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In touch with the dead : early medieval grave reopenings in the Low Countries

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3. The cemeteries – analyzing the data

This chapter contains the analysis of the data from each of the eleven cemeteries included in this study. The cemeteries comprise a total of 1169 graves, of which at least 208 were probably reopened. The cemeteries are distributed over the modern Netherlands and Belgian Flanders, with a concentration in the southern Netherlands. In the discussion of the data I will try to hold to a single format, but since the cemeteries vary considerably in number of graves, data quality and excavation circumstances, it is not possible or sensible to treat them all the same. A tailored approach is necessary. This section is concluded with a summary of the data, and an attempt to answer the practical research questions formulated in the introduction. These answers will be the starting point for the interpretations discussed in the final chapter.

3.1 Broechem

The Broechem cemetery (Belgium, province of Antwerp, municipality of Ranst) was excavated in the years 2001-2003 and 2007-2008. Most of the cemetery was expertly excavated and documented by the Flemish Heritage Institute (VIOE) (Annaert 2007; Annaert & Debruyne 2009; Annaert 2010; Annaert et al. 2011). Unfortunately, a few graves were dug up by the landowner prior to start of the official excavation.

Since some of the cemeteries' boundaries fell outside the reach of the excavation, it is uncertain how many graves remained undiscovered. However, a few of the cemetery's boundaries seem to have been reached, suggesting that the majority of the graves has now been excavated. At the moment of writing, most graves from this cemetery have not been published in detail, so my analysis is based on the field documentation and preliminary data that the excavators gathered in databases to which I was

very kindly given access. The Broechem cemetery is one of the largest and best excavated cemeteries in my dataset. Its analysis therefore served as a pilot and template for the assessment of the other cemeteries in this study. The cemetery is located on an 'island' of sandy loam surrounded by sandy regions. These soil conditions are very favorable for the preservation and visibility of archaeological features. The traces of grave constructions, post-depositional interventions and taphonomic processes were often very clearly demarcated in the soil. Unfortunately, the acidity of the soil is detrimental to the preservation of skeletal remains. Only a limited number of graves yielded recognizable human remains, often in the form of teeth and skeletal silhouettes. Only small quantities of actual bone were preserved, except for calcined remains from cremation graves.

Inhumation graves

The Broechem excavation documents and databases yielded information on 431 clearly defined human inhumation graves and 9 possible inhumation grave pits which lacked distinctive grave characteristics. There were also three horse inhumations. The inhumation graves of the cemetery's first phase are orientated west-east. The graves of the second phase are laid out south-north and concentrate in the southern part of the cemetery. The phases have not been dated precisely yet, but the cemetery as a whole dates between the fifth and the first half of the eighth century. Most people were buried in relatively simple wooden coffins, but there were a few exceptions, including trench graves, so called 'chamber graves', a tree trunk coffin, and possibly a bier. Most deceased were buried with at least a few grave goods, similar to what is found in other Merovingian cemeteries. A number of graves lacked preserved grave goods, but these may nevertheless have been furnished with items made from perishable organic materials like cloth and wood.

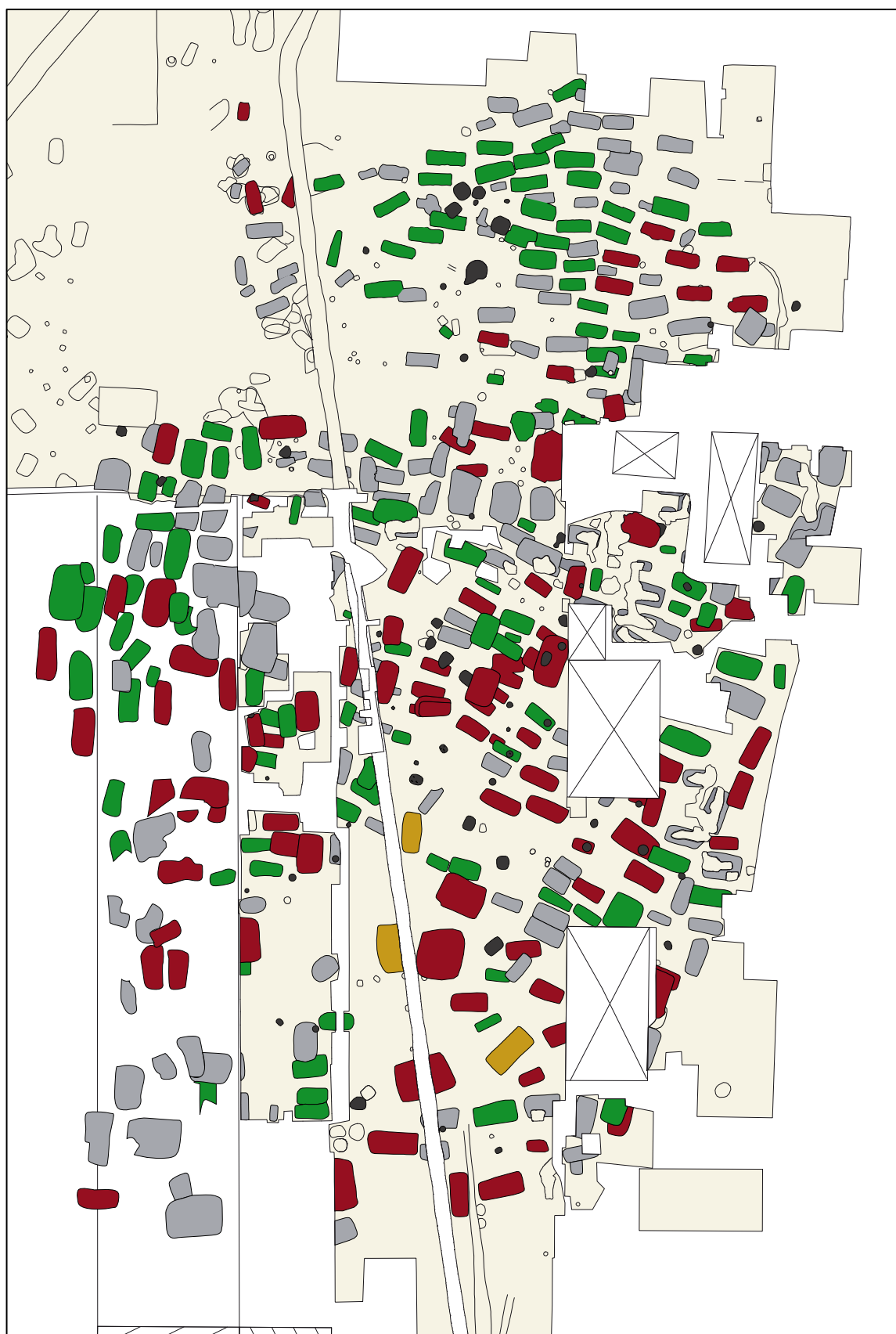


Figure 3.1.1 Map of the Broechem cemetery. Preliminary version provided by the excavators, not all graves are shown. Red=reopened inhumation, green=intact intact inhumation, light grey=indeterminate inhumation, dark grey= cremations, yellow=animal burials.

It seems that there were more graves with typical women's grave goods than with typical men's grave goods. Of 431 inhumation graves, 108 (25%) contained objects that are usually associated with women and only 66 (15%) contained objects that are usually associated with men. Two graves had a mixed set of grave goods with both typical men's and women's objects. The remaining 255 graves (59%) had only gender neutral grave goods, or no grave goods at all. Since almost no skeletal remains were preserved, the graves can only be assigned to a specific gender on the basis of the grave goods. We cannot check to what extent gender specific grave good sets were actually deposited in burials with individuals of the expected sex or whether the cemetery really contained more women's graves than men's graves.

Cremation graves

The excavation yielded at least 65 cremation burials, approximately 16% of the graves; a high number for a cemetery from this period, although not unheard of in this region (Annaert et al. 2011). The oldest cremation graves probably date to the same period as the earliest inhumation graves, the second half of the fifth century. The practice of cremation on the cemetery continues into the sixth century. Nearly all cremation graves consisted of a simple pit in which the cremation remains were buried, without any containers except possibly a wrapping of leather or cloth. There were pits containing bones and pyre remains (*Brandgrubengräber*) and deposits of compacted bones without pyre remains (*Knochenlager*). At least one cremation was buried in an urn and two others were furnished with small post-built 'cremation houses', which are the only above-ground grave markers preserved in this cemetery. The grave goods and dress accessories from the cremation graves had all been burnt, but they were otherwise very similar to those found in the inhumation graves.

The cremations were mostly scattered between and on top of the inhumation graves, but a conspicuous concentration was encountered in

the northern part of the cemetery, which was also where the urn burial and one of the cremation houses were found. Most cremation pits were dug less deep than the inhumation pits. As a result, a number of cremations were mixed in with the plough soil that covered the cemetery.

Post-depositional interventions

Of the inhumation graves 104 (24%) showed distinct traces of contemporary post-depositional interventions. A total of 124 graves (29%) was most likely left intact after the funeral. For the remaining 203 graves (47%), there is insufficient evidence to determine whether they were subjected to an intervention or had remained intact. Given the large number of indeterminate cases, in reality the percentage of reopened graves is probably much higher. If the distribution of the indeterminate group is similar to that of the other graves, we can postulate a total 194 reopened graves (45%) and 237 intact graves (55%). The topographical distribution of the reopened graves is shown in figure 3.1.1. Although the map is a preliminary version that does not show every grave that was excavated, it provides an adequate understanding of how post-depositional interventions are spread over the cemetery. The distribution is relatively even, except for a small area in the northernmost section of the cemetery where no reopened graves could be identified. The concentration of post-depositional interventions is densest in the middle and southern parts of the cemetery. These zones in the cemetery may to some extent date to different phases of the cemetery's use, so these variations in reopening rate may be related to changes in the treatment of graves that occurred over time. There is a difference between the intervention rates of presumed men's and women's graves. The cemetery has a relatively large number of graves with grave goods that are usually associated with women. Of all graves 25% were furnished with typical women's grave goods, while only 15% had typical men's grave

	Male	Female	Neutral	Total
Reopened	42% (n=28)	22% (n=24)	20% (n=50)	24% (n=102)
Intact	33% (n=22)	48% (n=52)	20% (n=50)	29% (n=124)
Indeterminate	24% (n=16)	30% (n=32)	61% (n=155)	47% (n=203)
Total	100% (n=66)	100% (n=108)	100% (n=255)	100% (n=429)

Table 3.1.1 Percentages of graves with typical men's, women's and gender neutral grave goods that were reopened or remained intact. The two graves containing both men's and women's grave goods were excluded.

goods. The remaining graves contained non-gender specific 'neutral' objects or lacked preserved grave goods altogether. However, post-depositional interventions occurred more often in burials that had grave goods associated with men. As can be seen in table 3.1.1, 42% of the graves with men's objects were reopened, compared to 22% of the graves with women's objects. This indicates that graves containing male gendered objects may have been preferred for reopenings.

The Z-test test shows that the difference between graves with men's and women's grave goods is significant for reopened graves ($P=0.005$, $F=2.825$). The difference is borderline significant for the intact graves ($P=0.055$, $F=1.918$) and not significant for the indeterminate graves ($P=0.220$, $F=-0.771$). The difference between graves with male and neutral grave goods is significant for reopened, intact and indeterminate graves ($P=0.000$, $F=3.852$; $P=0.017$, $F=2.383$; $P=0.000$, $F=-5.303$). The difference between graves with female and neutral grave goods is significant for intact and indeterminate graves ($P=0.000$, $F=0.565$; $P=0.00$, $F=-5.430$), but not for reopened graves ($P=0.575$, $F=0.565$).

No interventions in cremation graves

There is no evidence for post-depositional interventions in the cremation graves. Perhaps these graves were not reopened like the inhumations were. However, traces of potential post-depositional interventions would have been more difficult to recognize, since the cremation graves were often more shallow and had a simpler construction than the inhumations. Absence of evidence needs not be evidence of absence in this case.

Intervention types

Various types of post-depositional interventions were observed in the Broechem cemetery. Straightforward reopenings and intercuts between graves were the most common, but there were also a few cases of additional burials deposited in existing graves. Many graves were subjected to multiple intervention types. The relations between the various interventions were sometimes quite complex.

Additional burials

The deposition of additional burials in existing graves seems to be relatively rare in Broechem. This may partially be an effect of the poor bone preservation. Even if graves did contain multiple burials, this may not be apparent if the remains were not preserved. Grave 152 is the only case where the deposition of an additional inhumation was observed. The additional burial in this grave may have been reopened after its coffin had decomposed. Unfortunately this grave was documented with less detail than other graves in the cemetery, so the precise order of events is difficult to reconstruct. Graves 65, 55 and 54 were deposited in such a way that 55 almost completely overlapped 65 and 54 almost overlapped 55, thus making this cluster of intercutting graves look very similar to a single grave with multiple burials. Grave 982, which had also been reopened, showed traces of a possible second coffin at the bottom level, but these were not clear enough to be certain that it did indeed contain a second burial. Burials of cremation remains in existing inhumation graves were more common. It is not always clear whether the cremation remains were added to the grave during the funeral or

whether they were part of a post-depositional intervention. It seems both of these options took place. Four intact graves contain cremation remains (29, 349, 419, 960) which must have been deposited during the funeral. Five reopened graves contained cremation remains (22, 70, 211, 278, 445). In three cases (22, 70, 445) the cremation remains lay outside the reopening pit and had therefore most likely been deposited during the funeral. In grave 211 a concentration of cremation remains was found in the reopening pit, indicating that it was probably put in the grave during the reopening. Grave 278 is a curious case. The skeletal remains and grave goods appeared rummaged, indicating that the grave had probably been reopened, even though there were no visible traces of a reopening pit. It is unclear whether the coffin was still intact when the grave was reopened, but this seems likely as all the rummaged finds lay on the grave's bottom. A concentration of cremation remains was also found on the grave's bottom in the area of the reopening pit. The cremation deposit seemed to cut the coffin on this level. These findings could mean that the reopening and the deposition of the cremation remains were separate events, one before and one after the coffin had decayed. Alternatively, the reopening and deposition of the cremation remains took place simultaneously, at a time when the wooden container had started to decompose, but while there was still an open space inside.

Intercuts

Intercuts between graves were a very common type of post-depositional intervention in the Broechem cemetery. In total, 24% (n=104) of the inhumation burials were cut by a later grave. Intercuts occurred both in reopened and in unopened, otherwise intact graves. Of the reopened graves 29% had been cut by a later burial, versus 22% of the intact graves. The slightly higher percentage of intercuts in reopened graves is not surprising, since the new grave pits were sometimes dug into the fill of the old graves, thereby effectively reopening them. Eleven graves were reopened solely with an intercut, without any traces of a

separate reopening pit (28, 35, 36, 55, 65, 174, 389, 408, 1058, 1059, 1078). Interestingly, these invasive intercuts always seem to cut cleanly through the older graves' coffins, indicating that the wood had decayed when the intercuts took place. Invasive intercuts differ from regular reopenings in that they usually only disturb the grave's contents in the direct location of the new grave pit, and not the surrounding areas. In regular reopenings, especially if they took place while the coffin was still intact, the disturbance sometimes reached beyond the demarcated edges of the reopening pit. In a few cases like the one in figure 3.1.2, the diggers seem to have used the intercutting grave pit as a starting point from which they extended a reopening pit into the older grave (969 and perhaps 260 and 280). In most cases however, reopenings and intercuts seem to have been independent phenomena which did not take place at the same time.

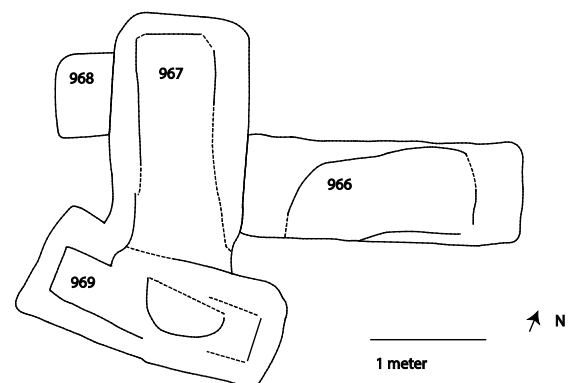


Figure 3.1.2 Grave 969 was cut by grave 967. The diggers may have expanded the grave pit to reopen grave 969. The excavators found it difficult to interpret and document the complex stratigraphic relations.

Reopenings

Straightforward reopenings are probably the most common type of post-depositional interventions in the Broechem cemetery. 'Reopenings' as a type are difficult to define, but usually a simple pit was dug into the grave, allowing the diggers access to its contents. After subtracting the eleven graves that were reopened solely by a later intercutting grave, we are left with 93 graves that reveal indications

of a regular reopening pit. The reopened graves will be analyzed in detail below.

Reopening methods

Despite the relatively well defined soil discolorations observed in Broechem, the reach of the reopening pits was sometimes difficult to determine. Some graves did not reveal traces of a reopening pit, even though the disordered layout of the skeleton and finds clearly indicated that they had been reopened (118, 137, 278). In the case of grave 70, there were no signs of a disturbance apart from the flecked appearance of the coffin's fill, which the excavators considered typical for reopened graves in this cemetery.

When traces of the reopening pits were found, these often gave valuable information about how the grave was reopened. Most graves were opened with a simple pit which entered the grave from above, usually in the area of the coffin. Disturbances in the graves' contents sometimes indicated that the actual intervention reached beyond the traces of the pit (for

instance in graves 53, 186 and 421). If the coffin was still intact when a grave was reopened, the diggers could probably have reached into the open space through a relatively small hole. Grave 94 revealed a very large reopening pit in the upper levels which disappeared once the level of the coffin was reached (see figure 3.1.3), suggesting that the diggers may have exposed and lifted the whole coffin lid in order to gain access to the grave. Perhaps a similar order of events can explain the lack of reopening pit traces in aforementioned grave 70 with its characteristic flecked coffin fill. In graves 286 and 435, the diggers may have approached the coffin from the side, either to lift the lid or to make a hole in one of its walls to access the contents. When interventions took place after the wood had decayed, the diggers had to rummage around in the soil that filled the open space in the coffin. This situation is reflected in graves like 137 and 813 where many grave goods and bones are mixed with the reopening pit's fill.

