemlich breiten Spektrum an Bestattungspraktiken im Spätmesolithikum geliefert hat. Sie betreffen die formelle Bestattung, die Aussetzung und eine Form der intentionellen Niederlegung. Die Fortsetzung dieses gleichen Spektrums [an Praktiken] im nachfolgenden Neolithikum ist hilfreich bei der Interpretation insbesondere von menschlichen Überresten, die über die Fundstelle verteilt gefunden wurden. Diese neuen Informationen verdanken wir den spezifischen holozänen sedimentären Bedingungen an Fundstellen, die dazu führen, dass sie nach einer langen Benutzungszeit in kurzer Zeit mit Silt abgedeckt werden. Die erwähnten Praktiken können sehr gut repräsentativ für weitere Gebiete der mesolithischen Landschaft sein, wo Informationen über Bestattungsrituale selten sind oder vollkommen fehlen.

Summary

Human remains at the Hardinxveld base camp sites, preserved in different states and under different taphonomic conditions, provide new information on a fairly wide spectrum of mortuary practices in the Late Mesolithic, comprising formal burial, exposure and a form of intentional deposition. The continuation of this same spectrum into the subsequent Neolithic is of help in the interpretation of, in particular, human remains found scattered across sites. This new information we owe to the specific Holocene sedimentary conditions at sites that were silted over shortly after their long-term use. The aforementioned practices may very well be representative of large tracts of the Mesolithic landscape, where information on mortuary rituals is scarce or even altogether absent.

1 Donken in the delta

The western part of the Netherlands, the so-called Rhine-Meuse delta, offers us extraordinary conditions for archaeological research. In actual fact, this is not a delta in the proper sense, but an extensive complex of Holocene sediments, deposited in a wide range of environments: coastal, tidal, estuarine, fresh marsh and fluviatile (Fig. 1). The deposits were formed under the influence of the gradual rise in sea level, and – further inland – the groundwater. Their thickness increases from several metres in the east to over 20 m at the coast.

It was only around the mid-20th century, following some major public works and more active archaeological attention, that it became evident that the greater part of these vast wetlands was inhabited throughout prehistory. Discoveries now date as far back as the Late Mesolithic, some even earlier. Such very old remains are however scarce because of the great depths at which they are embedded.

It's not surprising that prehistoric people chose to settle on the scarce elevations in these wetlands. Most prominent in this respect are the outcrops of Late Glacial river dunes along the lower courses of the main rivers, which are known as *donken* (the plural of *donk)* locally. These dunes have not been eroded and have survived intact under the stable conditions of the wide marsh zone of the intracoastal plain. Their rather steep slopes were gradually covered by clay and peat. The lower dunes may have completely disappeared, but the highest still rise to almost 10 m above the present ground surface.

Prehistoric use of these dunes was first established as a result of prospection by local amateur archaeologists in the early sixties of the last century. Excavation of the Hazendonk site in the seventies revealed systematic occupation throughout the Neolithic from 4000 cal BC onwards[1]. Rich settlement refuse was found to be embedded at distinct levels in the Holocene sediments covering the dune slopes. Systematic deep-coring prospection of a sample of 22 of these dunes in the eighties showed that they in fact all bear traces of multiple use, at least from 5500 cal BC onwards, the lower limit of the corings[2]. It was concluded that the whole of this landscape was intensively exploited from the Late Mesolithic onwards, but also that the earliest surfaces were beyond archaeological reach, for financial rather than technical reasons.

1 Louwe Kooijmans 1987.
2 Louwe Kooijmans/Verbruggen 2011.

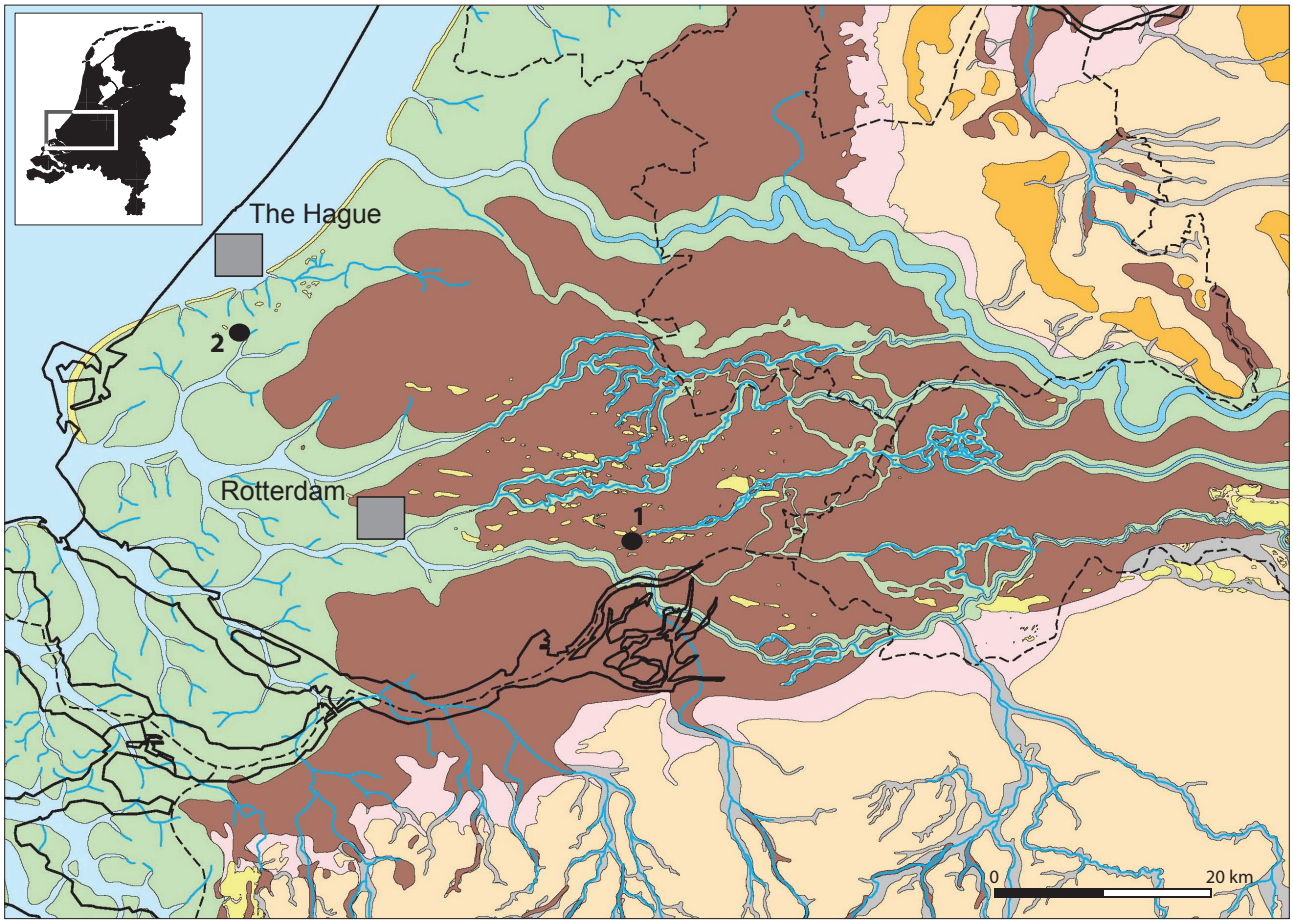

Fig. 1 Palaeogeography of the Rhine-Meuse delta c. 3850 cal BC showing the locations of Hardinxveld (1) and Schipluiden (2). Green: tidal areal; brown: peat swamp; yellow: sand (tops of *donken*).

2 Hardinxveld, the sites

Sooner than expected we got the chance to go down to those deep levels. Two low dunes lying approximately 1 km apart, with tops at –5 and –4 m OD and with indications of intensive occupation, were discovered during the prospection of the trajectory of a new railway line to be constructed between Rotterdam harbour and the German Ruhr area (Fig. 2–3). Unlike the outcropping dunes, the settlement area itself was expected to be well-preserved at these deeply covered sites, offering an altogether unique research opportunity, contrary in every respect to the general practice of investigating surface flint scatters on the Dutch uplands[3].