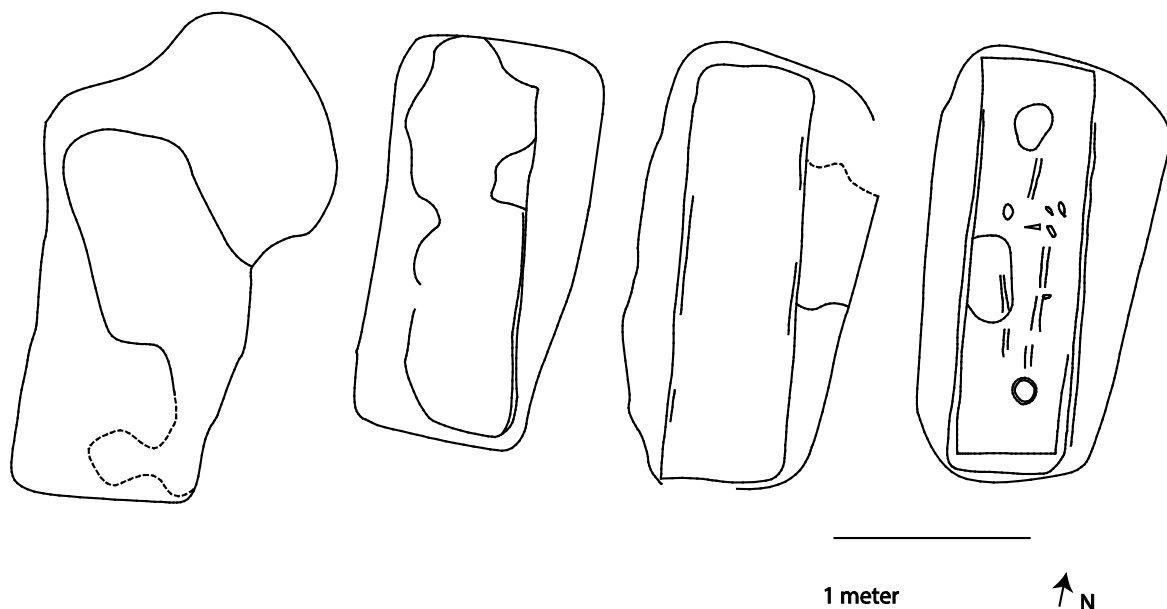


Figure 3.1.3 Levels 2-5 of grave 94. The grave showed traces of a very large reopening pit in the upper levels. Perhaps the diggers lifted the whole coffin lid.

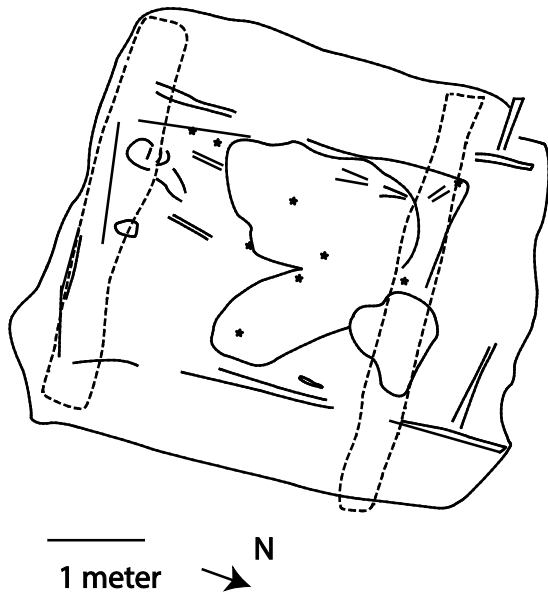


Figure 3.1.4 Grave 84, level 6. This grave showed traces of three separate reopening pits.

Most graves in Broechem seem to have been reopened with a single reopening pit, but at least four graves showed traces of multiple pits. Grave 84 had an unusually large wooden container which showed traces of at least three separate reopening pits in its fill (figure 3.1.4). Grave 186 revealed two separate reopening pits, a small one in the region of the head, and a larger one in the area of the pelvis and legs. Grave 989 also had separate reopening pits in the areas of the head and feet. Grave 141 showed two intercutting reopening pits with distinctly different colored fills. Together they covered almost the entire coffin. The intercutting pits in grave 141 suggest that at least some time passed between the interventions, since one must have been filled with earth before the other was dug. For the other cases it is unclear whether the pits were dug more or less simultaneously or whether they represent separate reopening events.

No real search trenches were found, but at least two sets of graves were reopened with a single pit (414/445 and 296/288). Both cases concern intercutting graves where the reopening pit was dug in the area of the cut, resulting in a complex stratigraphy.

It is not always clear what happened after

graves were reopened, but the reopening pits' fills were often quite homogenous and not filled with layered sediments. The field drawings are not always clear on this, - unfortunately almost no vertical profiles were documented - but the excavator told me in a personal communication that she observed homogenous fills in most of the reopening pits (Annaert on 15-07-2013). This indicates that the pits were probably backfilled soon after the interventions, but we cannot tell whether the backfilling was done by the same people who reopened the graves.

Reopening pit placement

The size and placement of reopening pits within the grave varied considerably. In most graves, the reopening pits reached down to the bottom level where the skeleton and grave goods lay. In graves 21, 32, 100, 296, 980 and 1079, the diggers clearly cut through the coffin's bottom, which indicates that the wood had probably decomposed. In graves 15, 987, 1030 and possibly graves 30 and 34 the reopening pit appears to be restricted to the upper levels of the fill. It is possible that these features are not reopening pits. They may have resulted from slumping of the graves' fill when the wooden container collapsed. However, since the graves in this cemetery were mostly very similar in construction, this raises the question why such pronounced slumping was not found in the other graves. It is even possible that these shallow pits have no intentional relation to the graves at all. However, their pronounced nature and similarity in placement and shape to the other reopening pits in the cemetery suggests that these superficial pits do indeed reflect an early medieval grave-related practice.

Table 3.1.2 shows which areas of the graves were reopened. In nearly all the graves, the reopening pit covered multiple areas. The higher the percentage listed in the table for a particular section of the grave, the higher the frequency with which those

	Head end	Head/neck	Thorax/pelvis	Legs/feet	Foot end	Sides
Men (28)	11% (n=3)	64% (n=18)	79% (n=22)	61% (n=17)	7% (n=2)	25% (n=7)
Women (25)	0% (n=0)	42% (n=10)	75% (n=18)	67% (n=16)	16% (n=4)	29% (n=7)
Neutral (50)	18% (n=9)	56% (n=28)	66% (n=33)	58% (n=29)	10% (n=5)	38% (n=19)
All graves (102)	12% (n=12)	55% (n=56)	72% (n=73)	61% (n=62)	11% (n=11)	32% (n=33)

Table 3.1.2 Placement of reopening pits in graves with men's and women's grave goods. The two graves containing both men's and women's grave goods were excluded.

sections of the graves were reopened. For instance, for the men's graves, the reopening rate of the thorax/pelvis region is 79% (n=22).

This means that in 79% of cases (22 graves), the thorax/pelvis area was reopened. Generally speaking, most reopening pits focused on areas inside the coffin. Not a single grave was completely reopened from the grave pit's head end to the foot end. The reopening pits focused primarily on the thorax area of the coffin, while fewer pits went into the area of the head/neck and the legs/feet. Reopening pits did occasionally extend beyond the confines of the coffin, reaching into the head end, foot end or sides of the grave pit. This happened more frequently in graves where the coffin had decomposed and no longer formed a physical barrier that constrained the digger's activities. The reopening pits were often wider in the upper levels of the grave, becoming more narrow and focusing on specific areas of the coffin as they went down. Grave 435 was the only grave with a reopening pit that focused on one side of the grave pit, rather than on the coffin's contents. It is unclear whether the coffin in this grave was opened, although this is suggested by the atypical placement of the beads inside. Perhaps the coffin was accessed from the side, as is suggested above.

There is no evidence that graves of men and women were reopened in different areas related to gender specific grave good distributions. The top rows of table 3.1.2 show the placement of reopening pits in graves with men's and women's grave goods. Only the head end displays a small statistically significant difference between graves with women's and neutral grave goods in the Z-test ($P = 0.027$, $F = -2.218$). Otherwise, there are only very small and non-significant differences in the place-

ment of reopening pits between graves with typical men's and women's grave goods.

Reopening chronology

Given the general lack of other dating features, the chronology of grave reopenings primarily relies on estimates of the time that passed between the burial and reopening. For Broechem, these estimates are mostly based on the state of the wooden container at the time of the reopening. For 19% of the reopened graves (n=20), it could be demonstrated that the reopening probably took place while the wooden container was still intact. About 39% (n=41) were reopened after the container had collapsed. For the remaining 41% (n=43), the state of the wooden container at the time of the reopening could not be determined. Based on these numbers, we can extrapolate that about one third of the graves was probably reopened while the container was still intact. The other two thirds were reopened after the container had decomposed. It is unclear how long it would have taken for the wood to decompose in the Broechem soils. The timing probably varied significantly, depending on the type and thickness of the wood and local variations in soil humidity. In the following analysis, we will therefore adhere to Aspöck's (2005: 251-252; 2011: 302-306) estimate that decomposition of wooden containers took 35 years. Only the small number of reopenings that took place in graves with intact coffins can potentially be dated to a delimited time period, namely the date range of the grave plus 35 years. Interventions that took place when the wooden containers had decomposed only have a *terminus post quem* of the grave's date plus 35 years. They cannot be dated to a delimited period because the reopening could

have occurred at any point in time after the wood had decayed.

Only 54 of the 104 reopened graves could be dated. The earliest reopened graves in the cemetery are 763 (dating 440-480 AD), 966 (470-570 AD) and 989 (470-570 AD). It was not possible to determine whether these graves were reopened before or after decomposition of the wooden container, so it is unclear how much time passed between the burials and reopenings. Grave 912 dates to 440-485 and was reopened after the container had collapsed, so the reopening dates between 475 and 800, assuming the reopening took place during the cemetery's use period.

A total of 35 interventions could be dated. Eleven reopenings have a date range starting before 555, 18 have a *terminus post quem* between 560 and 600 and only three reopenings have a date range starting after 600. Nineteen reopenings could be given an end date or *terminus ante quem* because they took place before the containers in the affected graves had decomposed. Six reopenings dated before 660, nine dated before 685 and the remaining four dated before 735. Assuming all reopenings took place while the cemetery was still in use, they have an end date before 750/800. To conclude, the date ranges of most datable reopenings lie between 500 and 700. Most reopenings probably took place in the second half of the sixth and first half of the seventh century, with possibly a few early cases at the end of the fifth century.

Grave goods

In this section, I reconstruct which objects may have been taken during grave reopenings. The differences between the objects found in reopened and intact graves can be seen in table 3.1.3. The table shows the number of objects found in graves with reopened, intact and indeterminate status, divided by object type. For each category of graves, the total number of objects of a particular type is displayed in the left column. The right column contains the average number of objects per grave, which is the total number of objects of that type divided by the number of graves in that

category. For instance, 39 lance heads were found, of which 21 came from reopened graves. Because there were 104 reopened graves, the average number of lance heads in reopened graves was $21/104=0.20$. These averages serve as an index that enables fair comparisons between reopened, intact and indeterminate graves when the number of graves in each category varies.

If the average number of objects in the reopened graves is low, this suggests objects may have been removed relatively often when graves were reopened. On the other hand, an equal or higher average number of objects type in the reopened graves suggests that objects were not removed during reopenings. However, such results can be interpreted in different ways. A lower number of objects in the intact graves could also mean that the diggers were not interested in opening graves containing few objects. Similarly, a higher number of objects in reopened graves could indicate that the diggers preferred to open graves containing many objects, possibly removing some and leaving others behind. The numbers of objects found in the indeterminate graves are generally low, reflecting the fact that the reopening status of graves with few finds is often difficult to determine.

It is important to note that not all types of objects commonly found in Merovingian graves were present in the Broechem cemetery. For instance, no swords and very few seaxes and shields were found. It is unclear whether this lack of weaponry is due to the burial ritual or whether these objects were systematically removed during reopenings. Lance heads and arrowheads on the other hand were found in large numbers. Interestingly, the average number of lance heads and arrowheads was higher in reopened than in intact graves. The only other object types with higher averages in the reopened graves were plate-buckles and plates of decorated belts. Most other object types such as knives, keys, simple belt buckles without plates, brooches, spindle whorls, earrings, miscellaneous rings, coins and beads were found in equal or larger numbers in the intact graves. According to the t-test, the dif-

ferences between intact and reopened graves are significant for lance heads ($P=0.006$, $F=2.785$), belt buckles ($P=0.019$, $F=-2.358$), plate buckles ($P=0.014$, $F=2.502$), belt plates/strap ends ($P=0.005$, $F=2.847$), brooches ($P=0.001$, $F=-3.325$), earrings ($P=0.033$, $F=-2.161$), miscellaneous rings ($P=0.002$, $F=-3.173$) and beads ($P=0.039$, $F=-2.080$). Looking at these data, the most conspicuous pattern seems to be that many female gendered object types are found in higher numbers in the intact graves, while a few male gendered

object types are found in higher numbers in the reopened graves. This is an interesting pattern, especially given the relatively high reopening rate of men's graves in this cemetery. Although the diggers seem to have preferentially reopened graves with male gendered grave goods, they seem to have removed fewer men's objects than women's objects. The high numbers of some grave good types in reopened graves suggest that they may even have deposited objects during reopenings.

Objects	Reopened (104 graves)		Intact (125 graves)		Indet. (203 graves)	
	Total	Average per grave	Total	Average per grave	Total	Average per grave
Seaxes	4	0,04	4	0,03	4	0,02
Shields	1	0,01	0	0	2	0,01
Axes	1	0,01	4	0,03	5	0,02
Lance heads	21	0,20	9	0,07	9	0,04
Arrowheads	24	0,23	22	0,18	14	0,07
Shears	2	0,02	3	0,02	4	0,02
Knives	37	0,36	60	0,48	33	0,16
Fire steels	1	0,01	3	0,02	1	0
Keys	1	0,01	9	0,07	1	0
Belt buckles	44	0,42	77	0,62	66	0,33
Plate buckles	19	0,18	6	0,05	6	0,03
Belt plates/strap ends	68	0,65	20	0,16	26	0,13
Leg strap plates	5	0,05	6	0,05	0	0
Belt pendants	4	0,04	10	0,08	7	0,03
Purse buckles	1	0,01	5	0,04	1	0
Brooches	7	0,07	48	0,38	20	0,10
Bracelets (mostly antique glass)	2	0,02	6	0,05	2	0,01
Tweezers	5	0,05	3	0,02	5	0,02
Spindle whorls	11	0,11	20	0,16	16	0,08
Earrings	0	0,00	6	0,05	2	0,01
Finger rings	0	0	2	0,02	0	0
Rings, miscellaneous	12	0,12	54	0,43	32	0,16
Pottery vessels	52	0,50	66	0,53	70	0,34
Glass vessels	5	0,05	3	0,02	0	0
Coins	3	0,03	24	0,19	5	0,02
Beads	759	7,30	2371	18,97	780	3,84

Table 3.1.3 Grave goods found in reopened, intact and indeterminate graves. For each category of graves, the table lists total number per type and the average per grave.

Objects	Reopened (104 graves)		Intact (125 graves)		Indet (203 graves)	
	Total	Average per grave	Total	Average per grave	Total	Average per grave
Iron	210	2,04	340	2,72	247	1,22
Copper alloy	88	0,85	127	1,02	86	0,42
Iron/copper alloy	23	0,22	4	0,03	9	0,04
Silver	23	0,22	25	0,20	9	0,04
Gold	2	0,02	10	0,08	4	0,02
Pottery	63	0,61	82	0,66	85	0,42
Glassware	5	0,05	3	0,02	0	0,00
Amber	121	1,17	231	1,85	113	0,56

Table 3.1.4 Grave good materials found in reopened, intact and indeterminate graves. For each category of graves, the table lists the total number per material and average per grave.

Table 3.1.4 shows which materials were found in reopened and intact graves. The table only takes into account recognizable objects, no fragments, since it is usually unclear whether these were part of the grave's original inventory or whether they were just part of the soil used to fill the graves. The data in this table mostly reflects and confirms the results of the previous analysis. According to the t-test, the differences between intact and reopened graves are significant for iron ($P=0.000$, $F=3.724$), iron/copper alloy ($P=0.020$, $F=2.357$) and glass ($P=0.041$, $F=-2.066$). The differences for the other material categories are not significant. Relatively few precious metal objects were found, especially very little gold. The average numbers of silver objects are very similar for reopened and intact graves. The number of gold objects is slightly higher for the intact graves, but the numbers are somewhat skewed because of one intact grave with a small coin hoard. The intact graves yielded a substantially higher number of iron objects and slightly more copper alloy objects than the reopened graves. However, the reverse was true for composite iron and copper alloy objects, which predominated in reopened graves. This somewhat surprising result is caused by the previously discussed predominance of decorated belt fittings in reopened graves, which are often made from an iron base plate with copper alloy rivets and inlays. The pottery numbers are very similar for reopened and intact graves, with a slightly higher average for

the intact graves. Too few glass vessels were found to draw any conclusions about them. In accordance with the high numbers of beads in intact graves, amber objects were found in much larger numbers in intact graves.

The question remains whether the objects in reopened graves were left behind on purpose or by accident. To answer this question we need to look at where these objects were found. Table 3.1.5 shows how many objects from reopened graves were found inside and outside the reopened area. If an object lay inside the reach of the reopening pit, the diggers could have seen it and left it behind on purpose, especially if the object was large. Nearly all object types were found more frequently inside the reopening pits than outside them. This was to be expected since we have seen above that reopening pits focus on areas of the grave where the grave goods lay. Nevertheless, it is interesting to see that the diggers left so many objects behind. It certainly is possible that they overlooked some objects while rummaging in the grave's fill, but probably not all of them. As we have seen above, at least 19% of the reopenings took place in the open space of an intact wooden container. These conditions would yield relatively good visibility of objects during the reopening. Large objects such as lance heads would have been hard to overlook even in the fill of a collapsed coffin, especially since their placement in the grave was relatively standardized, so the diggers knew where to look.