In 1997–1998 two deep trenches measuring 16 m x 24 m and 16 m x 28 m were excavated, reinforced by steel sheet-piling to a depth of 20 m and isolated from the groundwater by an impermeable bentonite layer, injected at a depth of 10 m, just below the deepest level to be reached (Fig. 4). Both trenches were dug so as to ensure that they would cover a stretch of the former water front, with the dune on one side and the adjacent marsh sediments on the other. It was estimated that the trenches would show a representative section of roughly 25 % of the sites.

The sites, named Polderweg and De Bruin, were dated by two series of 14 and 16 ^{14}C dates, respectively, obtained for a range of materials (uncharred seeds, charcoal, human and dog bone, charred food crusts on pottery) under stratigraphic control. Three main phases of occupation could be made out, and it was found that De Bruin was in fact the successor of Polderweg. Occupation started more or less simultaneously at Polderweg and De Bruin, the latter site apparently having been a subsidiary of the former. The use of Polderweg ended halfway through phase 2, by which time the dune had become completely submerged, and shifted to De Bruin, where it lasted until that dune also disappeared below the marsh deposits. This sequence, the short distance between the sites and the scarcity of dry land in the wide surroundings made us view the two sites in conjunction, and assume that they were used by one and the same local community.

The absolute dates of the phases have been slightly reviewed after publication as we became more aware of the great impact of the freshwater reservoir effect on the dates of the bones, in view of the major importance of aquatic food resources at the site[4]. More recently the dates of the encrusted food remains were also adjusted for the same reason. The

3 Full excavation reports: Louwe Kooijmans 2001; 2001a; English summary: Louwe Kooijmans 2003.

4 Mol/van Zijverden 2007.

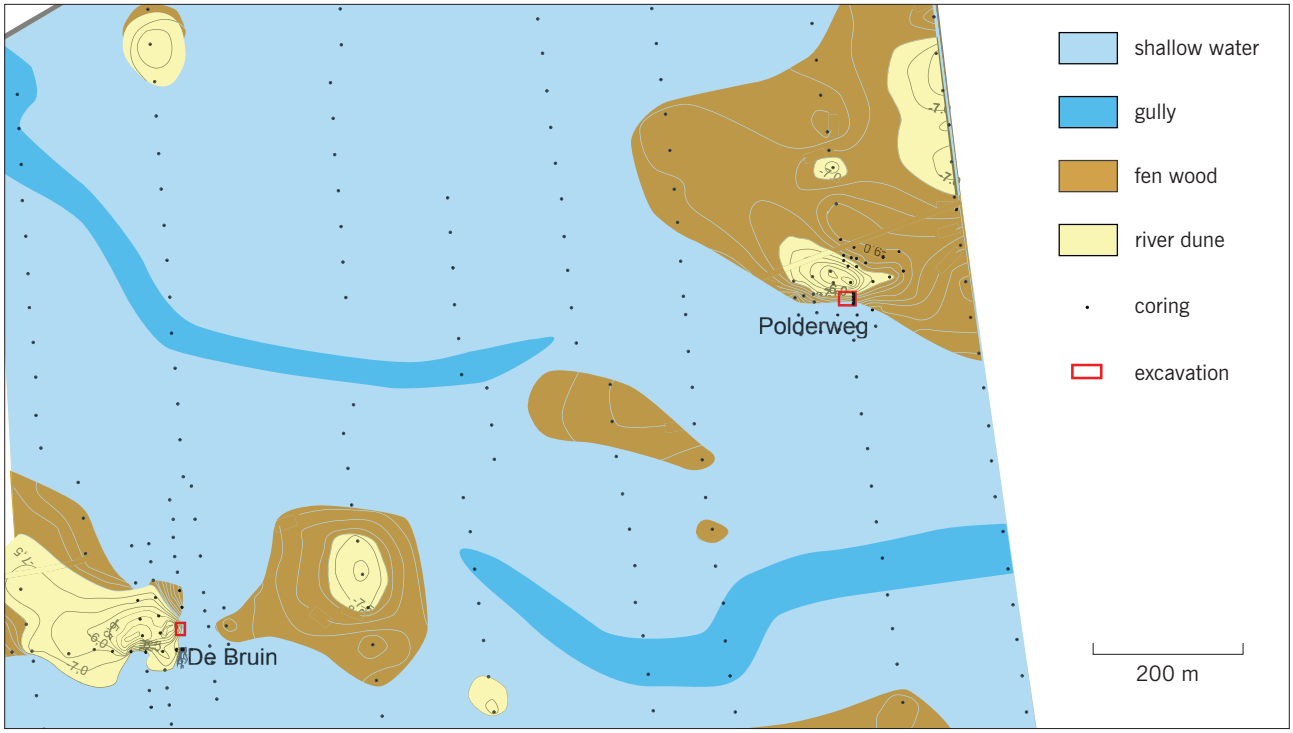

Fig. 2 Hardinxveld, palaeogeography c. 5000 cal BC showing the Polderweg and De Bruin sites.

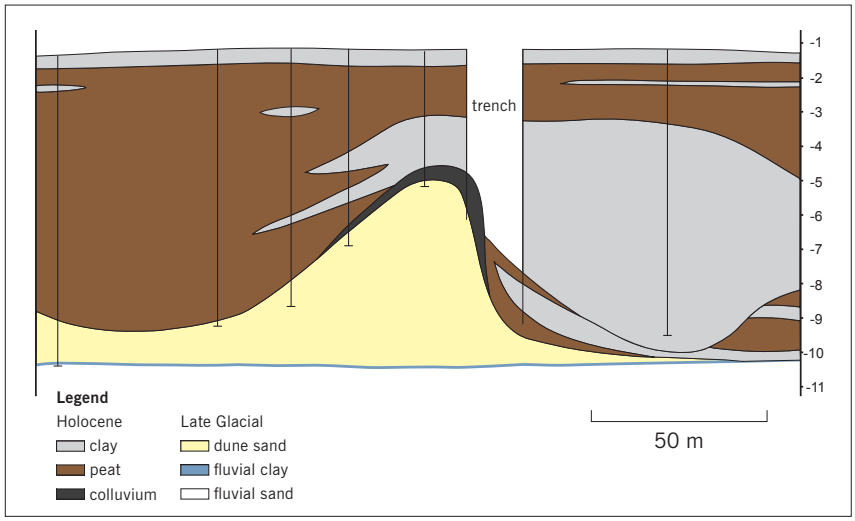

Fig. 3 Polderweg schematic section based on hand corings. Horizontal scale 25x vertical scale.

main consequences are a slightly later start of phase 1 and a later date for the introduction of pottery, some time during phase 2. But these corrections are not of great relevance for the topic of mortuary practices. The backbone of the chronology after all appears to be the stratigraphic sequences of the uncharred seed samples at both sites and the stratigraphic evidence in more general. Dates from Doel in the Lower Scheldt valley and Schela Cladovei in the Iron Gates Gorge show reservoir effects of 450–250 years under comparable conditions[5]. Similar high $\delta^{15}N$ values of 13.2–17.2 obtained for a large sample (N = 21) of human bones from both Hardinxveld sites and comparison with the botanical samples suggest a reservoir effect of 200–300 years[6]. This, along with the 2 σ margins of the calibrated dates, implies that we have to rely on the indirect (stratigraphic) dates of the burials. When the human bones and encrusted samples are left out of consideration, the dates shown in Table 1 are obtained for the occupation phases.

Together, the sites cover the trajectory of initial neolithisation north of the loess zone, from phase 1/2 onwards evident from the occurrence of imported pottery and the earliest local Swifterbant pottery, in phase 3 being represented by bones of domestic animals (cattle, sheep, goats and pigs). The major phase of interest here is the final Mesolithic phase 1,

5 Boudin et al. 2009; Cook et al. 2001; Fischer/Heinemeier 2003.

6 Smits/van der Plicht 2009, Tab. 4; Hans van der Plicht, pers. comm.

Fig. 4 Polderweg, the excavation trench covered by a huge tent.

	Polderweg	De Bruin	
phase 3	unoccupied	4700–4400	cal BC
phase 2	5000–4900	5000–4800	cal BC
phase 1/2	[5100]		
phase 1	5450–5300	5400–5100	cal BC

Tab. 1 Hardinxveld, phases, calibrated ^{14}C dates, not corrected for reservoir effect.

represented especially by the large assemblage at Polderweg. On the basis of firm evidence we may assume that the remains from this phase represent a base camp that was used by a number of cooperating households during the autumn/winter season. In the later phases there seems to have been a gradual shift to a more subsidiary function, with some additional use in other seasons. This is the context in which we have to view the mortuary practices discussed below.

3 Human burials

People lived at both sites, and they also died there[7]. This we know because their bodies underwent some form of treatment at the sites. Four human interments were found in the small parts of the sites that were excavated, two at each site, plus another three dog burials at Polderweg. The human remains are all of adults, two male, one female and one unspecified. Two were buried extended and one seated. The (incomplete) remains of one human and those of two dogs were found inarticulated. There were no grave goods (Tab. 2).

Polderweg burial 1 (Fig. 5) is the grave of a mature woman who was buried in the usual Mesolithic posture, extended on her back, without any grave goods. An early date within phase 1 is based on the stratigraphic position beneath the fill of a large pit, which is assumed to represent a sunken hut, and the poor state of preservation of the most vulnerable parts (ribs, vertebrae). The even earlier ^{14}C date should be corrected for the aforementioned reservoir effect of at least 300 years.

7 Excavation reports: Smits/Louwe Kooijmans 2001; 2001a.

Code	Posture	Sex	Age (y)	Stature (m)	Grave gifts	Lab. no.	^{14}C date BP	cal BC (without reservoir effect) *	Phase **
De Bruin									
Db G1	extended	♂	29–44	1.68	none	GrN-11.816	6710 ± 50	5717–5531	1 (early)
Db G2	seated	♂	35–40	1.70	none	GrN-11.815	6530 ± 50	5618–5373	1
Polderweg									
Pw G1	extended	♀	40–60	1.58	none	GrA-9804	6820 ± 50	5738–5588	1
Pw G2	inarticulated		adult	c. 1.70	none				1 (late)?
Pw G3	dog		> 1.5			GrA-9807	6650 ± 50	5590–5448	1 (late)
Pw G4	dog, inarticul.		adult			GrA-10902	5588 ± 60	4903–4553	3?
Pw G5	dog, inarticul.		> 1.5						1

* estimated at 200–300 years
** as based on stratigraphy

Tab. 2 Hardinxveld, burials, basic data.

Polderweg burial 2 (Fig. 6) is a concentration with a diameter of around 1.5 m high up the dune comprising some inarticulated human bones apparently deriving from a single individual, an adult male. The skeleton is far from complete. The skull and most of the axial skeleton parts are missing. All that have survived are a tibia (fragment), a fibula, nine vertebrae, two rib fragments, a left scapula, a right ulna and – remarkably – two left radii, implying that the remains derive from not one, but two individuals.

The bones were found at the top of the dark palaeo-soil of the dune, in what is assumed to have been a trampling horizon. This assemblage was initially interpreted as a disturbed burial, but that does not seem to be entirely in accordance with the evidence. If it had been a disturbed burial, the bones would have been washed down the slope and would have fragmented, weathered and decayed. The good preservation of the bones, especially that of a series of vertebrae, is in marked contrast to the condition of other remains from this horizon, suggesting that they quickly became covered with sediments. It is now considered more likely that we are here dealing with an intentional secondary burial of selected disarticulated elements from a slightly higher level[8]. This activity may on stratigraphic grounds be dated to the end of phase 1 or the transitional phase 1/2.

De Bruin burial 1 is a burial in the same tradition as that of Polderweg 1, of an adult man, extended on his back, without grave goods. The grave was intersected by a large pit, assumed to represent a hut, as a result of which the lower part of the body and lower limbs are missing. This is taken to be an argument for an early date within the occupation sequence (phase 1), implying a reservoir effect on the ^{14}C date of roughly 300 years.

De Bruin burial 2 (Fig. 7) contained the remains of an adult man in a seated posture, without grave goods. The grave pit will have been at least 90 cm deep, in view of the stature of the seated man, and must have been reinforced in some way, since part of the body and the head collapsed at some stage and came to rest between the two lower limbs. Some skeletal elements of the upper part of the body have not survived; they presumably decayed after collapsing. The grave was dug into the thick colluvial deposits and was filled with those same deposits, implying a date in an evolved stage of phase 1, which is also confirmed by the ^{14}C date. This again points to the same reservoir effect as for burial 1.

8 The concentration was found close to the wall of the trench, but the confined distribution makes it unlikely that the missing skeletal parts were somewhere outside the excavated area. A pit fill may be easily overlooked in a sequence of more or less sandy peat layers. It is unlikely that a skull that was found 2 m away and 50 cm higher in the stratigraphic sequence (phase 2) is associated with this concentration of bones.

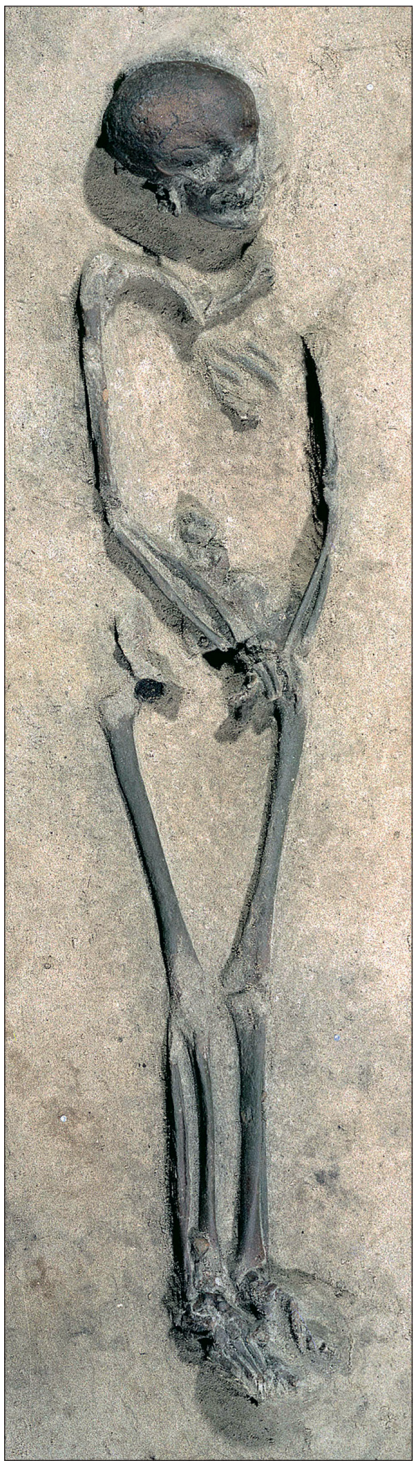

Fig. 5 Polderweg, burial 1, burial of a mature woman in extended posture.