The cemeteries – analyzing the data

Object type	In pit	Outside pit	Unknown
Seaxes	1	0	3
Shields	1	0	0
Axes	0	1	0
Lance heads	9	4	8
Arrowheads	13	5	6
Shears	1	0	1
Knives	25	6	6
Fire steels	1	0	0
Keys	0	0	1
Belt buckles	25	6	13
Plate buckles	11	2	6
Belt plates/strap ends	34	5	12
Leg straps	3	0	2
Belt pendants	1	2	1
Purse buckles	0	1	0
Brooches	6	0	1
Bracelets (mostly antique glass)	0	0	1
Tweezers	4	0	1
Spindle whorls	6	3	2
Rings, miscellaneous	8	0	4
Pottery vessels	26	12	12
Glass vessels	2	2	1
Coins	3	0	0
Beads	341	97	321
Fragments iron	109	97	218
Fragments copper alloy	8	0	2
Fragments pottery	292	438	1020

Table 3.1.5 Objects found inside and outside reopening pits in reopened graves.

	Reopened		Intact		Indeterminate	
	Completeness	N=	Completeness	N=	Completeness	N=
Lance heads	90%	11	93%	8	100%	3
Arrowheads	76%	14	95%	14	84%	5
Knives	81%	9	91%	20	92%	13
Belt buckles	91%	28	96%	50	93%	38
Plate buckles	78%	15	100%	2	73%	4
Belt plates/strap ends	89%	22	94%	5	100%	3
Brooches	93%	3	88%	21	89%	9
Spindle whorls	100%	10	100%	14	93%	12
Pottery vessels	75,4%	37	97,4%	46	84,5%	46

Table 3.1.6 Fragmentation and completeness of objects from reopened, intact and indeterminate graves.

Only pottery fragments were found in significantly larger numbers outside the reopening pits than inside. This anomaly probably results from the fact that the grave fills contained a lot of stray pottery fragments which had a different distribution than the intentionally deposited grave goods.

The database also contains information about the fragmentation and completeness of the objects found in graves. Unfortunately, assessments of the objects' completeness were often lacking from the cemetery documentation and had to be estimated on the basis of the descriptions in the excavators' database, which was not always possible. In table 3.1.6, the left columns show the average completeness of objects, while the right columns (N) contain the number of objects of that type for which a completeness percentage could be estimated. Many object types are excluded from this table because there is insufficient data about their completeness.

The table shows that on average, objects from intact graves were missing fewer fragments than those from reopened graves. This suggests that the diggers removed pieces of broken objects from the reopened graves. The pattern is most pronounced for pots, plate buckles and arrowheads. Brooches and spindle whorls show contradictory results, but this may not be meaningful since the number of brooches from reopened graves is very low and spindle whorls do not break easily. Perhaps the missing fragments were not removed intentionally but simply scattered in the vicinity of the grave or mixed with the backfilled soil. Reopened graves contained many more indeterminate fragments than intact graves (on average 22 versus 14 per grave). It can be very difficult to recognize the origin of a fragment, especially in the case of corroded iron fragments. For pottery however, it should be possible to trace scattered fragments back to the pot.

Addition of objects to reopened graves?

It is unclear whether objects were ever added to the graves when they were reopened. We can hypothesize that the diggers sometimes

deposited objects like the lance heads and arrowheads and decorated belt fittings in the graves during a reopening. This would explain the relatively high numbers of these types objects that were found in the reopened graves. The large numbers of all object types found inside the reopening pits also suggests the diggers may occasionally have deposited something in the reopening pit. But as discussed above, these findings could also have come about if the diggers were simply not interested in taking certain objects from the grave's inventory and therefore left them behind. Both in intact and reopened graves, lance heads and arrowheads were sometimes found in the graves' fills rather than on the bottom, so objects in the fill are not necessarily a result of deposition during reopenings. The dates of the objects and graves are also not detailed enough to allow definitive identification of later additions to the grave's inventory.

Grave constructions

As can be seen in table 3.1.7, the reopened graves were on average larger than the intact graves, indicating that grave reopenings occurred more frequently in large graves than in smaller ones. On average, the reopened grave pits were 26 cm wider and 37 cm longer than the intact ones. The coffins in the reopened graves were 15 cm wider and 31 cm longer than those in the intact graves. Significance testing was done on the differences in grave pit length. The differences between grave pit width, coffin width and coffin length were not tested, because these all correspond with the grave pit length. The differences in coffin length were overall significant ($P=0.000$, $F=15.455$). With the post-hoc Tuckey test, significant differences were found between reopened and intact graves ($P=0.000$) and reopened and indeterminate graves ($P=0.000$). The difference between intact and indeterminate graves was not significant. There were only seven graves with unusually elaborate grave constructions such chamber graves, two part coffins and tree trunk coffins. All but one of these seven graves had been reopened.

	Reopened (N= 104)	Intact (N= 125)	Indet (N=203)
Grave pit width	126 cm	100 cm	104 cm
Grave pit length	243 cm	206 cm	201 cm
Coffin width	68 cm	53 cm	60 cm
Coffin length	201 cm	170 cm	188 cm

Table 3.1.7 Average width and length of grave pits and wooden containers in reopened, intact and indeterminate graves.

As we shall see below, similar patterns are also found in other cemeteries in the research area. On some of these sites the graves from the cemeteries' last phase were relatively small and were reopened less often than those from previous phases, so the difference in size between reopened and intact graves may result from the reopening of more large early graves and fewer small late ones. However, it is unclear whether a similar explanation is valid for Broechem, since this cemetery does not seem to have a clearly defined end phase with smaller graves. The grave reopeners may therefore really have had a preference for larger graves.

3.2 Meerveldhoven

The first excavations at the cemetery site of Meerveldhoven (the Netherlands, province of Noord-Brabant, municipality of Veldhoven) took place in 1955. The excavation uncovered 25 graves and was carried out by workmen under the direction of Jaap Ypey from the State Archaeology Service (ROB). Excavation of the site continued in 1975, when State Service employees excavated 38 additional contexts. The drawings from the first excavation are somewhat schematic, but the drawings of the second campaign have an extraordinary level of detail, especially where the grave constructions and fills of the grave are concerned.

The excavation results have remained largely unpublished except for a concise report by Verwers (1978). Since that article lacks detailed depictions of most graves, the present analysis is based on the original field drawings in conjunction with Verwers' text. Unfortunately, it seems that not all original drawings were present in the data files that we retrieved from the State Service. Verwers' publication

often had additional information that was not included on the drawings, especially concerning the first 25 graves that were excavated in 1955. Unfortunately, the skeletal remains and body silhouettes from this cemetery have never been examined by an osteologist.

The cemetery was situated close to the river Dommel in the southern Netherlands, near the present city of Eindhoven. The area in which the cemetery was located has a sandy soil rich in loam that offers good conditions for the preservation and visibility of archaeological features. The traces of wooden grave constructions, post-depositional interventions and taphonomic processes were often clearly demarcated. Nevertheless, wood objects were only preserved as soil discolorations, not as physical remains. For example, in grave 15 the excavators found traces of the wooden shaft of a lance, visible as a color difference in the soil. Unfortunately, this type of soil leaches minerals from bone material, so uncalcined skeletal remains were poorly preserved. Nevertheless, basic body positions could often be reconstructed based on the skeletal silhouettes.

Inhumation graves

The excavation yielded 54 inhumation graves. It appears that the cemetery as a whole has an approximately rectangular shape and the excavation seems to have covered at least three of its boundaries. Only the east boundary was not fully excavated (see figure 3.2.5). It is likely that only a small number of graves remain *in situ* on the site. Unfortunately, some graves were damaged by sand extraction previous to the excavation. The cemetery probably came into use around the end of the sixth century. Burials on the site may have continued into the first half of the eighth century, but most graves date to the seventh century.

The graves were all oriented west-east and most were laid out in irregular rows. As far as could be established, all the dead were buried in supine position with extended legs. Most deceased were buried in wooden containers of variable size. The graves in Meerveldhoven were relatively large compared to other graves from this period in the region. The grave constructions were also quite elaborate and since they were documented with a great level of detail, they would make a wonderful subject of study which we cannot do justice here. There were 24 chamber graves, 14 partitioned coffins, nine simple coffins and seven cases where the type of grave construction could not be determined.

Nearly all graves contained at least a few grave goods and many graves were quite richly furnished compared to the general furnishings of graves from this region. There were more graves with typical women's grave goods than with typical men's grave goods. Of the 54 inhumation graves, 20 (37%) contained objects that are usually associated with women and 14 (26%) contained objects usually associated with men. The remaining 20 graves had only gender neutral grave goods, or no grave goods at all. Since no osteological data are available for this cemetery, the graves can only be assigned to a specific gender on the basis of the grave goods. We cannot check to what extent gender specific grave good sets actually lay in burials with individuals of the expected sex.

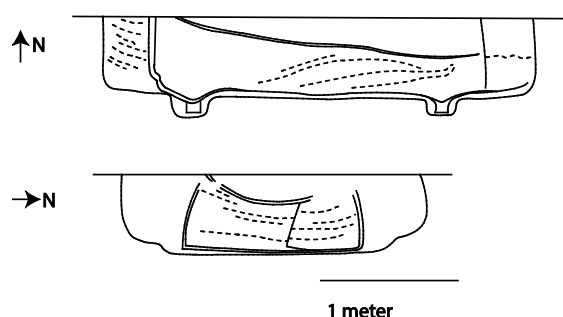


Figure 3.2.1 Length- and width-wise sections of intact grave 49 with sedimentation layers inside the chamber and coffin.

Taphonomic processes

The detailed field drawings that were made during the excavation in 1975 offer valuable material for the study of taphonomic processes that took place in the graves after burial. These data are relevant here, because they allow us to compare the results of natural decomposition with the disturbances caused by intentional anthropogenic interventions. The drawings also demonstrate the importance of combining excavation levels and sections for understanding stratigraphic relations within the grave. The examples below illustrate the taphonomic processes that can be observed in the graves of the Meerveldhoven cemetery and other cemeteries included in this study.

Figure 3.2.1 shows width- and lengthwise sections of an intact grave. It consisted of a grave pit and a bipartite wooden coffin. The coffin lid has sagged somewhat under the weight of the soil above it, but appears to have remained largely intact and did not collapse down into the grave. It is supported from below by layers of sediment that have probably crept into the coffin through crevices between the boards before the coffin's construction became unstable. A similar process can be observed in figure 3.2.2. This level drawing of grave 46 shows layers of sediment that filled up the wooden chamber, coffin and box through crevices in the corners.

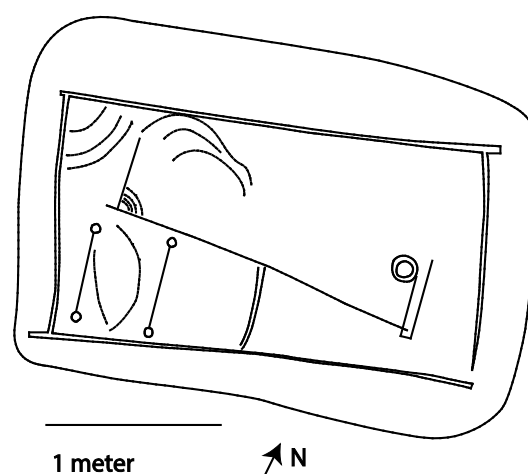


Figure 3.2.2 Grave 46, level 4, showing layers of sediment that entered the wooden containers through crevices in the corners.

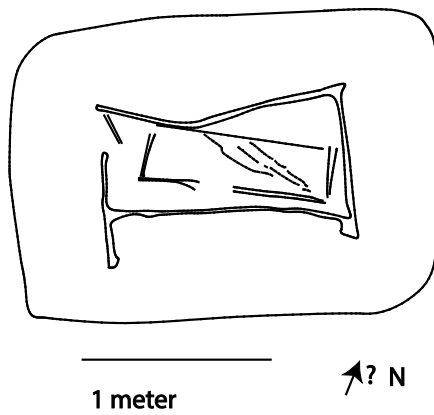


Figure 3.2.3 Grave 19. The walls of the wooden chamber were pressed inwards by the pressure of the surrounding soil.

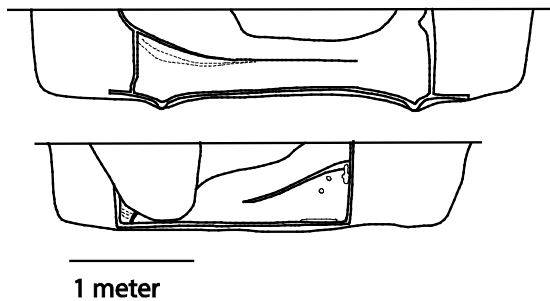


Figure 3.2.4 Length- and width-wise sections of reopened grave 45.

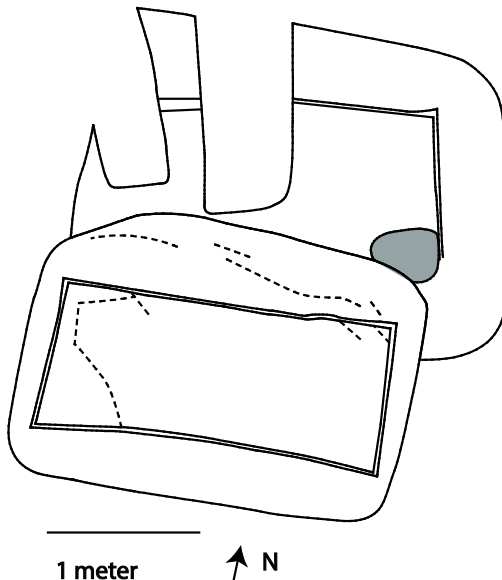


Figure 3.2.5 Grave 43 was cut by grave 42 and contained a concentration of cremated bone.

In some cases, the walls of the wooden container were bent inwards under the pressure of the surrounding soil. This process can be observed in grave 19 shown in figure 3.2.3.

These are only two examples of the results of natural taphonomic processes that take place after burial, but observations on other intact graves in this cemetery and others confirm what we see here. Coffin lids may show some amount of slumping and the sides of coffins are sometimes pressed inwards a little by the pressure of the surrounding soil, but in general, decomposing coffins retained their shape rather well, probably because they were already partially filled with soil before they became structurally unstable.

For comparison, figure 3.2.4 shows the section drawings of the reopened grave 45. The lengthwise section is quite similar to that of intact graves 49 and 46. However, the slumped down soil on top of the lid seems to have two separate fills and near the foot end, a section of the coffin's lid is missing. In the width-wise section we see the cause of this partial lid, as an intervention pit was dug into the grave. On the side opposite the intervention pit, a few objects including a horse's bit were found high in the coffin's fill. It seems unlikely that these objects were displaced by the intervention. Perhaps they had been deposited on top of the coffin's lid and sunk down into the fill as the wood decayed. These – and other – examples confirm the hypothesis that distinctly colored fills are an important indicator for reopened graves, especially if they persist down to the grave's bottom. Natural decomposition slumps are usually much more evenly colored and rarely reach down to the grave's bottom.

Cremation graves

The excavation yielded nine possible cremation graves. Since the bones were not examined by an osteologist, it is not certain that they were human cremations. This nevertheless seems likely given the finds of similar deposits of burnt human bone in other Merovingian cemeteries from the region. Seven cremations were buried in independent shal-

low round pits, one was contained in a small wooden box that was deposited in a similar round pit and one was deposited in inhumation grave 43.

It is unclear whether the concentration of cremated bone from inhumation grave 43 was placed in the coffin during the funeral or whether it was deposited at a later time, possibly when the grave was cut by grave 42 or during a separate intervention (see figure

3.2.5). The cremations were not dated, but it seems likely that they date to approximately the same period as the other graves in the cemetery. They were placed between the younger inhumation graves. Since the pits of the cremation graves were rather shallow, it is possible that additional cremation graves were destroyed by later ploughing and the sand extraction that took place on the site.

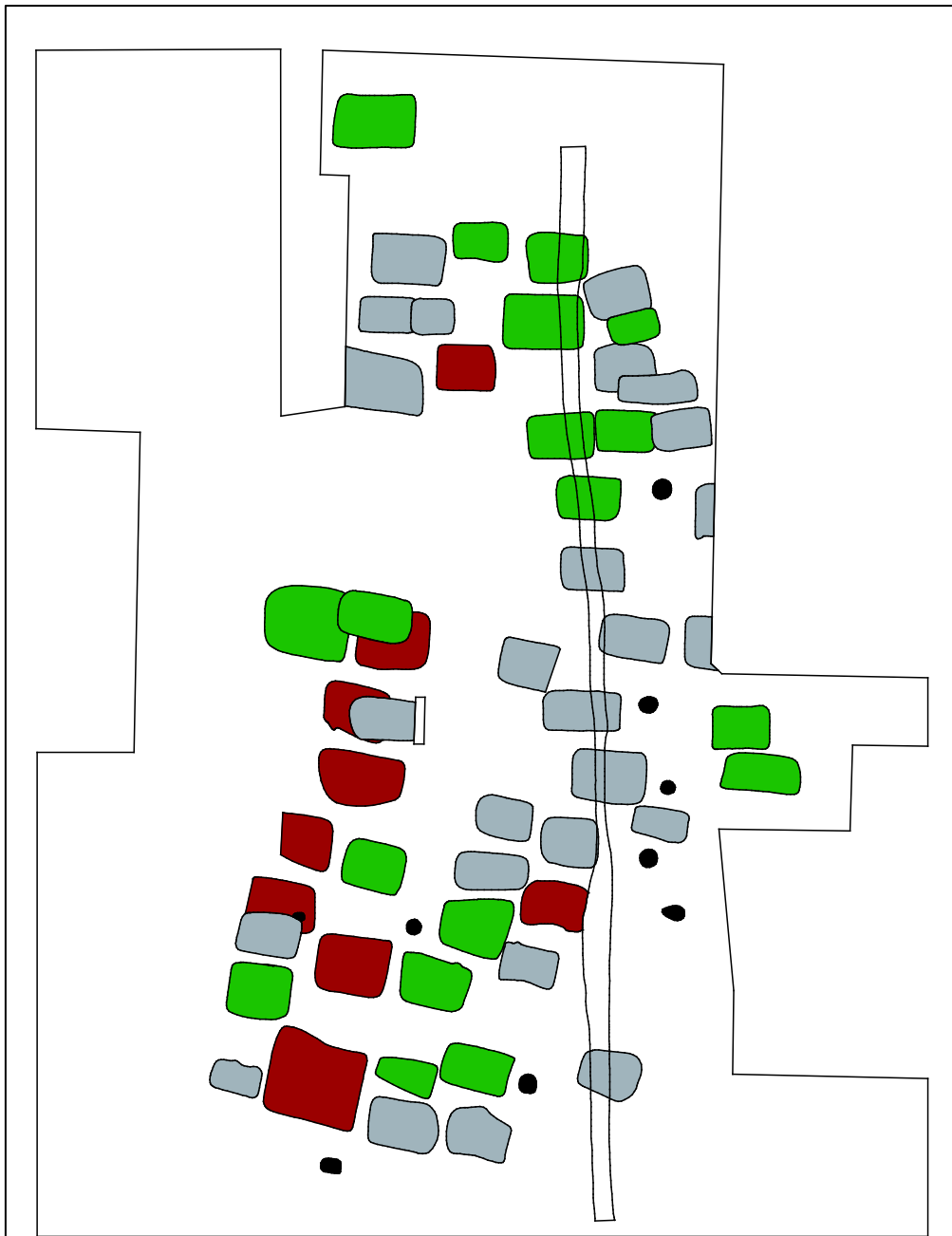


Figure 3.2.6 Map of the Meerveldhoven cemetery. Red=reopened inhumation, green=intact inhumation, light gray=indeterminate inhumation, dark grey=cremation.