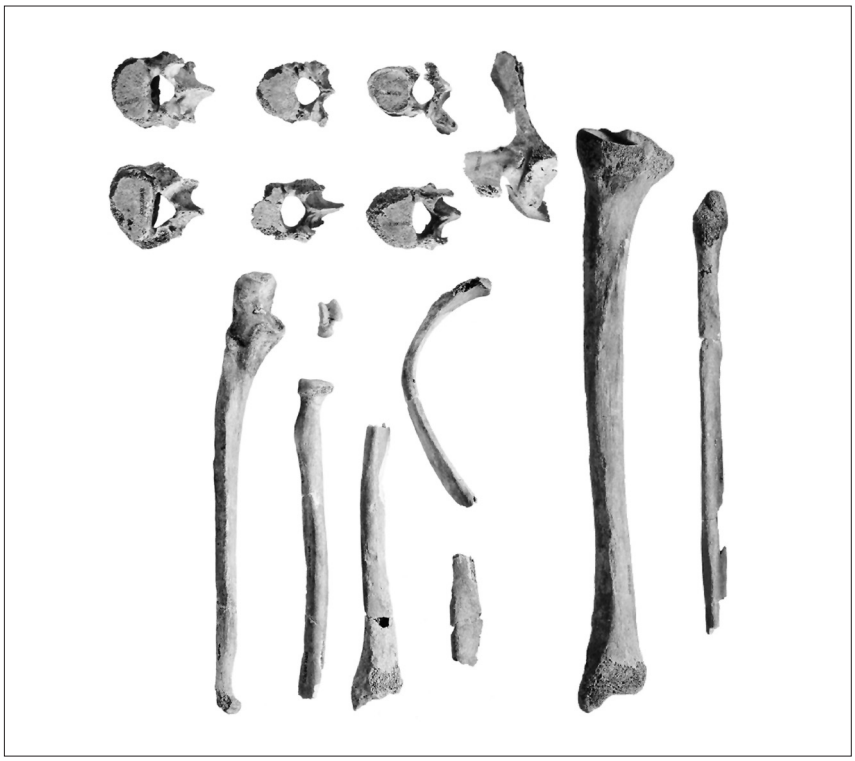

Fig. 6 Polderweg, burial 2, bones from a secondary burial of an adult person.

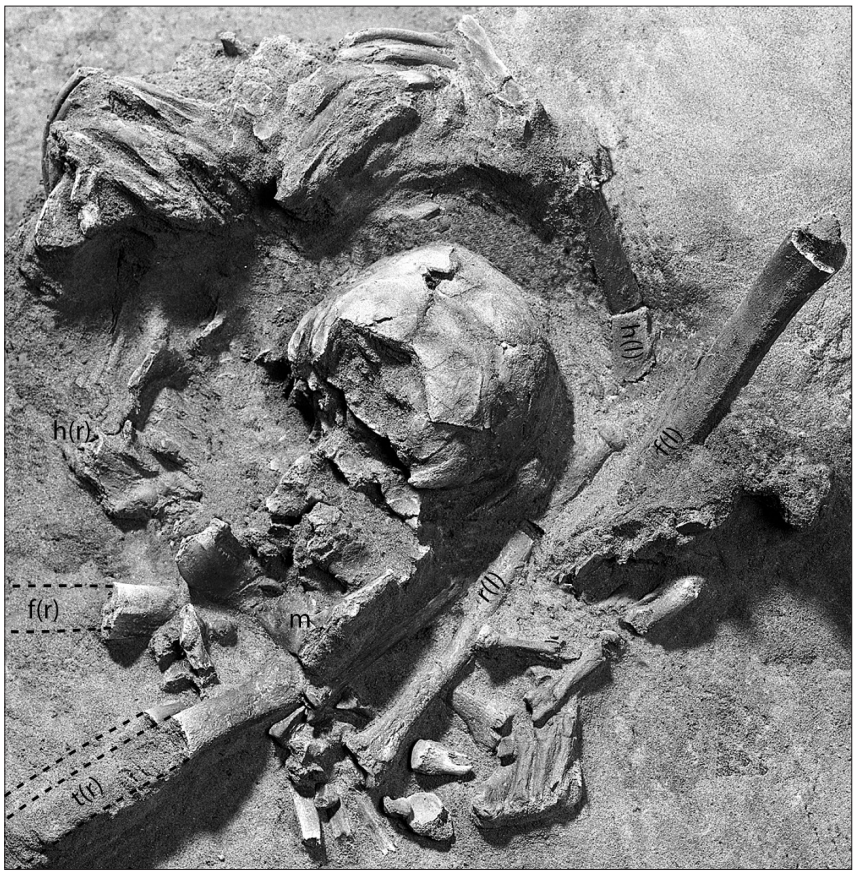

Fig. 7 De Bruin, burial 2, burial of an adult man in a seated posture. Some long bones were removed before the photograph was taken. The photo has been photoshopped for esthetic reasons.

h(r) = right humerus
h(l) = left humerus
f(r) = right femur
f(l) = left femur
t(r) = right tibia
r(l) = left radius
m = mandibula

Fig. 8 Polderweg, dog burial 4.

4 Dogs

Besides humans, some deceased dogs also received special attention. At Polderweg they were to some extent subjected to comparable practices. However, most dog bones were found among the settlement refuse, indicating that they had not received such special treatment.

One dog (No. 3, Fig. 8**)** was buried on its left side, completely articulated and well preserved, embedded in the colluvium of phase 1. No outlines of a pit were visible, implying that the pit was filled with the same colluvium, and hence dates from phase 1. This is in agreement with the ^{14}C date after correction for the reservoir effect.

A second dog (No. 4) was represented by a small cluster of some inarticulated bones of one and the same animal buried at the top of the fill of the same pit overlying burial 1. The stratigraphic position implies a date after phase 1. ^{14}C dating gave a surprisingly late date, especially when the reservoir effect is taken into account. The date may indicate an activity associated with phase 3 of De Bruin, at a time when the Polderweg dune was no longer occupied. By then the dune must have been totally submerged, its position marked only by its vegetation.

A third dog (No. 5) was represented by a cluster of bones deriving from a single animal found near the water's edge, at the bottom of the colluvium, allowing us to firmly date it to an early stage of phase 1. The remains are assumed to represent a dog whose body was left lying on the ground, where it decomposed and disintegrated. The fact that these bones belong together was discovered only during the post-excavation analysis of the remains that had been routinely recovered in the grid system.

5 Scattered human remains

Apart from the remains of the aforementioned individuals the sites contained a considerable number of scattered human remains, some of which were found during the large-scale wet-sieving of the find-bearing deposits. Many dental elements were recovered from the residues. These scattered remains date from all the phases, but especially Polderweg phase 1 – in absolute terms (the assemblage from this phase was in every respect the richest), but also in a relative sense, for instance in relation to the total number of identified animal bones (Tab. 3). Bones from the later phases are rare. For these reasons we will focus on Polderweg phase 1 in the following.

	NISP bone mammals	Human bone	Human-mammal ratio (%)	MNI	Juvenile	Adolescent	♂	♀	Adult
De Bruin									
phase 3	609	2	0.3	2	–	1	–	–	1
phase 2	1772	5	0.3	2	1	–	–	–	1
phase 1	347	3	0.9	3	–	–	3	–	–
Polderweg									
phase 1/2 & 2	613	3	0.5	3	–	–	2?	1?	–
phase 1	4166	77	1.8	6	2	–	3	1?	–
total	**7507**	**90**	**1.2**	**16**	**3**	**1**	**8**	**2**	**2**

Tab. 3 Hardinxveld, scattered human remains.

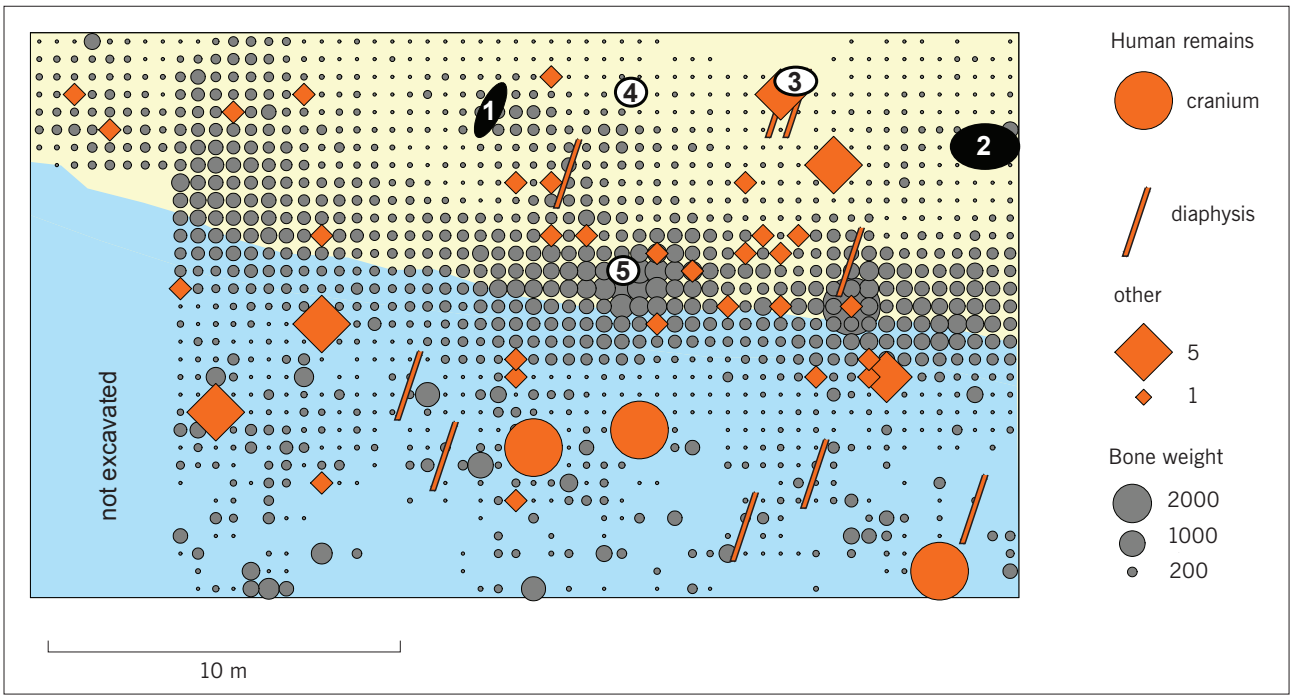

Fig. 9 Polderweg, phase 1, Final Mesolithic. Human remains in relation to former landscape zones and the distribution of animal bones expressed in bone weight (grams).
Yellow: outcropping dune sand; blue: aquatic deposits (clay, peat); black: human burials 1–2; white: dogs 3–5.

Most of the remains found scattered at the Polderweg site are from adults, with positive identifications for males, uncertain ones for females, one adolescent and three children. The children's remains comprise three permanent dental elements of a person of 10–15 years and two deciduous teeth of children of less than ten years old. They are one of the arguments for assuming the presence of complete households at this site, and hence for interpreting the site as a domestic base camp.

Fig. 10 Polderweg, human skull No. 22.639 from aquatic deposits, 8 m from the water's edge (Fig. 9, lower right corner).

The bones were found all over the excavated area, across all three settlement zones, but in different numbers in each (Fig. 9). Only a few bones were recovered from the former living area on the dune sand, a zone with relatively poor conditions for bone preservation. A slightly larger number came to light in the colluviation and dump zone on the lower dune slope. The bones found here are mostly small, durable fragments – dental elements and phalanges. The former water margin on the contrary contained some human skulls and shafts of long bones. Most remarkable are the four skulls that were found here. Three dates from phase 1 and one was contained in a peat layer associated with phase 2. The skulls were found at distances of 4 to 8 m from the former water's edge (Fig. 10), in what was then a reed marsh with clay deposition and peat formation. This appears to have been a toss zone, in which objects of various categories were discarded from the settlement. The finds comprise animal bones, quite a few damaged and broken bone and antler tools and even some exceptional implements, which were probably intentionally deposited here. In our opinion the latter also holds for the human skeletal parts that were found in this zone, because no natural process may explain their occurrence there.

The few remains that were found at the De Bruin site show similar patterns. In addition to some adult remains this site yielded remains of an adolescent and a 10-year-old child. The remains, which date from all the phases, were recovered mainly from the wetland margins of each phase. Remarkable is a large skull fragment of an adult male (older than 45) from phase 1.

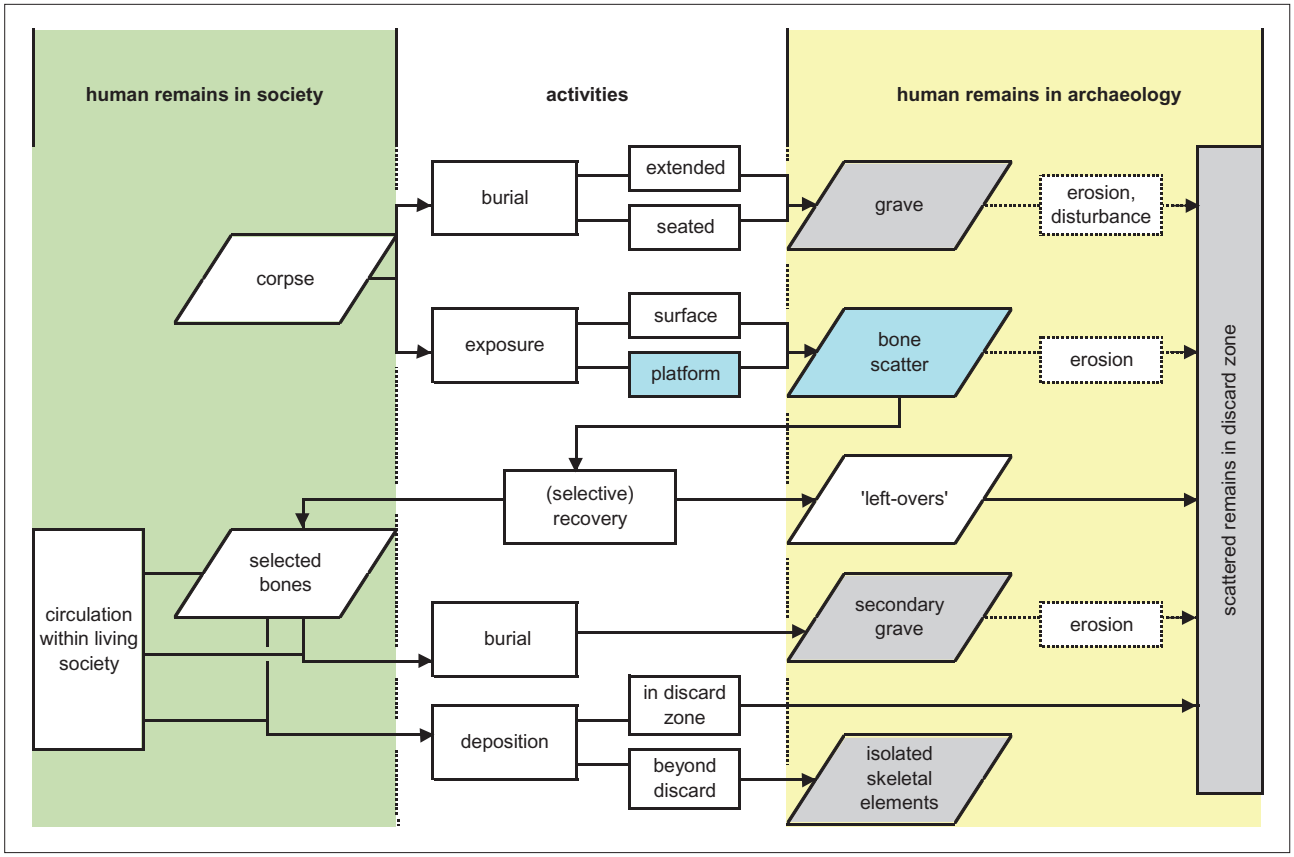

Fig. 11 Hardinxveld, schematic representation of the mortuary processes inferred from the evidence from Hardinxveld (grey), Schipluiden and Hekelingen (blue).

6 Evaluation: mortuary practices

The remains of humans and dogs were buried and deposited on the Hardinxveld dunes throughout the entire period of the dunes' use as settlement sites, from the earliest occupation until the very end, though with a marked decrease in intensity (Tab. 3). All formal burials date from phase 1, the Final Mesolithic. The numbers of scattered remains from the later phases show a decrease. This may be linked to the change to the Swifterbant Culture that took place around that time, or to a gradual shift in the sites' function, from seasonal base camps to sites with a more subsidiary role in relation to an assumed (but still hypothetical) initial Neolithic society on the southern uplands.