Post-depositional interventions

Of the 54 inhumation graves 9 (17%) were reopened. A total of 18 graves (33%) were most likely left intact after the funeral. For the remaining 27 graves (50%), there is insufficient evidence to determine whether they were subjected to an intervention or remained intact. Given the large number of graves with an indeterminate status, the percentage of reopened graves is probably higher than 15%. If the distribution of the indeterminate group is similar to that of the other graves, we can postulate a total of 18 reopened graves (33%) and 36 intact graves (67%).

Of the 9 reopened graves, two contained typical men's grave goods, and four yielded typical women's grave goods. Figure 3.2.6 displays the spatial distribution of reopened graves. The reopenings seem to concentrate in the south-western section of the cemetery, but given the large number of indeterminate cases, it is difficult to be certain. There is no evidence for post-depositional interventions in the cremation graves. Perhaps these graves were not reopened like the inhumations were. However, traces of potential post-depositional interventions in these graves are more difficult to recognize, since the cremation burials were more shallow and most had a simpler construction than the inhumations.

Types of post-depositional interventions

There were multiple types of post-depositional interventions in the Meerveldhoven cemetery, mostly reopenings and intercuts. As far as could be established there were no additional burials in the inhumation graves. The only possible exception was grave 43, which – as discussed above – contained a concentration of possible human cremated bone in addition to the non-cremated skeletal remains of the main burial.

In total, 15% (n=8) of the inhumation burials were cut by a later grave. Three of these graves had also been reopened and two were otherwise intact. The status of the remaining three could not be determined. Interestingly, the

new grave pits always seem to cut cleanly through the older graves' coffins, indicating that the wood had decayed when the intercuts took place. Most intercuts were non-invasive, affecting only the peripheral sides of the grave pits and sometimes an edge of the coffin of the cut grave. Only graves 50 and 51 were affected by invasive intercuts where the new grave cut the inner coffin. In both cases, the old graves may simultaneously have been reopened. Similarly, in grave 43 (figure 3.2.5) the diggers may have used the grave pits of intercutting graves as starting points for reopening pits. However, the reopenings and intercuts could also have been independent events.

Reopenings

After subtracting the two graves that may have been reopened by a later intercutting grave, we are left with seven graves that revealed straightforward reopening pits. In all reopened graves except 38, the excavators observed traces of a reopening pit. However, it was often unclear whether these features accurately represent the extent of the interventions. All the regular reopening pits went down to the graves' bottoms. In grave 50, which may have been reopened during an intercut, the depth of the reopening pit is unclear. Most graves were reopened with a single pit, except perhaps for grave 45 which yielded two possible reopening pits (figure 3.2.7). However, the excavators interpreted only the upper pit as a disturbance or reopening pit, and thought that the lower pit was a slump in the grave's fill. Unfortunately the excavators dubbed all reopening pits 'disturbances' and did not document their fills as carefully as they documented other soil features. Therefore, it is somewhat unclear what happened after graves were reopened. The drawings seem to indicate that the reopening pits' fills were quite homogeneous. This would mean that the pits were backfilled soon after the interventions.

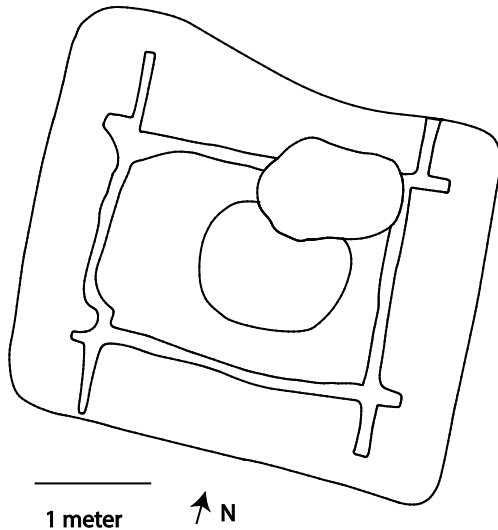


Figure 3.2.7 Grave 45, level 1 with two possible reopening pits.

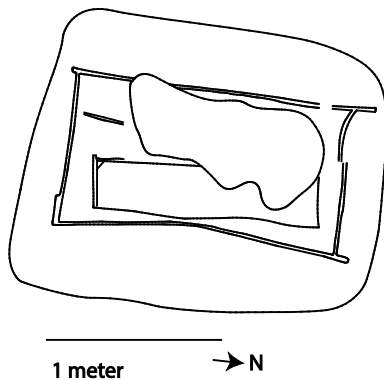


Figure 3.2.8 Grave 44, where the reopening pit focused on the area in the chamber next to the coffin.

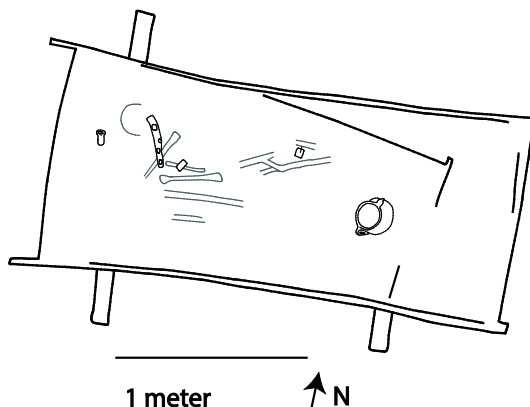


Figure 3.2.9 Reopened grave 29, bottom level. The excavators documented traces of a leather of belt strap decorated with metal plates, which may still have been intact when the grave was reopened.

All reopening pits focused on the inside of the wooden container, usually on the area where the deceased lay. The reopening did often reach beyond the confines of the coffin, going either into the head end, foot end and/or sides of the grave pit. In only one case had the entire grave been reopened from the head end to the foot end and sides. The reopening pit in chamber grave 44 (figure 3.2.8) atypically concentrated on the half of the wooden chamber that did not contain the coffin with the deceased's body. The thorax/pelvis region was reopened most often. Fewer pits went into the area of the head/neck and the legs/feet. The dataset is too small to analyze differences in reopening technique between women's and men's graves, but interestingly the one grave where only the leg region had been reopened held grave goods that are usually associated with women. This does not fit with the hypothesis that women's graves were usually opened in the head and chest region.

Reopening chronology

Five out of nine graves were reopened after the container had decomposed. Only the container of grave 29 was probably still intact at the time of the reopening. This grave even yielded traces of an intact leather belt strap fitted with plates that may have been moved during the intervention (figure 3.2.8), indicating that at maximum only a few years could have passed between the burial and reopening. Unfortunately none of these graves could be dated precisely, so we cannot assign absolute dates to the reopenings. For the remaining three graves, the status of the wooden container at the time of the reopening could not be determined. These graves were dated 575-625, 600-650 and 650-700, covering the cemetery's entire use period. The fact that most reopenings took place after the wooden containers had decomposed, suggest that the reopenings may have taken place relatively late in the cemetery's history, possibly when the last generation buried its dead here, or even when the cemetery was no longer in active use.

Grave goods

The graves in Meerveldhoven were relatively well furnished with grave goods. This is true for both the intact and reopened graves. Reopened grave 29 is an interesting example. Despite the disorderly and atypical distribution of the bones and artefacts in this grave (figure 3.2.9), Verwers (1978: 284) does not mention a possible disturbance in his report. Perhaps an intentional post-depositional intervention was not considered as a possibility because the grave still contained so many objects, including a belt fitted with an iron plate buckle and copper alloy plates, 78 beads and a biconical pottery jug.

Given the relatively small number of reopened graves in this cemetery, it is difficult to make a statistical comparison between the grave goods found in reopened and intact graves. Nonetheless, a few interesting observations can be made. Table 3.2.1 shows the number of objects found in graves with reopened, intact and indeterminate status. For each category of graves, the total number of objects of a particular type is displayed in the left column. The right column contains the average number of objects per grave, calculated by dividing the total number of objects by the number of graves in that category.

Some object types were found more often in reopened graves and others in intact ones. The numbers of objects found in the graves with an indeterminate status are low, reflecting the fact that the reopening status of graves with few finds is often difficult to determine. A few object categories, including swords, seaxes, axes and knives were entirely absent in the reopened graves. Shields, lance heads and arrowheads, simple buckles, plate buckles and pottery vessels were found slightly more often in intact than reopened graves. A few singular objects such as a key, bracelet and coin were found exclusively in reopened graves, but this may well be a coincidence. The 19 pieces of horse gear also originated from a single reopened burial, grave 45, and were probably part

of one set of horsegear (figure 3.2.6). Surprisingly, traces of wooden bowls were observed more often in reopened graves than in intact ones. The averages of belt plates and beads were also higher in reopened than in intact graves. This is partially due to the 10 belt plates and 78 beads from reopened grave 29. These findings suggest that when the diggers reopened a grave, they may have targeted weaponry such as seaxes, knives, and possibly belt fittings and pottery vessels. The removal of large weapons is also suggested by concentrations of oxidized iron as observed in grave 45. These may represent the former locations of iron objects that were removed during an intervention. At the bottom of the rusty features the excavators found a few copper alloy mounts. The diggers may have been less interested in belt plates, wooden bowls, beads and perhaps horse gear, although the set of horse gear in grave 45 was probably incomplete, so parts of it may have been removed. These findings deviate from the general patterns of object removal found in this study. It is important to keep in mind that the Meerveldhoven dataset is too small to provide statistically significant results, so any variations may be due to chance rather than patterns in past behavior. In any case, the diggers did not systematically remove all the grave goods.

Table 3.2.2 shows that the reopened graves still contained relatively large numbers of metal objects. Fragments were excluded from the analysis. The numbers for iron and copper alloy are somewhat skewed by the 19 pieces of horse gear from reopened grave 45 and the 10 copper alloy belt plates from grave 29. Only a few precious metal objects were found: three of silver, one of gold, which nearly all came from reopened graves. The combined iron/copper alloy objects are mostly decorated belt fittings, which predominated in intact graves. In accordance with the high numbers of beads in intact graves, amber objects were found in much larger numbers in graves that were not reopened.

Objects	Reopened (9 graves)		Intact (18 graves)		Unknown (27 graves)	
	Total	Average per grave	Total	Average per grave	Total	Average per grave
Swords	0	0,00	1	0,06	0	0,00
Seaxes	0	0,00	6	0,33	2	0,07
Axes	0	0,00	1	0,06	0	0,00
Shields	2	0,22	7	0,39	3	0,11
Lance heads	2	0,23	7	0,39	2	0,07
Arrowheads	3	0,33	7	0,39	0	0,00
Knives	0	0,00	9	0,50	7	0,26
Horse gear	19	2,11	0	0,00	0	0,00
Keys	1	0,11	0	0,00	0	0,00
Belt buckles	2	0,22	5	0,28	2	0,07
Plate buckles	4	0,44	11	0,61	7	0,26
Belt plates	17	1,89	19	1,06	35	1,30
Bracelets	1	0,11	0	0,00	0	0,00
Rings, miscellaneous	3	0,33	0	0,00	2	0,07
Glass vessels	1	0,11	1	0,06	1	0,04
Pottery vessels	3	0,33	10	0,56	4	0,15
Bowls, wood	5	0,56	5	0,28	2	0,07
Coins	1	0,11	0	0,00	0	0,00
Finger rings	1	0,11	2	0,11	2	0,07
Beads	148	16,44	260	14,44	218	8,07

Table 3.2.1 Grave goods found in reopened, intact and indeterminate graves. For each category of graves, the table lists the total number per type and the average per grave.

Objects	Reopened (9 graves)		Intact (18 graves)		Unknown (27 graves)	
	Total	Average per grave	Total	Average per grave	Total	Average per grave
Iron	35	3,89	39	2,17	26	0,96
Copper alloy	21	2,33	12	0,67	36	1,33
Iron/copper alloy	2	0,22	10	0,56	1	0,04
Silver	2	0,22	0	0,00	1	0,04
Gold	1	0,11	0	0,00	0	0,00
Pottery	3	0,33	10	0,56	5	0,19
Glass (vessels)	1	0,11	1	0,06	1	0,04
Amber	4	0,44	19	1,06	5	0,19

Table 3.2.2 Grave good materials found in reopened, intact and indeterminate graves. For each category of graves, the table lists the total number per material and average per grave.

Object type	In pit	Outside pit	Unknown
Shields	2	0	0
Lance heads	1	1	0
Arrowheads	0	0	3
Keys	0	0	1
Belt buckles	0	0	2
Plate buckles	4	0	0
Belt plates/strap ends	13	0	4
Fingerring	0	1	0
Ring miscellaneous	1	0	2
Pots	0	2	1
Glass vessels	1	0	0
Coins	1	0	0
Beads	80	27	41
Bowls, wood	2	3	0
Fragments iron	32	0	18
Fragments pottery	2	0	1

Table 3.2.3 Objects found inside and outside reopening pits in reopened graves

As can be seen in table 3.2.3 the majority of objects that were left behind in the reopened graves were found inside the reopening pits. This was to be expected since most of the reopening pits focused on areas of the grave where the grave goods lay. If an object lay inside the reach of the reopening pit, the diggers could have seen it and therefore left it behind on purpose, especially if the object was large. Since many graves in Meerveldhoven were reopened after the container had collapsed, the objects may have been more difficult to spot, which makes it more likely that they were overlooked and left behind accidentally. Grave 29 is an obvious example of the contrary, because it yielded many grave goods from the reopened area, even though the intervention seems to have taken place while the container was still intact.

Addition of objects to reopened graves?

It is unclear whether objects were ever added to the graves when they were reopened. We can hypothesize that the diggers sometimes deposited objects like belt plates and wooden

bowls in the graves during a reopening. This would explain the relatively high numbers of these types of objects that were found in the reopened graves. The relatively large numbers of all object types found inside the reopening pits also suggests the diggers may occasionally have deposited something in the reopening pit. These findings could however also have come about if the diggers were simply not interested in taking certain objects from the graves' inventories and therefore left them behind. Unfortunately, the dates of the objects and graves are not detailed enough to allow the identification of later additions to the grave's inventory.

Grave constructions

Of the reopened graves, six had a chamber construction, one had a partitioned coffin and two had a wooden container of which the type could not be determined. As can be seen in table 3.2.4, the chamber graves were slightly overrepresented among the reopened graves, while the intact graves more often had partitioned and simple coffins.

	Reopened (n=9)		Intact (n=18)		Unknown (n=27)	
	number	percentage	number	percentage	number	percentage
Simple coffin	0	0%	2	11%	7	25%
Partitioned coffin	1	11%	6	33%	0	0%
Chamber	6	67%	10	56%	0	0%
Unknown	1	11%	0	0%	0	0%

Table 3.2.4 Grave constructions in reopened, intact and indeterminate graves.

	Reopened (n=9)	Intact (n=18)	Indeterminate (n=27)
Pit depth	37 cm	38 cm	38 cm
Pit width	217 cm	200 cm	173 cm
Pit length	294 cm	273 cm	268 cm
Coffin width	218 cm	207 cm	206 cm
Coffin length	133 cm	107 cm	104 cm

Table 3.2.5 Average width and length of grave pits and wooden containers in reopened, intact and indeterminate graves.

On average, the reopened graves were slightly wider and longer than the graves that had remained intact (table 3.2.5). On average, the reopened grave pits were 17 cm wider and 21 cm longer than the intact ones. The coffins in the reopened graves were 11 cm wider and 26 cm longer than those in the intact graves. Due to the small numbers of graves, these differences were not statistically significant. The depths of reopened and intact graves were very similar. It is unclear whether the difference in size between the reopened and intact graves resulted from conscious choices on the part of the diggers. Since Merovingian graves tend to become smaller toward the end of the period, it is possible that the difference in size between reopened and intact graves resulted from fewer small late graves being reopened than large early graves.

3.3 Dommelen

The site Dommelen Kerkakkers (the Netherlands, province of Noord-Brabant, municipality of Valkenswaard) was excavated between 1980 and 1987, by a team from the University of Amsterdam, under the direction of Frans Theuws. The excavations uncovered an early medieval settlement and several clusters of graves that were scattered over the settlement area. At the moment a publication of the excavation results is in preparation (Theuws forth-

coming).

The Dommelen grave group was situated on a relatively narrow stretch of land between the rivers Dommel and Keersop, near the modern towns of Valkenswaard and Eindhoven. The site was located in an area with a sandy soil. The soil conditions were quite favorable to the preservation and visibility of archaeological features. The traces of grave constructions, post-depositional interventions and taphonomic processes were often clearly demarcated. Nevertheless, wooden objects were only preserved as soil discolorations, not as physical remains. Unfortunately, this type of soil quickly leaches minerals from bone material, so bone remains were only preserved as skeletal silhouettes.

Graves

The excavation yielded 24 inhumation graves and no cremation graves. The excavators think no graves are left *in situ*. All datable graves date between 670 and 750, but there are many graves with few grave goods on the site, which may date later than this. The graves were distributed over the settlement area and were contemporaneous with the settlement. All graves were oriented approximately west-east. The graves were divided into a northern and a southern cluster and three isolated graves (8, 9 and 24) which are not depicted here. The northern cluster consisted of 14 graves with no

additional burials (figure 3.3.1). The southern cluster consisted of seven graves that contained nine or ten burials (figure 3.3.2). The layout of the two grave clusters differed significantly. The graves in the southern cluster were relatively large and were spaced at a distance from one another. In the northern cluster, the graves were much smaller and most of them were packed together with no open spaces between them. The cluster consists of a large group of eight packed graves, a smaller group of three packed graves and three separate graves. This mostly tightly packed layout of relatively small graves seems to be typical of

the last phase of graves in some cemeteries from the region, including Bergeijk and to a lesser extent Posterholt that are discussed below (Theuws & van Haperen 2012: 43; De Haas & Theuws 2013: 63).

The documented skeletal silhouettes were extremely vague, but as far as could be established, all the dead were buried in supine position with extended legs. Nearly all deceased were buried in wooden containers. There were 18 graves with simple wooden coffins, three with a chamber, one partitioned coffin, one trench grave and one grave where the construction could not be determined.

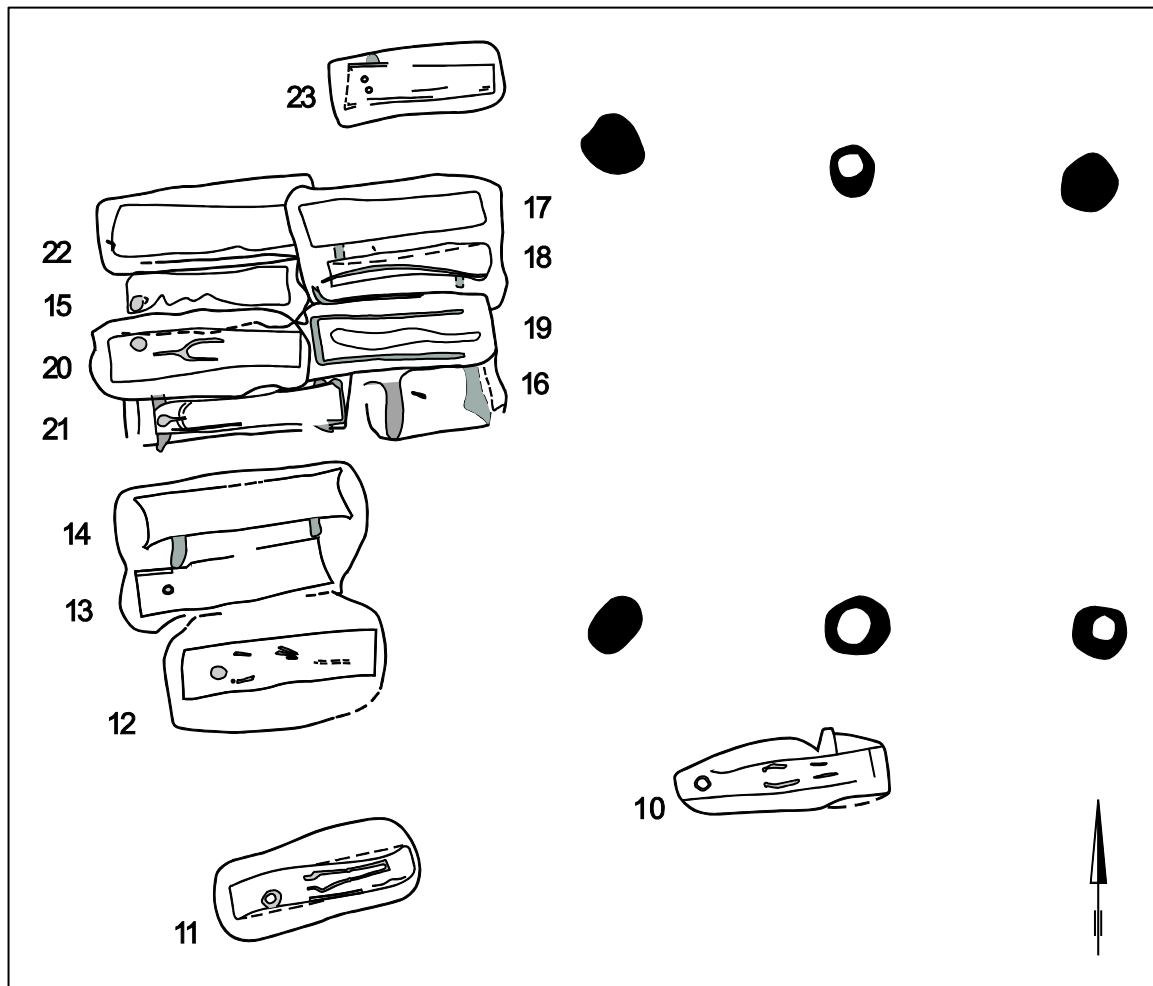


Figure 3.3.1 Map of the northern grave group showing graves and post holes. Drawing by Frans Theuws.

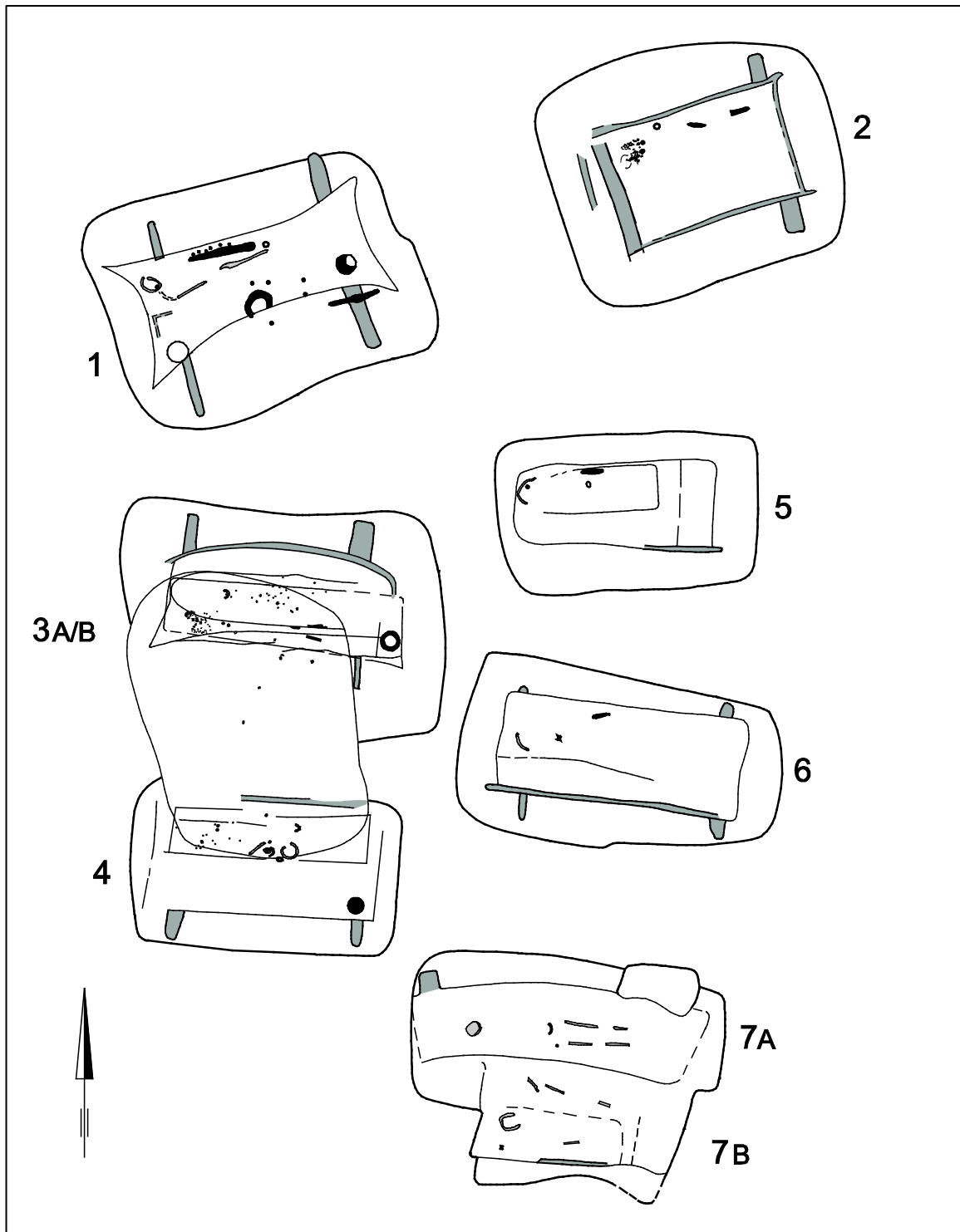


Figure 3.3.2 The southern grave cluster, including grave 3 with burials A and B, grave 4 and a reopening pit. Drawing by Frans Theuvs.

A few graves were furnished with many grave goods, while others - especially those in the northern cluster - had no grave goods at all. This lack of grave goods in the northern cluster falls in line with the hypothesis that these graves are part of the last phase of Merovingian graves in the region, when the grave good

deposition custom was in decline. Unfortunately, the lack of grave goods in these burials means that they cannot be dated precisely. No osteological data are available, so the graves can only be assigned to genders on the basis of the grave goods. Four graves contained objects that are typically associated with women and

only one yielded objects typically associated with men. The remaining 19 graves had only gender neutral grave goods, or no grave goods at all.

Post-depositional interventions

Various types of post-depositional interventions were observed in the Dommelen graves. Relatively few graves had been reopened, but quite a few contained additional burials. Intercuts between graves were also common. A few graves were subjected to multiple interventions types. The relations between the various interventions are sometimes quite complex.

Additional burials

Graves with multiple burials come about in quite different ways. A true double grave requires the remains of two people who died at approximately the same time. Especially in winter it may have been possible to keep a body above ground for a few weeks before decomposition set in. No such time constraints apply to graves with a later additional burial, since the grave can be reopened at any time to deposit a second individual. Between four and six graves contained two burials. In graves 9/24, the first and second body seem to have been buried simultaneously. For graves 13/14 and 17/18 it is unclear whether they were double graves or intercutting single graves. In grave 3, the second burial was added to the grave at a later time. For grave 7, it is unclear whether burials A and B were deposited simultaneously or consecutively. The grave also contained additional bone (7C) that was found between the coffins of 7A and 7B (see figure 3.3.2). Perhaps this bone belonged to burial 7B, but it is also possible that it belonged to a third individual. Based on the field drawings it seems most likely that B and possibly C were added to grave 7A at a later time. Compared to other cemeteries in the region, Dommelen has a high number of graves containing more than one individual. Especially the true double graves where two individuals were buried simultaneously in a single grave pit are relatively rare. Most double graves from

the region contain adult individuals, but in Dommelen one double grave yielded an adult and a child, and one contained two children. Grave 7 which possibly received three consecutive burials also held the remains of at least one adult and one child. Grave 3, with two consecutive burials, contained the remains of two adults.

Intercuts

At least four and possibly six graves were cut by a later grave. As mentioned above, graves 13/14 and 17/18 could either be intercutting graves or double burials. All intercuts were non-invasive, affecting only the peripheral areas of the cut grave pits. The intercuts were all found in the northern grave cluster, where the burials were packed tightly together. None of the cut graves had been reopened.

Reopenings

Of the 24 excavated inhumation graves in the grave group only 2 (8%) showed traces of a contemporary reopening. Nine graves (38%) had most likely been left intact. For the remaining 13 graves (54%), there was insufficient evidence to determine whether they had been subjected to an intervention or had remained intact. If the distribution of the indeterminate group is similar to that of the other graves, we can postulate 4 reopened graves (18%) and 20 intact graves (82%). This is a very low reopening rate compared to the other cemeteries in the region. As observed in other cemeteries like Bergeijk and Posterholt, graves from the last phase of the Merovingian period were reopened much less frequently than earlier burials, so the low reopening rate in Dommelen may very well be due to the relatively large number of late graves on the site. This hypothesis is confirmed by the fact that the reopened graves (3 and 4) both lay in the southern cluster of graves, which probably belongs to an earlier phase.

Graves 3 and 4 form an interesting complex. They were seemingly reopened with a single pit and an additional burial was added to grave 3 (see figure 3.3.2). All three burials are

accompanied by grave goods that are associated with women. The order of events by which this complex was created is difficult to reconstruct. The coffin containing individual 3B was deposited as a consecutive burial on top of individual 3A. At that time, the larger wooden container in which 3A had been buried was probably still at least partially intact. Since burial 3A appears disturbed and 3B does not, it seems likely that 3A was reopened before or during the deposition of 3B. There are no separate traces of a grave pit for 3B, so the coffin was probably deposited in the reopening pit. This hypothesis is confirmed by the fact that a fragment of an iron belt chain that probably originated from burial 3A was found underneath a pot that was probably part of burial 3B. The other fragments of this belt chain had been scattered throughout the grave and the reopening pit. The reopening pit into which burial 3B had been deposited extended to grave 4, which also had an at least partially intact wooden container at the time of the reopening. We can conclude that the reopenings of graves 3A and 4, and the deposition of burial 3B were probably part of a single intervention, for which one large pit was dug. In both graves 3A and 4 the reopening pit covered the entire contents of the wooden container. It did not extend very far into the peripheral areas of the graves, except for the sides of the grave pits in the area in between the containers of both graves, which had to be dug out in order to reopen both graves with a single pit. The pits went down to the graves' bottoms where the skeleton and grave goods lay. The graves were reopened while the wooden containers were still at least partially intact. Grave 4 dates to 675-700 and grave 3 dates to 700-725. If they were indeed reopened in one event, the reopening took place between 700 and 735.

Grave goods

The reopened graves contained many grave goods. Given the grave group's small size and the low number of reopened graves, a statistical comparison between the objects found in reopened and intact graves would not produce

meaningful results. This paragraph will therefore be limited to a short discussion of the objects found in the reopened graves. Grave 3A contained 24 glass beads, one complete and one half silver earring, a silver sceatta coin which was deposited in the deceased's mouth, a silver knife hilt knob, an iron belt chain, four iron keys and an iron knife. All of these items were found within the reach of the reopening pit, so the diggers could potentially have noticed them. The grave good set in grave 4 consisted of 14 glass beads, a pottery vessel, two gold foil disc brooches a silver finger ring and a silver knife hilt knob. Apart from the pot, all these were found within the reach of the reopening pit. The find of a knife hilt knob without a knife suggests that the knife may have been broken and partially removed during the reopening. The relatively low number of beads suggests that beads may also have been removed from this grave. Interestingly, the intact additional burial 3B was furnished with a set of grave goods that was quite similar to those in 3A and 4. This grave contained two silver earrings, 60 glass beads, a knife, a pottery vessel, a silver fastening ring, two gold foil disc brooches, one silver equal armed brooch and a sceatta of the same type as that found in 3A which was also deposited in the mouth. If the grave good set in burial 3A was originally truly similar to that in grave 3B, the diggers may have removed a pot, a number of beads, and brooches from 3A during the reopening. It is even possible that some items from graves 3A and 4 were reused in burial 3B. Since the wooden containers of graves 3A and 4 were probably still intact at the time of the reopening and the deposition of burial 3B, the grave goods date so close together that it is not possible to distinguish between reused and newly deposited items. However, it is equally possible that burials 3A and 4 were left largely intact and few or no items were removed. There are no indications that any objects were added to the graves during the reopenings, other than those associated with burial 3B.

Grave constructions

The reopened graves both had a chamber construction. Only one other grave on the site had a wooden container of this type. Most other graves were furnished with simple wooden containers of varying sizes. The reopened graves were not exceptionally large or small compared to the other graves in the southern group, but as mentioned above, the graves in this group were on average much larger than the graves in the northern group, which probably dated to a later phase.

3.4 Bergeijk

The cemetery of Bergeijk-Fazantlaan (the Netherlands, province of Noord-Brabant, municipality of Bergeijk) was discovered when a house was built on the site in 1957. A number of graves was partially destroyed before the site was recognized as an early medieval cemetery. The State Archaeology Service (ROB) assumed responsibility and excavated approximately 75 graves. In 1959, employees from the State Service returned to the site and excavated an additional 55 potential graves along the paths that led to the house (see figure 3.4.1). The terrain between these paths and the area north of the house remained unexcavated, so a considerable number of graves are probably still present *in situ*.

For many years, the excavation results were largely unpublished. Reports about some of the finds were published by Ypey (1957/1958; 1977). A brief overview of the excavated material appeared in Verwers (1987). Unfortunately, part of the finds were lost after the excavation and could not be retrieved. The descriptions of these missing finds in the final publication and in this study are therefore based on the limited information from the excavation find records. The field documentation and finds were eventually taken up by Frans Theuws and his students at the University of Amsterdam. These efforts led to the creation of the NWO funded ANASTASIS Merovingian cemetery backlog project, which aimed to analyze and publish the data from a number of cemeteries. The final publication of the Ber-

geijk cemetery was a combined effort of Frans Theuws and myself (Theuws & Van Haperen 2012). This publication also contains an analysis of the reopened graves, which served as a pilot study for this thesis.

Bergeijk is situated in the Kempen region, near the cemetery of Dommelen, which is also discussed in this thesis. The early medieval landscape around the cemetery was characterized by brook valleys, stretches of unfertile lands and smaller fertile zones. The area in which the cemetery was located has a sandy soil. The soil conditions are quite favorable to the preservation and visibility of archaeological features, even though wood was only preserved as soil discolorations. The traces of grave constructions, post-depositional interventions and taphonomic processes were often clearly demarcated. Unfortunately, this type of sandy soil quickly leaches minerals from bones, so uncalcined skeletal remains were poorly preserved. At the time of the excavations, most of the site was covered by a young pine tree forest. The naturally rather poor preservative conditions were probably exacerbated by the influence of the tree roots.

Inhumation graves

The excavations uncovered 117 inhumation graves. As mentioned above, more graves remain *in situ*. The excavated graves date between the later sixth or early seventh century and the first half of the eighth century. The graves were all oriented approximately west-east and most were laid out in relatively well-ordered rows. The cemetery's spatial layout seems to have developed from north to south. Nearly all deceased were buried in wooden containers of variable size. There were three possible trench graves and three graves with tree trunk coffins. Most deceased were buried with at least a few grave goods, but a few lacked preserved grave goods of all types. These may nevertheless have been furnished with items made from perishable organic materials like cloth and wood. The cemetery's southernmost section was occupied by a distinct group of the youngest graves which were relatively small and had few or no grave goods.