So these mortuary practices evidently took place at settled areas of the same period, but they need not necessarily have taken place during those areas' actual use. The remains may have been buried or deposited when the other dune was settled and the site in question had a subsidiary function. Another possibility is that the mortuary practices took place at the time when the sites were abandoned after a period of seasonal use, after which the sites may have remained deserted for many months. This is difficult to substantiate, but may be supported by the very late date of the remains of dog No. 3 at Polderweg, and the skull that was deposited there in phase 2. Two main mortuary practices may explain the diversity of the remains: formal burial and exposure of bodies, visualised in the flow diagram of Figure 11.

A formal burial will have been a rather casual affair, not marked in a durable way or memorised, and not in groups in special places. We should at any rate not see the burials as (parts of) cemeteries. In two of the four cases the sites' inhabitants appear to have been unaware of the presence of formal graves: Polderweg No. 1, which was overlain by the sunken floor of a later hut, and De Bruin No. 1, which was cut in half during the digging of a similar pit. It could be argued that ›such things happen‹ in the case of long-term use of restricted areas such as these dune tops in their wide swampy surroundings. The common practice seems to have been burial in the extended posture, like elsewhere in Europe. This was recently confirmed by a single burial at a previously intensively used dune top near Swifterbant, dated between 5500 and 4800 cal BC[9]. A small supposed cemetery of seated burials at Mariënberg is exceptional in the Netherlands, but also in a much wider context[10].

9 Hamburg et al. 2012.
10 Verlinde/Newell 2006; comments in: Louwe Kooijmans 2012; see also Grünberg 2008.

The second practice resulted in quite a diversity of inarticulated remains:

- the secondary burial of – either positively or negatively – selected skeletal parts (Polderweg Nos. 2, 4, 5);
- the intentional deposition of (again) selected, conspicuous skeletal parts – skulls and the shafts of major long bones – in the aquatic zone next to the dune.

These bones will either have been retrieved from formal burials, or never have been buried at all. In the latter case the corpses may have been exposed to the elements for some time, after which parts of the remains were collected. There are a few indications in the form of cut marks on a clavicula suggesting that people were actively involved in the process of defleshing[11]. This will have been followed by burial and/or deposition in places where the remains were out of view of the living, and irretrievable. Deposition in the water and the subaquatic sediments may be regarded as essentially also a type of ›burial‹, comparable with the ›cultic‹ deposition or offering of objects that was so widely practised in later times. It may be that not all remains were disposed of in this way. Some may have been temporarily kept and circulated in the living society, to be deposited or reburied after a certain period.

The small, durable elements that were found scattered all over the former settled area may be the last relics of such exposure to the elements followed by selective retrieval. It is precisely those parts that may easily have escaped attention, having been hidden for example amongst the vegetation. Such remains are commonly interpreted as relics from disturbed graves, but this is not very likely in the case of Polderweg phase 1. An MNI of six individuals is represented by the scattered remains, which would mean that at least six burials have completely disappeared within the restricted area excavated, whereas no partially disturbed burials were found there. This is in marked contrast to De Bruin, where neither of the two burials was still intact for different reasons, whereas there were very few scattered remains at this site. The number of remains of individuals dating from phase 1 is moreover remarkably high: ten in total, if we consider Polderweg and De Bruin together, as ›twin sites‹. In view of the optimum local preservation conditions it is interesting to compare this number with a rough estimate of the number of casualties. The calculated estimate for a site with a total of 20 inhabitants with a life expectancy of 30 years using the site on a six-month basis for a period of 300 years is 100 cases of death. Of that total, 25 should have been represented in the approximately 25 % of the site's area that was investigated in the excavation if the dead were buried or disposed of locally. With due allowance for all the uncertainties involved in such calculations, the representation of a *minimum* number of eleven out of 25 is striking. I would like to conclude that the remains of group members were frequently buried or disposed of on site, at least in phase 1.

These thoughts on the mortuary practices at Hardinxveld have much in common with those concerning the subsequent Swifterbant Culture, which may be considered the direct heir of the Final Mesolithic in many respects.

7 Continuity after 5000 cal BC

Middle phase of the Swifterbant Culture (4500–3900/3800 cal BC)

The Swifterbant Culture represents the first stage of neolithisation in the Lower Rhine Area and is in essence a continuation of the Late Mesolithic. What is known about the mortuary practices of this society can be seen to be rooted in those described for Hardinxveld. We owe much of our understanding of these practices to the good preservation conditions in the deep polders of the central Netherlands and the research that has been done there. A total of 37 buried individuals is known from 32 graves at seven sites, plus isolated bones from settlement contexts at six sites[12]. They all date from the middle phase of the Swifterbant Culture, c. 4400–3900 cal BC, and have recently been analysed by Raemaekers et al. (2007)[13]. The burials are characterised by the common extended posture of the bodies. New in relation to the Late Mesolithic is their grouping in small cemeteries and the occasional grave goods in the form of personal ornaments, but we also know of some isolated burials (Zoelen, Swifterbant S4), and it is questionable whether a group of burials at Urk with an irregular, open layout should be viewed as a cemetery.

There are a few unmistakable double burials, such as that of a woman and child contained in an isolated grave at Zoelen, and Urk 7, which contained the remains of three individuals. Two others listed as double burials are probably actually intersecting individual graves (Swifterbant S2 VII-VIII, Urk Nos. 4–5). Another phenomenon is that of partial burial, especially of skulls. In our opinion it would be going too far to describe this as a form of ›*pars pro toto* burial‹, as that would imply that the intention was to bury an individual's complete remains, which is questionable and in principle beyond our knowledge. Swifterbant S22-I is a good example of such a burial: a small round pit containing a complete skull, including the mandible, representing the separate burial of a detached head. Another example of a skull with a mandible is Urk No. 2, but in this case no pit fill was observed, so it is possible that other skeletal parts were overlooked. The position of the head in the soil did not differ from that in an ordinary burial, and local preservation conditions were poor.

To conclude, we know of quite a few isolated bones, also in Swifterbant contexts, that are considered to be ›a common characteristic of this period‹. The more robust skeletal parts prevail, especially dental elements, just like at Hardinxveld. Their presence seems to be clearly related

11 Smits/Louwe Kooijmans 2001, 430. Renewed study by Amy Gray Jones (2013) revealed some more traces.

12 Raemaekers et al. 2007.

13 The boundaries between the individual Swifterbant phases are still ill-defined.

to the favourable preservation conditions at the levee sites and the large-scale sieving that was done during the excavations. There are arguments for not relating these remains to disturbed graves. In the first place, none of the recorded graves showed any signs of disturbance. On the other hand, some of the graves overlapped, and bioturbation may have had some influence, for instance at site S2. But no formal burials were found at S3, while the occupation layers produced quite a few bones and (permanent) teeth. They are most probably to be attributed to some form of manipulation of human remains within the settlement area. This is most obvious in the case of a large part of a skull (a parietal bone of an adult male) found in the creek deposits next to site S4. Being too heavy to have been transported by water, it is assumed to have been intentionally deposited there, as in the similar cases at Hardinxveld. A comparable case is the skull fragment Urk No. 6 that was found at the site at the water's edge of the dune slope. This practice is not restricted to skulls: a large part of a mandible and the diaphysis of a tibia came to light as isolated finds at S3.

It has been concluded (Raemaekers et al. 2007, 543) that: »*the widespread presence of skulls and skull fragments and the absence of graves without skulls are indicative of rituals surrounding death other than burial. It suggests that some of the deceased were treated in a different manner. Perhaps they were simply placed outside the settlement proper and some of their bones were collected to circulate in society ending as settlement debris or ›pars pro toto‹ burial.*« To this we can add that the Swifterbant community in this respect had much in common with the preceding Hardinxveld community, the main difference being the more prominent role of non-burial (exposure) at Hardinxveld and formal burial, in burials grouped in small cemeteries, in the Swifterbant period.