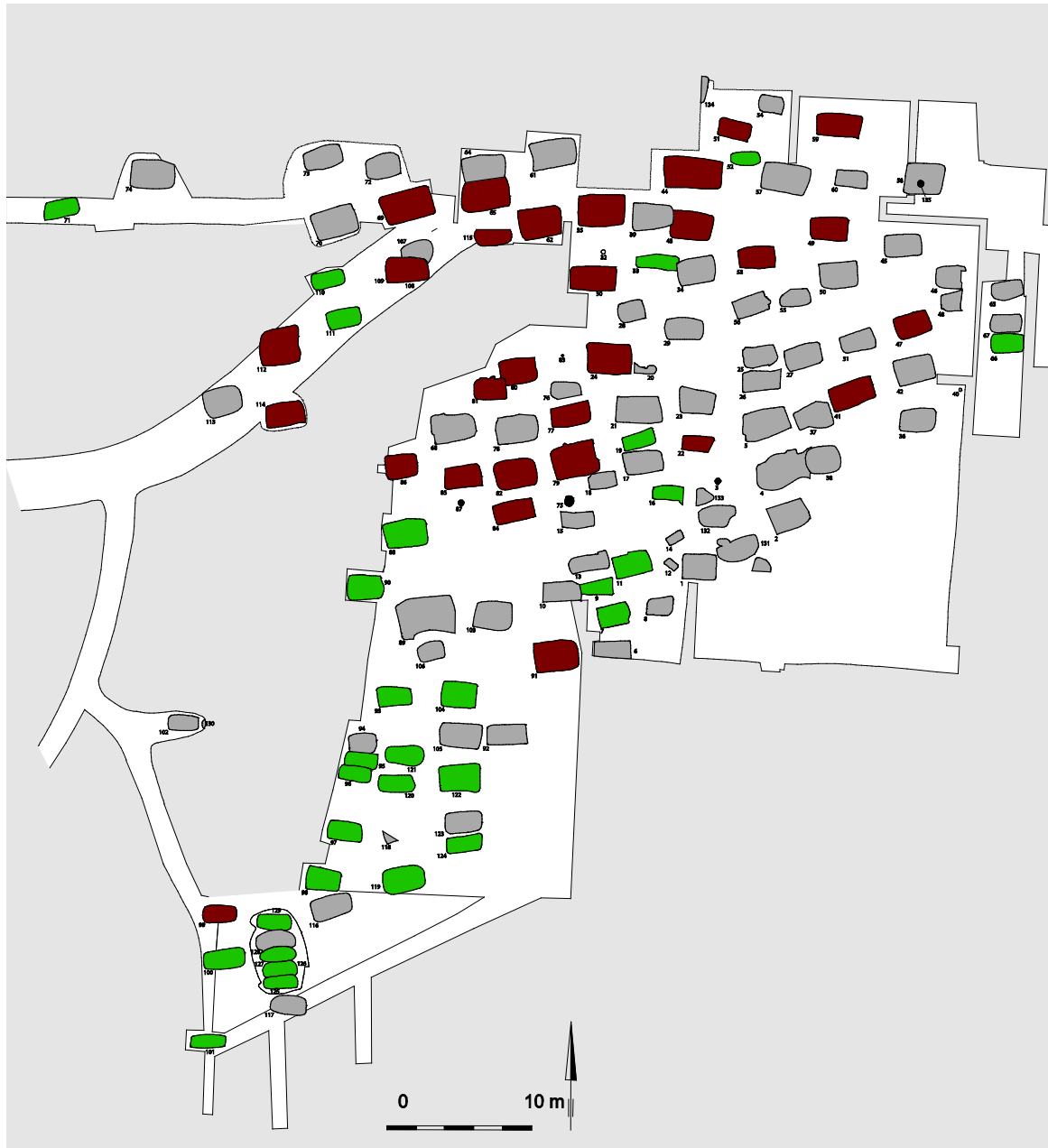


Figure 3.4.1 Map of the cemetery, showing the excavated sections and reconstructed possible graves in the unexcavated areas. Red=reopened inhumation, green=intact inhumation, light gray=indeterminate inhumation, dark gray=cremation. After Theuws & Van Haperen (2012: 49).

There were more graves with female gendered grave goods than with male gendered grave goods. Of 117 inhumation graves, 28 (24%) contained objects that are usually associated with women and only 17 (15%) yielded objects usually associated with men. Two graves (56 and 82) had a mixed set of grave goods which included both typical men's and women's grave goods. The remaining 70 graves (60%) had only gender neutral grave goods, or no grave goods at all. Since almost no skeletal remains were preserved in these graves, they could only be assigned to a specific gender on the basis of the grave goods. We cannot check to what extent gender specific grave good sets actually lay in burials with individuals of the expected sex. There may have been fewer men's graves in the cemetery or men may have been buried with gender specific artefacts less often than women.

	Male	Female	Neutral	Total
Reopened	59% (n=10)	39% (n=11)	10% (n=7)	24% (n=28)
Intact	18% (n=3)	36% (n=10)	25% (n=18)	27% (n=31)
Indet.	24% (n=4)	25% (n=7)	65% (n=48)	49% (n=58)
Total	100% (n=17)	100% (n=28)	100% (n=72)	100% (n=117)

Table 3.4.1 Percentages of graves with typical men's, women's and gender neutral grave goods that were reopened or remained intact.

Cremation graves

Seven contexts on the sited yielded cremated bone. Four were small round pits and three were inhumation graves containing concentrations of burned bone. These pits and concentrations were very similar to the finds of human cremated bone from other early medieval cemeteries in the region. Unfortunately, the bones from Bergeijk are lost, so it is no longer possible to determine whether these pits did indeed contain the remains of human cremations.

Compared to the inhumation grave pits, the cremation pits were rather shallow. No grave goods were found in them. It is unclear whether they had been subjected to post-depositional interventions.

Post-depositional interventions

Of the 117 excavated inhumation graves in the cemetery 28 (24%) showed traces of contemporary post-depositional interventions (see table 3.4.1). Thirty-one (27%) had most likely been left intact. For the remaining 58 graves (50%), there was insufficient evidence to determine whether they had been subjected to an intervention or had remained intact. If the distribution of the indeterminate group is similar to that of the other graves, we can postulate 55 reopened graves (47%) and 62 intact graves (53%). As can be seen in figure 3.4.2, the reopened graves were concentrated in the cemetery's northern half. Of the late graves in the southern section, only one had been reopened. This difference in the distribution of the reopened graves may have resulted in changes in reopening frequency during the cemetery's use period. The chronology of the reopenings will be discussed in more detail below.

Similar to the Broechem and Posterholt cemeteries, the Bergeijk cemetery showed a difference between the intervention rates of presumed men's and women's graves. The cemetery had a relatively large number of graves with grave goods that are usually associated with women. Of all graves 24% was furnished with typical women's grave goods, while only 15% had men's grave goods. The remainder of the graves contained non-gendered 'neutral' grave goods or lacked preserved grave goods altogether. As in the Broechem cemetery, post-depositional interventions occurred more often in burials that had grave goods associated with men. As can be seen in table 3.4.1, 59% of the graves with men's objects were reopened, compared to 39% of the graves with women's objects. The Z-test test showed that there was a statistically significant difference between the numbers of reopened graves with male and neutral grave goods ($P=0.000$, $F=4.632$) and between reopened graves with female and neutral grave goods ($P=0.001$, $F=3.455$). However, the difference between the numbers of graves with men's and women's grave goods is non-significant. The diggers appear to have preferred graves with gendered grave goods over graves with neutral grave goods, but did not select graves with men's or women's grave goods in a way that led to a statistically significant difference.

Additional burials

Because almost no unburned bone was preserved, there was no conclusive evidence for additional inhumations in older graves. Grave 56 revealed both beads and a lance head, suggesting that the grave may have contained the remains of both a woman and a man. In grave 82, the grave good types and their distribution indicate that the grave may have contained

two burials, a woman in the northern part of the container and a man in the southern part. If these graves did indeed contain multiple individuals, these could either have been deposited simultaneously or the graves could have been reopened for additional burials. There were three cases of possible cremation remains found in inhumation graves. As mentioned above, the bone has gone missing, so it is uncertain whether it was human. It is unclear whether the concentrations of burned bone were deposited during the original burial, or whether they were added to the graves at a later time. In grave 34, the burned bone fragments were scattered throughout the grave, with a concentration in the south. These remains may have originated from a cremation that was disturbed by the inhumation grave pit, but they could also have been deposited in the grave intentionally. Grave 58 also contained a concentration of cremated bone, which had probably been placed underneath the coffin. There is evidence that a fire may have been lit in the vicinity of the concentration of burned bone at the time of its deposition. More burned bone was scattered in the grave's fill. It could not be determined whether graves 34 and 58 had been reopened. Grave 108 contained a concentration of cremated bone which had not been scattered. This grave had probably been reopened, but it is unclear whether the cremated bone was deposited during the original funeral or during the reopening.

Intercuts

Intercuts between graves were comparatively rare in the Bergeijk cemetery. Only ten graves (9%) were cut by a younger grave and none of these intercuts were invasive. They only cut the peripheral areas of the older grave's pit and did not reach into the coffin. Interestingly, intercuts were more common in the younger southern section of the cemetery, where there were fewer reopenings.

Reopenings

Of the 117 excavated inhumation graves, 28 had been reopened. Despite the clearly defined soil features observed in this cemetery, the coverage of the reopening pits was sometimes difficult to determine. Some graves did not reveal any traces of a reopening pit, so reopened graves could only be recognized on the basis of the chaotic layout of the skeleton and grave goods. In most cases where intervention pits were observed, the graves were opened with a simple pit which entered the area of the coffin from above. Disturbances in the graves' contents sometimes indicated that the actual intervention reached beyond the traces of the pit (for instance in graves 24, 41, 43 and 84). As far as could be established, all reopening pits were dug down to the graves' bottoms where the grave goods and skeletal remains lay. It was usually unclear whether the pits were backfilled after the reopenings. In a few cases the reopening pit fills contained many relatively well preserved grave goods, making it likely that the pits had been backfilled soon after the interventions.

In a few graves the reopenings deviate from this general pattern. In grave 27 the diggers seem to have approached the container from one side, and then have freed up and removed the entire lid to gain access to the space within (see figure 3.4.2). If there was still an open space inside the container, the diggers had easy access after lifting the lid, which could explain why the grave's remaining contents look relatively undisturbed.

In grave 35 the wooden container may have been taken from the grave as a whole. Alternatively the grave may never have had a wooden container to begin with. Because of this grave's unusual appearance, the excavators made a section drawing. The drawing shows sedimentation layers, suggesting that the reopening pit may have been left open after the intervention and slowly filled with natural sediments.

	Head end	Head/neck	Thorax/pelvis	Legs/feet	Foot end	Sides
Men (10)	10% (n=1)	60% (n=6)	100% (n=10)	90% (n=9)	0	30% (n=3)
Women (11)	36% (n=4)	82% (n=9)	91% (n=10)	64% (n=7)	18% (n=2)	45% (n=5)
Neutral (7)	0	71% (n=5)	100% (n=7)	43% (n=3)	0	29% (n=2)
All graves (28)	18% (n=5)	71% (n=20)	96% (n=27)	68% (n=19)	7% (n=2)	36% (n=8)

Table 3.4.2 Placement of reopening pits in graves with men's and women's grave goods.

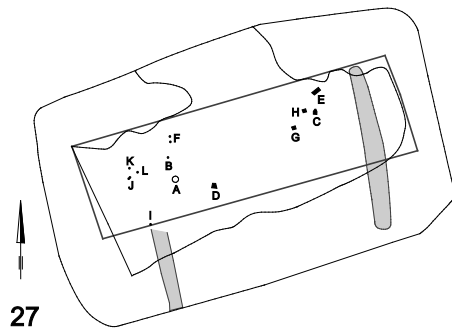
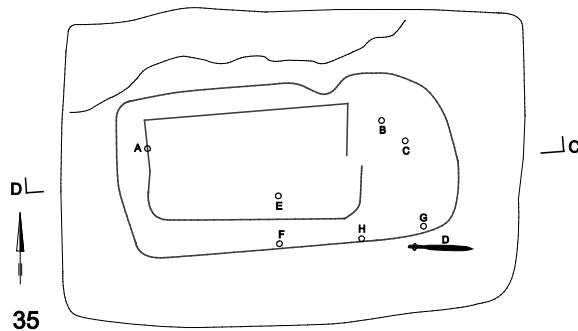


Figure 3.4.2 Grave 27 with a reopening pit which approached the coffin from the side.



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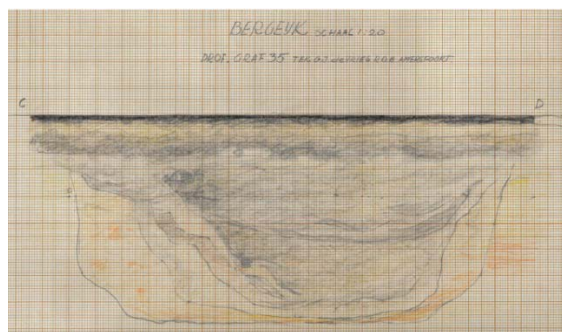


Figure 3.4.3 Level and section drawings of reopened grave 35 where the diggers may have taken out the wooden container.

Table 3.4.2 shows which areas of the graves were reopened. The data in this table differ slightly from those presented in the chapter on post-depositional interventions in the original publication (Van Haperen 2012: 47), because I changed the definition of the grave zones to include the grave pit and not just the area inside the wooden container. In nearly all the graves, the reopening pit covered multiple areas. Most reopening pits focused on areas inside the wooden container, especially on the thorax and pelvis regions which were almost always reopened. Fewer pits went into the area of the head/neck and the legs/feet. In 12 cases, the entire coffin had been reopened. The reopening pits occasionally extended beyond the confines of the coffin, reaching either into the head end, foot end or sides of the grave pit. In only two cases (27 and 108) the entire grave had been reopened from the head end to the foot end. In grave 27, the reopening pit also covered part of the grave pit's sides. Both these graves contained grave goods that are usually associated with women. There were no cases where the reopening pit focused specifically on the peripheral areas of the grave.

There is very little evidence for differences between the ways graves with typical men's and women's grave goods were reopened. The top rows of table 3.4.2 show the placement of reopening pits in presumed men's and women's graves. The head end, head/neck area and foot end were opened slightly more often in women's graves than in men's graves. The legs/feet area on the other hand was opened slightly more often in men's graves. However, grave 85 which contained typical women's grave goods was only reopened in the leg/feet area and foot end. Of the 12 graves where the entire coffin had been reopened, five contained grave goods usually associated with women and six had grave goods associated

with men. Only the difference for the reopening of the leg/feet area between graves with female and neutral grave goods was statistically significant ($P=0.036$, $F=-2.099$).

Reopening chronology

Seven graves were reopened while the container was still intact (27, 44, 47, 77, 79, 82 and 99). The skeletal silhouette in grave 99 indicates that this grave was probably opened after the corpse had skeletonized, but while there was still an open space within the wooden container. According to Aspöck's scale (2005: 251-252) this would indicate a reopening between 10 and 35 years after burial. Six graves were probably reopened after the container had collapsed (22, 24, 41, 43, 51 and 62). For the 15 remaining graves, it was not possible to determine the state of the container at the time of the reopening. The reopenings that could be dated based on the state of the container took place in 565-655, 580-685 (3 graves), 610-735, 610-715 and 640-715. The excavated section of the cemetery probably dates between 580 and 750. Both the dates of the reopened graves and the reopenings themselves cover the cemetery's entire use period. It seems likely that the mostly intact graves in the southern part of the cemetery form its last phase, but it is difficult to be certain because these graves contained very few datable grave goods. However, even this southern group has at least one reopened grave (99). Reopenings probably occurred during most if not all of the cemetery's use period. The majority of the reopenings probably took place in the seventh century, with possibly a few early cases at the end of the sixth century and a few late cases in the beginning of the eighth century. However, it is also possible that nearly all reopenings were carried out at the end of the seventh and the beginning of the eighth century, perhaps by the generation who constructed the final group of mostly intact graves in the southern section.

Grave goods

The differences between the objects found in reopened and intact graves can be seen in table 3.4.3. The table shows the number of objects found in graves with reopened, intact and indeterminate status. For each category of graves, the total number of objects of a particular type is displayed in the left column. The right column contains the average number of objects per grave. Since many finds were lost after the excavation, some of the grave goods had to be reconstructed on the basis of the find records. As a result, some of the numbers are an estimate of what was actually found. The reopened graves in Bergeijk contained relatively large amounts of grave goods. The average numbers of lance heads, arrowheads, horse gear, knives, plate buckles, belt plates, leg strap plates, necklace pendants, pottery vessels and glass vessels were all higher for reopened than for intact graves. Only simple belt buckles, earrings and beads were found in larger numbers in intact graves. The differences between intact and reopened graves are significant for arrowheads ($P=0.043$, $F=2.121$), belt plates/strap ends ($P=0.013$, $F=2.661$), leg strap fittings ($P=0.039$, $F=2.167$) and pots ($P=0.020$, $F=2.427$). The differences for the other object types were not significant. The differences for the other object types were not significant. The low numbers of grave goods in the intact graves probably result at least partially from the fact that most intact graves date to the cemetery's end phase, when the deceased were buried with relatively few or no grave goods.

It is important to note that the objects found in the reopened graves were often fragmented and missing fragments. For instance, forty-five percent of the pottery vessels from the reopened graves were missing some shards, while the pots in intact graves were all complete, even when they were broken (Van Haperen 2012: 51-52). Because of the many objects that have gone missing after the excavation, there are insufficient data to systematically analyze the completeness of other object types.

Objects	Reopened (28 graves)		Intact (31 graves)		Indet (58 graves)	
	Total	Average per grave	Total	Average per grave	Total	Average per grave
Swords	2?	0,07	0	0	0	0
Seaxes	0	0	1	0,03	0	0
Shields	1	0,04	0	0	2	0,03
Lance heads	4	0,14	1	0,03	2	0,03
Arrowheads	4	0,14	0	0	2	0,03
Horse gear	3	0,11	0	0	0	0
Knives	10	0,36	8	0,26	15	0,26
Fire steels	0	0	0	0	1	0,02
Spurs	1	0,04	0	0	1	0,02
Belt buckles	8	0,29	11	0,35	9	0,16
Plate buckles	7	0,25	0	0	0	0
Belt plates/strap ends	46	1,64	7	0,23	18	0,31
Leg strap plates	13	0,46	2	0,06	1	0,02
Belt pendants	2	0,07	0	0	0	0
Earrings	1	0,04	4	0,13	0	0
Fingerrings	1	0,04	1	0,03	1	0,02
Brooches	1	0,04	0	0	0	0
Bracelets	0	0	1	0,03	0	0
Necklace pendant	2	0,07	0	0	1	0,02
Rings, miscellaneous	2	0,07	2	0,06	7	0,12
Decorative pin	1	0,04	0	0	0	0
Pottery vessels	20	0,71	7	0,23	14	0,24
Glass vessels	2	0,07	0	0	5	0,09
Coins	0	0	1	0,03	1	0,02
Beads	98	3,50	206	6,65	87	1,50

Table 3.4.3. Grave goods found in reopened, intact and indeterminate graves. For each category of graves, the table lists the total number per type and the average per grave.

Nevertheless, there are a number of cases where objects from reopened graves were fragmented and partially removed, that are worth discussing. Grave 59 contained a lance head's socket. The diggers may have taken the lance, broken it, removed the blade and redeposited part of the socket in the grave. Of the two swords listed with a question mark in table 3.4.4, only fragments were found. The excavation find list of grave 69 mentions a sword point and a hand guard or grip. Unfortunately, these finds have gone missing so their nature could not be verified. It is possible that a sword was buried here and was later broken and partially removed from the grave. A similar scenario may apply to the iron frag-

ment gg2 from grave 24. This fragment, which is partly covered in mineralized leather fixed with small rivets, closely resembles the point of a sword or seax. When graves contain partial fragmented objects, it is always the question whether the fragmentation resulted from actions that took place during the reopening, or whether the objects were fragmented previously by other processes and were simply mixed with the grave's fill. Given the predominance of fragmented objects in reopened graves and the lack thereof in intact graves, it seems likely that the fragmentation was indeed at least partly caused by processes that took place during the reopenings. Breakage may have come about accidentally when

the diggers accessed the grave, but purposeful fragmentation is equally possible. Many reopened graves contained large iron rivets which were sometimes plated with bronze foil and lay scattered over part of the grave (24, 30, 41, 44, 49, 49, 59, 62, 65 and 85). Although such rivets could have originated from various types of objects, they probably often belonged to wooden shields. This is confirmed by the fact that many of these rivets revealed traces of mineralized wood. Some of the graves in question also yielded relatively large flat fragments of iron, some of which had rivets attached, that may have belonged to shield bosses and grips. The rivets and fragments indicate that the graves in question may originally have contained shield bosses and grips that were removed from the grave during reopenings.

There are also a few cases where it is likely that belt fittings were removed from reopened graves. Grave 82 yielded a large counter plate with silver inlay in geometric style (find-number h). Such plates were normally part of a set of multiple belt fittings which included at least a decorated plate buckle and often a back plate as well, neither of which were found. In grave 69, the excavators found a rectangular back plate decorated with geometric silver inlay (11). This fitting was most likely originally on a belt that also had a plate buckle and counter plate, which were no longer present in the grave when it was excavated. Since the fittings were originally attached to a belt, they probably lay close together in the grave. The people reopening graves must have known, like we do, that these fittings were part of sets and usually lay in close proximity to one another. When parts of these sets were left behind in reopened graves, it is likely this was due to a choice on the part of the participants. Apart from the large decorated counter plate, grave 82 also contained two pyramid-shaped copper alloy sword belt fittings (d1 and j). It is one of three reopened graves that yielded sword belt fittings. Grave 79 held a similar

pyramid-shaped mount (f). In grave 44 the excavators found two rectangular belt sword-belt mounds with incised decoration (v1 and w1). It is not certain whether these fittings belonged to complete sword belts, but it is nevertheless likely that these mounts were originally associated with other fittings that were taken from the graves when they were reopened. They may also have been associated with swords that were removed.

Table 3.4.4 shows which materials were found in reopened and intact graves. The table only takes into account recognizable objects. Fragments are excluded, because it is often unclear whether these were part of the grave's original inventory or whether they were just mixed with the soil that was used to fill the graves.

The data in this table reflects and confirms the results of the previous analysis, which indicated that the reopened graves contained relatively large numbers of grave goods compared to the intact graves. Few objects of precious metal were found: four of silver and four of gold. They were found both in reopened, intact and indeterminate graves. Objects made of iron, copper alloy and pottery were found in much higher numbers in the reopened graves. The differences between intact and reopened graves are statistically significant for iron ($P=0.003$, $F=3.198$), copper alloy ($P=0.030$, $F=2.270$) and pottery ($P=0.000$, $F=4.187$).

Table 3.4.5 shows where objects from reopened graves were found in relation to the reopening pit. All object types were found more frequently inside reopening pits than outside them. This was to be expected since we have seen above that reopening pits in this cemetery were often quite large and focused on areas of the graves where most objects were deposited. If an object lay inside the reach of the reopening pit, the diggers could have seen it and left it behind on purpose, especially if the object was large. At least seven graves were reopened while there was still an open space inside the wooden container, so the visibility in these cases would have been relatively good.

The cemeteries – analyzing the data

Objects	Reopened (28 graves)		Intact (31 graves)		Indet (58 graves)	
	Total	Average per grave	Total	Average per grave	Total	Average per grave
Iron	98	3,50	32	1,03	58	1,00
Copper alloy	55	1,96	9	0,29	25	0,43
Iron/copper alloy	30	1,07	2	0,06	8	0,14
Silver	1	0,04	3	0,10	0	0,00
Gold	2	0,07	0	0,00	2	0,03
Pottery	21	0,75	8	0,26	14	0,24
Glass (vessels)	2	0,07	0	0,00	5	0,09
Amber	7	0,25	6	0,19	4	0,07

Table 3.4.4 Grave good materials found in reopened, intact and indeterminate graves. For each category of graves, the table lists the total number per material and average per grave.

	In pit	Outside pit	Unknown
Swords	2	0	0
Shields	0	1	0
Lance heads	2	2	0
Arrowheads	4	0	0
Horse gear	3	0	0
Knives	10	0	0
Spurs	0	0	1
Belt buckles	7	0	1
Plate buckles	7	0	0
Belt plates/strap ends	45	0	1
Leg straps	8	0	5
Belt pendants	1	0	0
Earrings	1	0	0
Finger rings	1	0	0
Brooches	1	0	0
Necklace pendants	0	0	1
Rings, miscellaneous	2	0	0
Decorative pins	1	0	0
Pottery vessels	10	5	5
Glass vessels	1	0	1
Beads	59	28	11
Fragments iron	179	10	16
Fragments copper alloy	1	0	0
Fragments pottery	31	0	6

Table 3.4.5 Objects found inside and outside reopening pits in reopened graves

Addition of objects to reopened graves?

It is unclear whether objects were ever added to the graves when they were reopened. We can hypothesize that the diggers sometimes deposited objects like lance heads, arrowheads, knives, plate buckles and belt plates in the graves during a reopening. This would explain the relatively high numbers of these types of objects found in the reopened graves. The large numbers of all object types found inside the reopening pits also suggests the diggers may occasionally have deposited items in them. These findings could however also have come about if the diggers were simply not interested in taking certain objects from the grave's inventory and therefore left them behind. The dates of the objects and graves are not detailed enough to allow the identification of later additions to the graves' inventory. There is some evidence for the redistribution of pottery fragments over multiple graves. The excavators' find administration states that a number of pottery fragments from grave 22 fitted to others found in the adjacent grave 23. Unfortunately all the fragments in question have gone missing, but it is likely that the graves contained fragments of a single pot. Similarly the neighboring graves 62 and 65 contained pottery fragments that looked very similar, but could not be fitted together. They could either belong to a single pot or to two nearly identical pots. Since the graves 22, 62 and 65 were certainly reopened and grave 23 may have been reopened as well, various scenarios can be conceived which account for the distribution pattern of these pottery fragments (Van Haperen 2012: 52). Some of these scenarios require one or both graves to be reopened, while in others, the graves could have remained intact. The fragments may have been introduced into the graves during the funerals (1). This could mean that the graves were dug simultaneously or within a short time of one another and that the pots were broken during the funeral after which the fragments ended up in the graves. The fragments may also have been introduced into the graves when they were reopened. This could

mean that the graves were reopened around the same time. In this scenario (2a) the pot could have been taken from one of the graves and its fragments afterwards spread over both of them. Alternatively (2b), a 'new' pot could also have been broken at the time of the reopening and the fragments put into the graves when they were backfilled. Here, the pot could date to a later period than one or both of the graves. If one of the graves was constructed later than the other (3a), fragments of a broken pot from an older grave could have been removed during a reopening and then introduced into the newer grave when it was first dug. The other way around (3b), a pot could have been broken during the funeral after which part of the fragments were put into a neighboring grave that was being reopened around the same time. Here, the graves may differ in date so one of the graves could contain finds that do not date to the moment of burial. As shown above, the fragmentation and especially the removal of fragments from graves seems to have occurred primarily during reopenings, so scenarios 2a, 2b and 3a are more likely to approximate the true course of events than 1 and 3b. In all these scenarios the fragments could have been introduced into the graves intentionally or by accident. Since both the pairs of graves in question lay in close proximity to one another, accidental dispersal of the fragments is certainly a possibility, since they may simply have mixed with the soil used to refill the graves after the funeral or reopening.

Grave constructions

As can be seen in table 3.4.6, the reopened graves were larger than the intact graves, indicating that grave reopenings occurred more frequently in large graves than in smaller ones. On average, the grave pits of the reopened graves were 49 cm wider and 35 cm longer than those of intact burials. The coffins in the reopened graves were 29 cm wider and 28 cm longer than those in the intact ones. Significance testing was done on the differences in grave pit length which were overall significant ($P=0.014$, $F=4.449$). With the post-hoc Tuck-

	Reopened (n=28)	Intact (n=31)	Indet (n=58)
Grave pit width	181 cm	132 cm	164 cm
Grave pit length	279 cm	244 cm	252 cm
Coffin width	91 cm	62 cm	76 cm
Coffin length	228 cm	200 cm	200 cm

Table 3.4.6 Average width and length of grave pits and wooden containers in reopened, intact and indeterminate graves.

ey test, significant differences were found between reopened and intact graves ($P=0.015$) and reopened and indeterminate graves ($P=0.049$). The difference between intact and indeterminate graves was not significant. This difference in size between reopened and intact graves may partially result from the fact that a relatively high number of large early dating graves from the cemetery's northern area was reopened compared to a much lower number of the smaller late graves from cemetery's south-eastern edge.

3.5 Posterholt

The first small-scale excavation at the cemetery of Posterholt-Achterste Voorst (the Netherlands, province of Limburg, municipality of Roerdalen) was carried out in 1983 by local amateur archaeologists from the Heemkundevereniging Roerstreek. Six Roman cremation graves and five Merovingian inhumation graves were found. The work was continued in 1984 by the State Archaeology Service who launched a full-scale excavation. The excavations were conducted with reasonable care and the documentation is quite detailed. The State Service excavated only 94 potential grave contexts and dug a number of trial trenches to estimate the cemetery's size (see figure 3.5.1). The remaining contexts are still *in situ*, although some may have been damaged in 1953 when a road was constructed across the site.

For many years, the excavation results remained largely unpublished. A short report was made by Willems, Van Kregten (1984). The field documentation was eventually taken up by Frans Theuws and his students at the

University of Amsterdam. These efforts led to the creation of the NWO funded ANASTASIS Merovingian cemetery backlog project, which aimed to analyze and publish a number of cemeteries including Posterholt. The final publication of Posterholt was a combined effort of Maaïke de Haas and Frans Theuws (De Haas & Theuws 2013).

Posterholt is situated in the middle of the Dutch province of Limburg near the German border, along the banks of the river Roer, a tributary of the Meuse. The area in which the cemetery was located has a sandy soil. The conditions are quite favorable to the preservation and visibility of archaeological features. Wood remains were preserved as soil discolorations. The traces of grave constructions, post-depositional interventions and taphonomic processes were often clearly demarcated. Unfortunately, this type of porous soil quickly leaches minerals from bone material, so unburned skeletal remains were poorly preserved.

Inhumation graves

The excavation and trial trenches revealed 123 potential inhumation graves, of which 78 human inhumation graves and 5 possible inhumation grave pits were excavated completely. The cemetery was probably in use from the sixth until the first half of the eighth century, but the majority of the excavated graves date to the seventh century. The graves were all oriented west-east and most were laid out in relatively well-ordered rows. The cemetery's spatial layout stratigraphy seems to have developed from west to east. The unexcavated portion of the site, west of the excavated graves, may harbor the oldest burials.

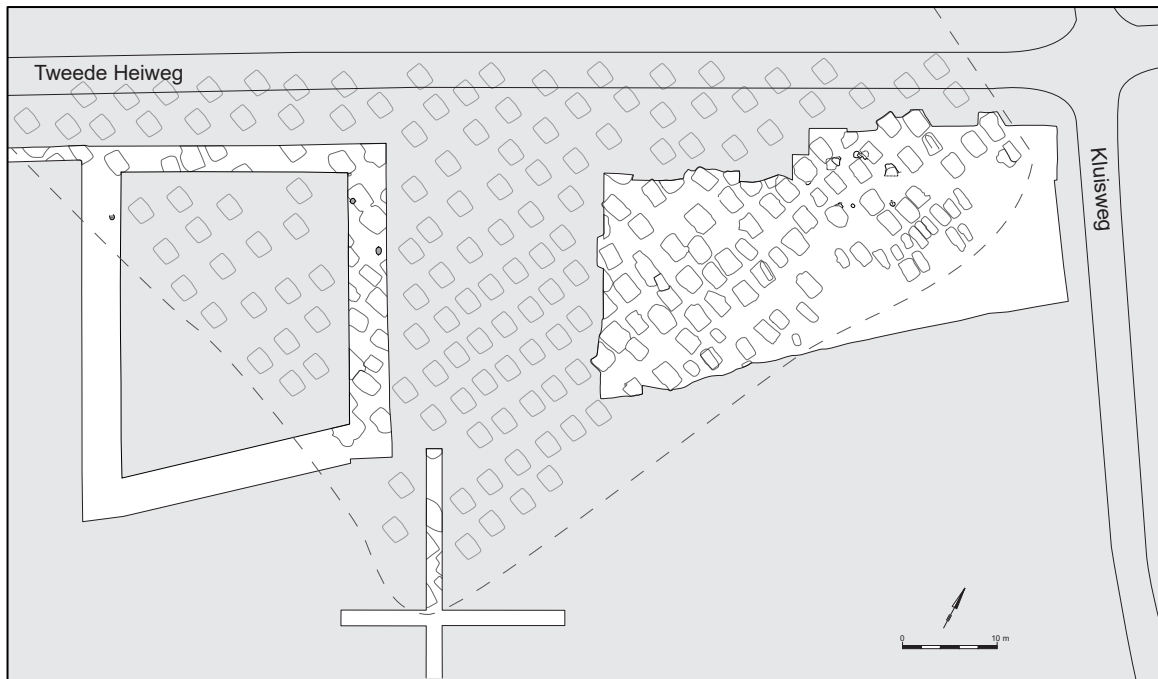


Figure 3.5.1 Reconstruction of the cemetery's layout based on the data from the excavation and trial trenches. From De Haas & Theuws (2013: 161).



Figure 3.5.2 Map of the excavated part of the Posterholt cemetery. Red=reopened inhumation, green=intact inhumation, light gray=indeterminate inhumation. After De Haas & Theuws (2013: 71).

Most deceased were buried in wooden containers of variable size. There were six possible trench graves, two tree trunk coffins, one two-part coffin and one bier burial. Most deceased were buried with at least a few grave goods, but a few lacked preserved grave goods of all types. These may nevertheless have been furnished with items made from perishable organic materials like cloth and wood. Nineteen graves did not yield traces of a wooden container. Some of these graves may have been trench graves, but the De Haas and Theuws assume that in most cases, the grave had a wooden container of which no traces were preserved. Since all the graves without containers had been reopened or possibly reopened, they suggest that the containers may have been damaged or even removed from the grave. Alternatively, the disturbance may have interfered with the preservation of organic remains, causing the containers to decompose more readily after a reopening (De Haas & Theuws 2013: 59).

There were more graves with female gendered grave goods than with male gendered grave goods. Of 78 inhumation graves, 18 (23%) contained objects that are usually associated with women and only 8 (10%) contained objects that are usually associated with men. The remaining 52 graves (67%) had only gender neutral grave goods, or no grave goods at all. Since almost no skeletal remains were preserved, the graves can only be assigned to a specific gender on the basis of the grave goods. We cannot check to what extent gender specific grave good sets actually lay in burials with individuals of the expected sex. A number of other graves did contain sufficient skeletal material for age and sex determinations. Eight women's graves could be identified based on osteological data. None of them were buried with gender specific grave goods. No men were found in the osteological analyses. The cemetery also yielded remains of eight children

between 4 and 12 and three adolescents. It is unclear whether there were truly fewer men's graves in the cemetery, or whether men were simply buried with gender specific artefacts less often than women.

The osteological data suggest that there really were more women's than men's graves, but the graves that yielded well preserved bone were all located on the cemetery's east boundary, so the sample may be biased (Panhuysen 2013: 144).

Cremation graves

The excavated section of the cemetery contained 12 cremation graves of which three were Merovingian, eight were Roman and one dated to the Roman period or Iron age. The Roman cemetery was marked with a rather large stone grave monument of which only fragments remained. The Roman cremations were sometimes cut by the Merovingian inhumation graves, but showed no indications of intentional reopenings. The Roman cremations will not be discussed in detail.

The three Merovingian cremation graves (25, 26, and 27) were quite shallow and had all been disturbed by ploughing. The constructions of the cremation graves were all slightly different, but consisted of small round or oval pits containing charcoal, cremated bone and pottery fragments. Some of the pottery may have served as urns. Apart from the pottery, the cremation graves did not contain any grave goods. The graves contained relatively little bone, between 25 and 170 grams, which is a very small proportion of the bone left over after the cremation of an adult body. The minimum number of individuals for every cremation grave is one. The remains belonged to three adult individuals, one woman and two adults whose sex could not be determined (Panhuysen 2013: 140-141).