Middle Neolithic Schipluiden (c. 3600 cal BC)

An obvious case of continuity is provided by the Middle Neolithic settlement of Schipluiden, whose complete excavation in 2003 was urged by the construction of a sewage purifica-

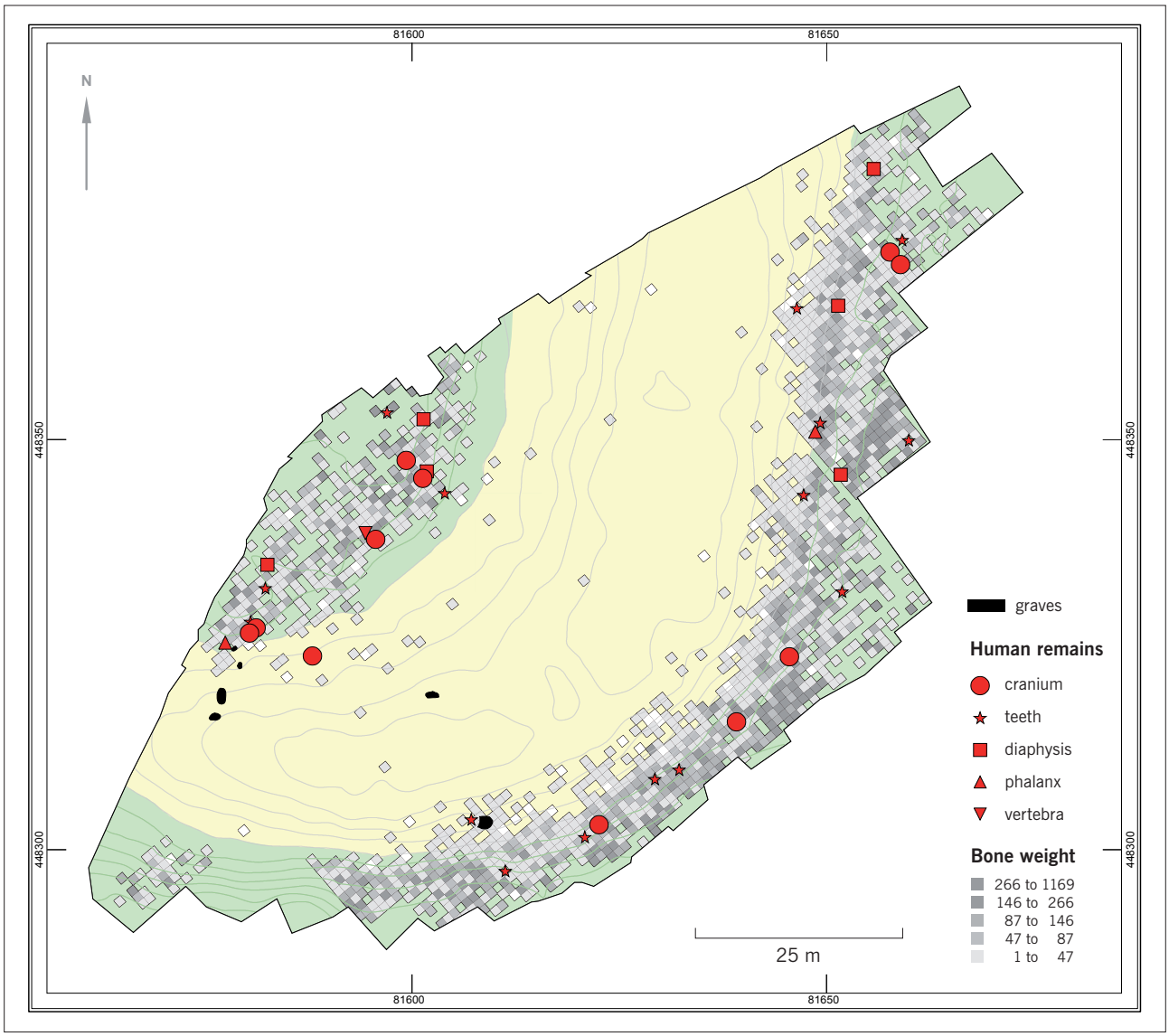

Fig. 12 Schipluiden, Hazendonk group, c. 3600 cal BC. Human remains in relation to former landscape zones and the distribution of animal bones expressed in bone weight (grams). Yellow: dune and settlement; green: former beach plain.

tion plant[14]. The site was situated in a landscape of coastal barriers and low dunes, protecting the area to some extent from incursions by the sea. People made use of a low dune, which was just high enough to keep their feet dry. The dune and the settlement measured about 0.5 ha. It comprised four to five farmsteads that were in permanent use for 200–300 years around 3600 cal BC. The inhabitants surrounded their yards with communal fences, which had to be renewed several times. This community represents an evolved stage of neolithisation. It was semi-agrarian, pasturing cattle on natural grassland in the surroundings, in which it also grew its crops, but hunting was still of some importance and fish in particular featured prominently in its diet, as can be inferred from isotopic data. In many respects this community may be considered the successor of Late Mesolithic Hardinxveld. This is also evident from the mortuary practices[15].

Six burials were found at the site. They contained the remains of individuals who had been buried on their sides, in contracted postures, in the Neolithic tradition, but – with one exception – without grave goods and representing only a minor fraction of the total population. Although restricted to one part of the settlement, this group of burials cannot be termed a ›cemetery‹ in view of its irregular layout and internal spacing.

The zone outside the fences, the transitional area between the dune and the surrounding grassland, was used for dumping domestic refuse. There was no water's edge here, as at Hardinxveld, but probably a narrow zone of reed marsh. Here, human bones were found mixed with animal bones, broken pottery and other discarded remains (Fig. 12). The human remains were mainly skull fragments, teeth, parts of long bones and some phalanges, i.e. the most durable or best identifiable parts. They were not restricted to the corner of the site containing the cluster of burials, but were scattered all over this zone. Age, chronological context and clustering suggest that some of the bones derive from the same individuals, but this is mere conjecture. There are no indications of the process of deposition. The absence of erosion makes disturbance of formal graves very unlikely. Equally unlikely is exposure at the surface at such a permanent settlement site.

Another point in common with Hardinxveld is the special role of dogs in society and the special – albeit different – treatment of their bodies. Some seem to have been killed, and their body parts dumped in the refuse zone.

While the traditional mortuary practices are prominently represented at Schipluiden, the contemporary site of Ypenburg, in the same region, shows a more ›progressive‹ ritual, characterised by the grouping of burials containing the remains of 42 individuals in two cemeteries, and the almost complete absence of isolated remains. The latter may however be a consequence of different preservation conditions.

Late Neolithic Hekelingen

There is remarkable evidence of non-burial mortuary practices from the Late Neolithic site Hekelingen III, close to Rotterdam, dated 2000 years later than Hardinxveld, but in a delta-based tradition that was ultimately rooted in the preceding Swifterbant Culture. In 1980 a 200-m-long stretch of the levee of an estuarine creek was excavated there, uncovering a series of apparently rather short-lived activity sites of the Vlaardingen Culture, dated 3100–2700 cal BC. At two sites a scatter of cremated human bones testified to *in situ* cremation. One scatter was disturbed by subsequent flooding, but the other was remarkably well preserved. Anthropological analysis in combination with the spatial pattern of the bones showed that an adult man was cremated in a seated position on the surface of the land[16]. Such a practice would normally not have left any traces in the archaeological record, but in this case the remains were perfectly sealed in by the steady deposition of Holocene estuarine clays. Even more remarkable is a configuration of six firm oak posts – one of which had disappeared due to erosion – close to another campsite. They were arranged in a rectangle measuring 1.2–1.5 m (Fig. 13). Between these posts, and at the former ground surface, were the fragmented remains of an adult man, comprising all the body parts. Oak is a species not represented in the wood samples from this site, suggesting that it was deliberately brought to the site for this specific purpose. The feature is assumed to represent the remains of a platform on which a dead body was exposed to the elements. We owe both these observations to the specific conditions in the zone of steady sedimentation in the Holocene wetlands. They give us a rare glimpse of other ways of treating bodies, besides burial – ways which may have resulted in isolated human skeletal remains, either at settlement sites themselves or off-site[17].

8 Conclusion

An overview presented in 2007 focusing on the mortuary practices in the Lower Rhine Area during the Mesolithic and Neolithic concluded that they were characterised by remarkable diversity unrelated to time and space[18]. The human remains from the period and region under consideration here were analysed in detail by Smits/van der Plicht (2009), mainly from an anthropological and an isotopic perspective. The aim of the present paper was to arrive at a better understanding of non-burial practices in part of the aforementioned period.

So far, a total of 76 formal burials have been recorded, containing the remains of 93 interred individuals, plus another 189 isolated remains representing at least 25 individuals, probably many more (Tab. 4).

14 Louwe Kooijmans/Jongste 2006.
15 Smits/Louwe Kooijmans 2006; Louwe Kooijmans 2007a and 2011 for the neolithisation process in general.
16 Hoogland 1985.
17 Louwe Kooijmans 1987 for general information about Hekelingen; 2007, 567, for this burial.
18 Louwe Kooijmans 2007.

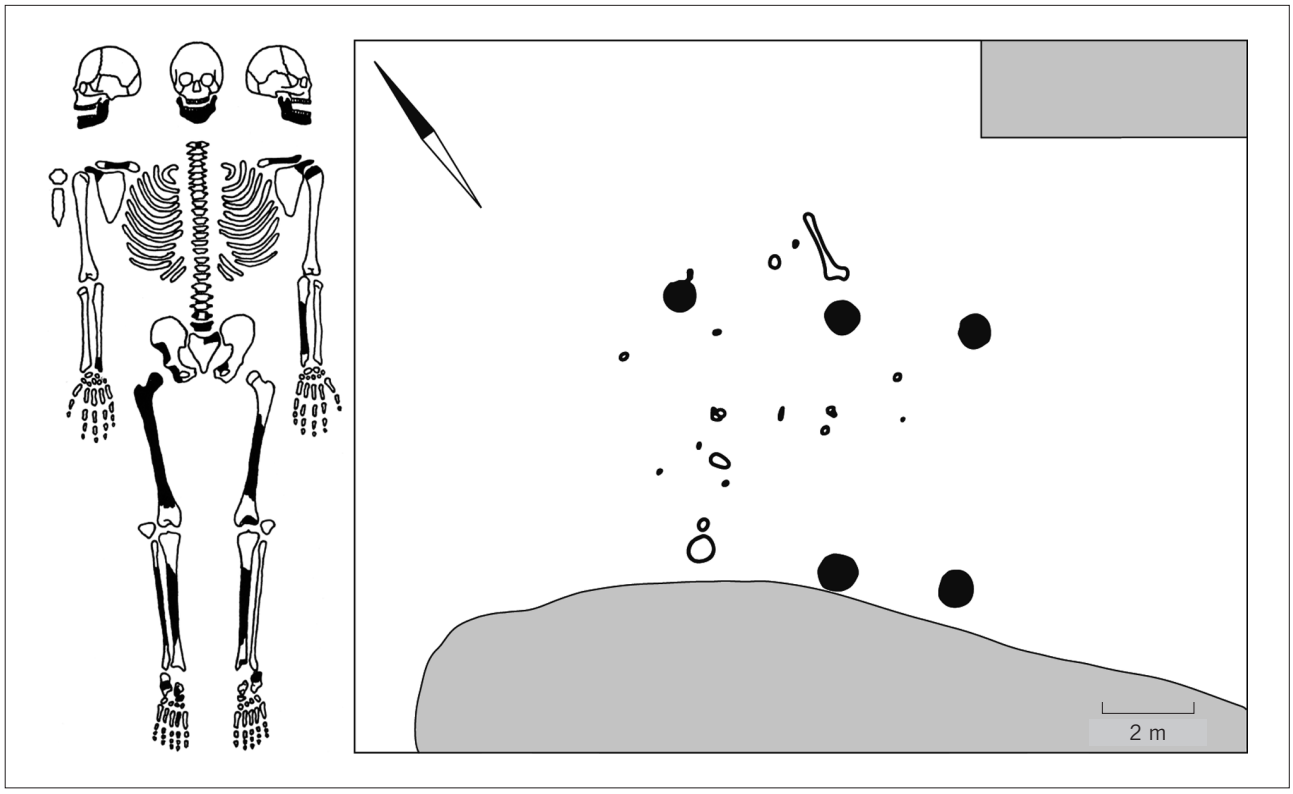

Fig. 13 Hekelingen, scatter M1, Vlaardingen Culture, c. 3000 cal BC. Remains of an adult man in relation to a six-post structure interpreted as an exposure platform.

They reveal a long continuity of two contrasting traditions:

- formal burial, initially mostly in an extended posture, replaced by flexed postures at the end of the period. The occasional seated posture does not seem to have been widespread. However, a group of five round pits at Mariënberg dating from the Late Mesolithic is assumed to represent a small cemetery, in spite of the absence of human remains[19]. This assumption is based on the profuse occurrence of red ochre in the pit fills accompanied by artefacts that are believed to be grave goods. This cemetery reflects a tradition that is entirely different from that attested in the wetlands;
- the greater part of the population did not receive a formal burial, but was exposed to the elements, either on the ground or raised on a platform. This was followed by different ways of handling the remains: secondary burial or deposition in water, optionally combined with the handling and circulation of selected bones in the living community for some time. Some of the bones were apparently not retrieved, but left at the site of exposure, perhaps because they had become hidden from view by vegetation. Only the most durable elements survived, to be mistakenly interpreted as ›discarded‹ in later times.

We owe this evidence to the favourable conditions of the delta environment, but the attested practices may be considered representative of a much wider region, comprising at least the whole Lower Rhine Area, because we may assume that mortuary practices were not restricted to a specific landscape or ecological zone. The practices expounded here may moreover be of relevance for other regions where stray human bones have been found at settlement sites.

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19 Verlinde/Newell 2006; comments in: Louwe Kooijmans 2012.

	Burials		Scattered remains N =			Ratio scattered:
	graves	indiv.	bone	teeth	total	burial
Late Mesolithic - Early Swifterbant 5500–4500 cal BC						
Polderweg	2	2	45	35	80	40
De Bruin	2	2	8	2	10	5
Swifterbant N23/N307	1	1	0	0	0	–
Swifterbant Culture, middle phase 4500–3800 cal BC						
Swifterbant S2	9	10	3	19	22	2.2
Swifterbant S3–5	1	1	2	13	16	16
Swifterbant S21–23	13	13	3	5	8	0.6
Swifterbant S11	2	2	0	0	0	–
Urk	8	10	2	0	4	0.4
Zoelen	1	3	0	0	0	–
Hazendonk group 3800–3400 cal BC						
Schipluiden	6	7	20	16	36	5.1
Ypenburg	31	42	5	8	13	0.3
	76	**93**	**88**	**98**	**189**	

Tab. 4 Burials and scattered human remains in the Netherlands, 5500–3400 cal BC.

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Tab. 1–3	authors
Tab. 4	after Raemaekers et al. 2007; Louwe Kooijmans 2001; 2001a; Louwe Kooijmans/Jongste 2006; Koot et al. 2008

Addresses

Leendert Louwe Kooijmans
Het Jachthuis, Imbosch 5
6961 LJ Eerbeek
The Netherlands
louwekooijmans@planet.nl

Tom Hamburg
Archol
postbus 9515
2300 RA Leiden
The Netherlands
t.hamburg@archol.nl

Liesbeth Smits
University of Amsterdam
Turfdraagsterpad 9
1012 XT Amsterdam
The Netherlands
E.Smits@uva.nl