Post-depositional interventions

Of the 78 excavated inhumation graves in the cemetery 33 (42%) showed traces of contemporary post-depositional interventions. At least 23 (29%) appeared to have been left intact. For the remaining 22 graves (28%), there was insufficient evidence to determine whether they had been subjected to an intervention. If the distribution of the indeterminate group is similar to that of the other graves, we can postulate that there were approximately 46 reopened graves (59%) and 32 intact graves (41%) in this cemetery. As can be seen in figure 3.5.2, the reopened and intact graves form two unusually distinct sections of this cemetery. This is probably because the intact graves in the cemetery's eastern section most likely belong to the cemetery's end phase, when graves were reopened less frequently. The diggers focused their efforts on graves with gender specific objects. Similar to the Broechem and Bergeijk cemeteries, Posterholt yielded a relatively high percentage of reopened graves with typical men's grave goods, compared to the cemetery as a whole which is dominated by graves with typical women's grave goods. As can be seen in table 3.5.1, all graves (100%) with men's objects had been reopened, while only 61% of the graves containing women's objects had been reopened. Also, the majority of the reopened graves contained gendered objects, while none of the intact graves yielded any gendered objects. In addition, no children's graves appear to have been reopened. Statistically significant differences were found between reopened graves with men's and women's grave goods ($P=0.039$, $F=2.063$), with male and neutral grave

goods ($P=0.000$, $F=3.993$) and with female and neutral grave goods ($P=0.009$, $F=2.609$). It can be concluded that the diggers generally focused on graves with gendered grave goods, and seem to have been most interested in graves containing objects associated with men.

Additional burials

Various types of near-contemporary post-depositional interventions were observed in the Posterholt cemetery. Straightforward reopenings and intercuts between graves were the most common, but there were also three cases of additional burials deposited in existing graves. Some graves were subjected to multiple interventions types.

A few graves from Posterholt yielded evidence of multiple burials. Given the relatively poor preservation of bone in the cemetery, more double burials may have gone unnoticed.

Grave 14 contained two wooden containers, each holding the remains of one individual, a child and a young adult. They were probably buried simultaneously. The grave did not contain any grave goods and was not subjected to visible interventions after the burial.

Grave 42b was reopened to deposit second burial 42a. Almost no skeletal material was found in 42b. It is unclear whether it was removed from the grave or had simply decayed. The individual in 42a was an adolescent of unknown sex. No age or sex data are available for 42b.

Grave 46b contained a skull (19), a number of bones and parts of a decorated iron belt. It was cut by pit 46a which yielded an additional skull (20) and a few pieces of bone, together with a silver coin and 13 beads.

	Male	Female	Neutral	Children	Total
Reopened	100% (n=8)	61% (n=11)	27% (n=14)	0	42% (n=33)
Intact	0	0	44% (n=23)	64% (n=7)	29% (n=23)
Indet.	0	39% (n=7)	29% (n=15)	36% (n=4)	28% (n=22)
Total	100% (n=8)	100% (n=18)	100% (n=52)	100% (n=11)	100% (n=78)

Table 3.5.1 Percentages of graves with typical men's, women's and gender neutral grave goods that were reopened or remained intact.

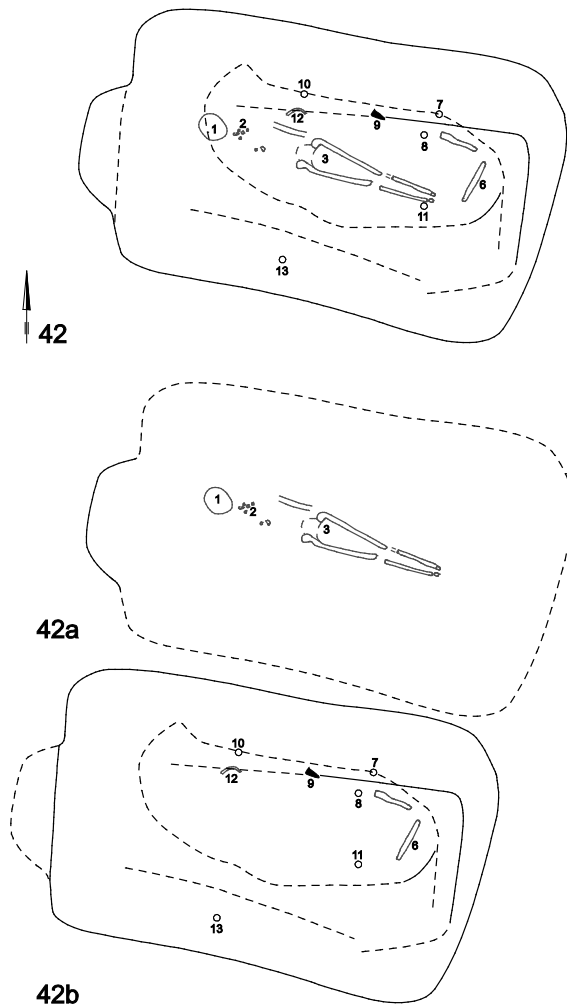


Figure 3.5.3 Grave 42b and second burial 42a. After De Haas & Theuws (2013: 219).

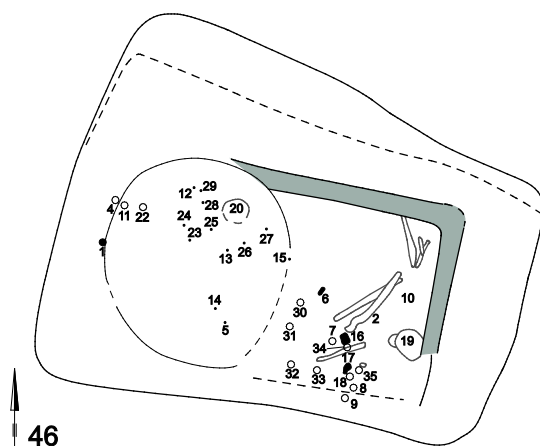


Figure 3.5.4 Pit 46a in grave 46b. A second skull (20) was found in the pit. After De Haas & Theuws (2013: 222).

The individual in 46b was an older adult of unknown sex. No osteological data are available for the individual from 46a. The way the bones in burial 46b are scattered suggests that they were disturbed by an intervention that extended into the entire coffin, far beyond the documented limits of pit 46a. It is unclear whether 46a contained a complete body or just a skull and grave goods. Most finds were located on the bottom of the grave, indicating that it was reopened while there was still an open space inside the container, even though the pit seems to cut the container's wood. This situation could have come about in several ways. (1) The grave could be a reopened double burial of which some remains were left in the coffin while others were deposited in the reopening pit 46a. (2) The grave could be a single burial which was cut by a reopening pit in which the diggers deposited the – articulated or disarticulated – remains of a second individual. (3) It is also possible that the reopening and disarticulation of the remains in grave 46b and the deposition of the additional remains in 46a were separate events that took place at different points in time. Since no beads were found outside pit 46a, scenarios 2 and 3 are the most likely.

In grave 48, two wooden containers outlines were visible. The small container held the remains of a young adult female. No human remains were recovered from the large container. The grave either held a single burial with a double container (a wooden coffin in a wooden chamber), or it held an additional burial. The latter scenario seems more likely since the small container seems to cut the large one, indicating that it was deposited after the large container had started to decompose. The outline of the north wall of the large container was only visible at level IV, underneath the small container. The remains in the large container could have been disturbed during the deposition of the additional burial. This second burial remained undisturbed.

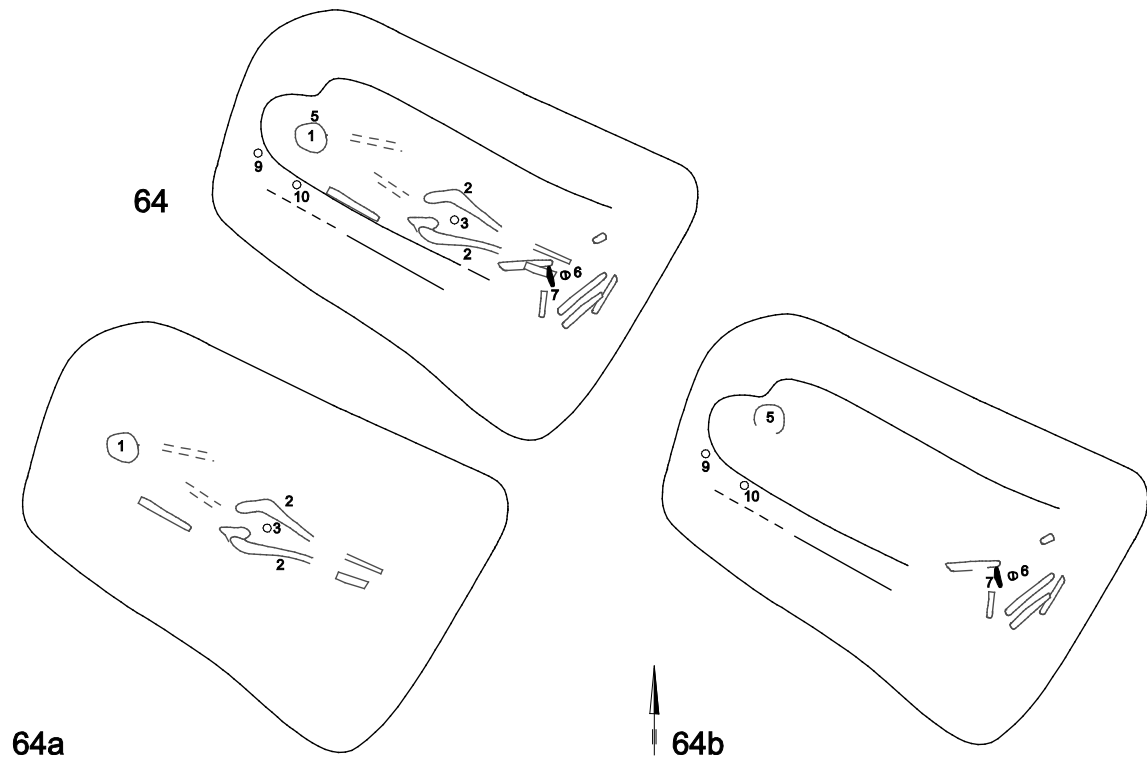


Figure 3.5.5 The two burials in grave 64. After De Haas & Theuws (2013: 242).

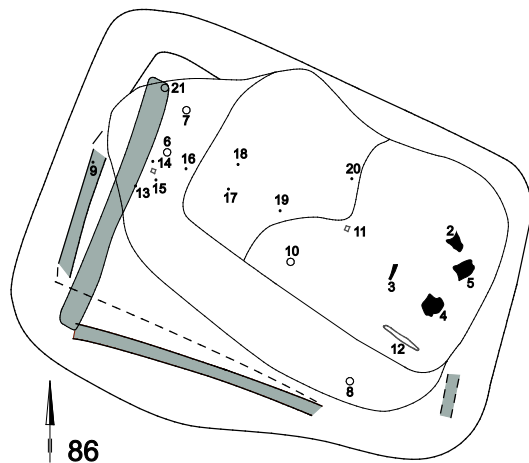


Figure 3.5.6 Grave 86 with two nested reopening pits. From De Haas & Theuws (2013: 266).

Grave 64 was also reopened to deposit a second individual. There was probably still an open space inside the wooden container when the second burial took place. The remains of the second individual (64a) lay only five centimeters above those of the first (64b). The post-cranial skeleton of the first burial was moved to a pile at the grave's foot end, but the skull was left *in situ*. The individual in 64a was an adult female. No osteological data are available for 64b.

Grave 86 may have had two nested reopening pits that were both visible on excavation level 2. One was rectangular with slightly rounded corners, the other was more irregular in shape. Given the rectangular shape and the presence of human remains in the upper pit, it is possible that this pit was in fact an additional smaller inhumation grave deposited on top of the already reopened grave. This hypothesis cannot be confirmed because the upper pit is very shallow. Alternatively, all the observed features could belong to a single reopening pit with different fills.

Intercuts

Intercutting graves were relatively rare in the Posterholt cemetery. Six or seven inhumations (8%) were cut by a later grave. Intercuts were found only in graves that had also been reopened and graves of indeterminate status. A few intercuts were invasive and may have been extended into a reopening of the older grave. In other cases the intercut and reopening seem to have been separate events. Some of the documented intercuts were not invasive and only touched the peripheral areas of the older graves (21, 33, 54). No otherwise intact graves had been affected by an intercut.

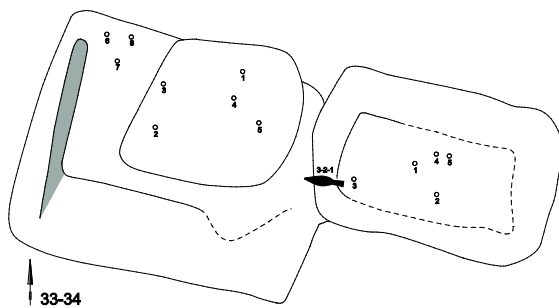


Figure 3.5.7 Intercutting graves 33 and 34. A lance head was found in the overlapping area between the two graves. After De Haas & Theuws (2013: 215).

The edge of the grave pit of grave 33 was cut by grave 34. Grave 33 had been reopened and a lance head was found in the overlapping area between the graves, but the reopening pit appears to be separate from the intercut. If the reopening took place after the intercut, it is possible that the diggers took the lance head from grave 33 and placed above the overlap. It is also possible that the lance head was always part of the furnishings in grave 34 and its placement is unrelated to the reopening of grave 33.

Graves 74a and b form an ambiguous case that could be classified both as an intercut and as a deposition of a second burial in an older grave. The upper layer of grave 74b was almost completely cut by grave 74a. The lower levels of 74b may also to have been reopened, possibly when 74a was dug.

Grave 79 was largely dug away when it was cut

by grave 80. It is unclear whether the uncut section of this grave had also been reopened. Grave 80 in turn was cut by possible grave 81, which was either an inhumation grave or a reopening pit that extended between grave 80 and 82. It contained a fragment of a decorated belt back plate of which the other half was found in grave 82. This case will be discussed further below.

Reopenings

Regular reopenings are by far the most common type of contemporary post-depositional intervention in the Posterholt cemetery. After subtracting the graves that were opened during the deposition of a second burial and the graves that were opened by an intercutting grave, between 26 and 28 graves remain that were opened with simple pit that had the sole purpose of allowing the diggers access to the grave's contents.

Despite the clearly defined soil features, the reach of the reopening pits was sometimes difficult to determine. Some graves did not reveal clear traces of a reopening pit, while the chaotic layout of the skeleton and finds indicated that they had been reopened (graves 4, 24, 51, 82). Most graves were opened with a simple pit which entered the grave from above, usually in the area of the wooden container. All graves were reopened with a single pit, except perhaps grave 86 which was discussed above. No true search trenches were found, but two sets of graves may have been reopened from a single pit (80/82 and 89/90). The diggers either did not know the exact location of the grave they were targeting, or wanted to reopen two graves simultaneously. In the case of graves 89 and 90, the reopening pit was dug in the area of the intercut between the graves. Fibula 11-I-8 was found in this area and could have come from either of the graves. As mentioned above, grave 80 and 82 were both cut by context 81, which was either a very small inhumation grave or a reopening pit that extended between grave 80 and 82. Context 81 contains a fragment of a back plate of which the other half was found in grave 82. All reopening pits went down to the graves'

bottoms. No partial reopenings were found. In grave 78 the excavators documented digging traces on the reopening pit's bottom, indicating that a spade was probably used to dig a hole in the grave. The traces cut the coffin's bottom, which means that the wood had probably decayed by the time the grave was reopened.

Disturbances in the graves' contents sometimes revealed that the actual intervention reached beyond the traces of the pit (for instance in graves 24, 31, 58, 70, 80, 88, 91). In most of these cases it was unclear whether the coffin was still intact when the grave was reopened, but if it was, the diggers could probably have reached into the open space through a relatively small hole, thus causing a disturbance that was larger than the intervention pit itself.

Figure 3.5.8 is a part of a section drawing made along the eastern limits of the excavation, showing the vertical cuts of two reopened graves with reopening pits ('*roofkuil*' in

Dutch). Unfortunately, these graves were not fully excavated, so there are no level plans that show what the graves looked like in the horizontal plane. The pit in the grave on the right extends beyond the burial pit. The part of the reopening pit that lay outside the grave contained charcoal fragments ('HK'), suggesting that a small fire may have been lit here. The purpose of this fire is unclear, but the stratigraphic relation with the reopening pit indicates that it was part of the chain of events that took place when the grave was reopened. The reopening pit in the grave on the left has a homogenous fill, indicating that it was probably backfilled soon after the intervention. The pit on the right grave has two distinct fills, suggesting that it was only partially backfilled after the reopening and may have remained partially open for quite a long time. De Haas and Theuws think it may not have been filled up until the field was brought into cultivation in the later medieval period (De Haas & Theuws 2013: 73-75).

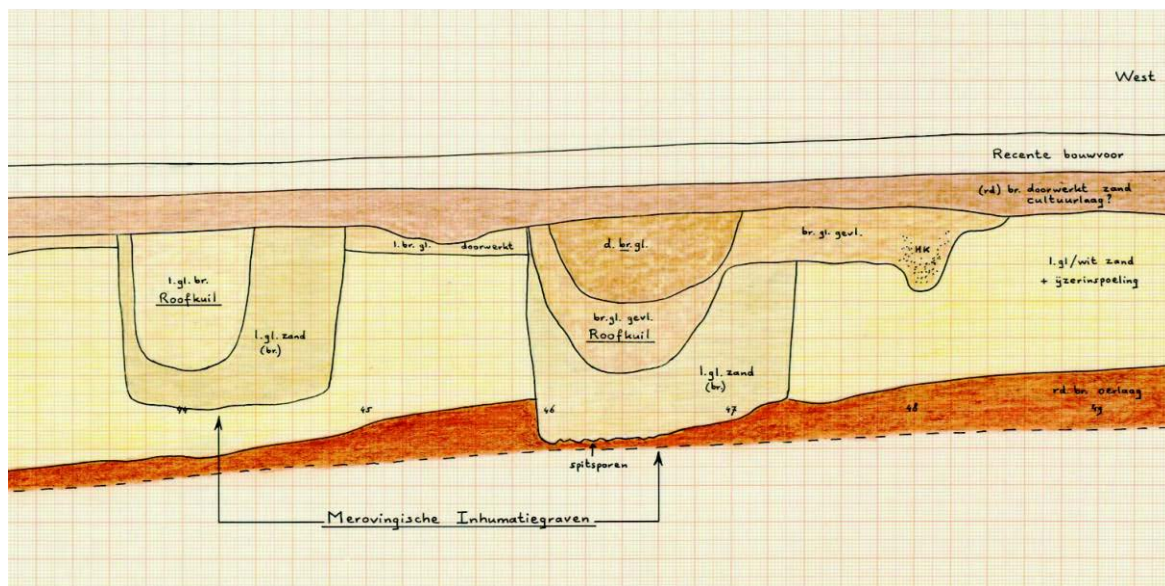


Figure 3.5.8. Section drawing of two reopened graves. The graves were not fully excavated or documented, so they were not given numbers. After De Haas & Theuws (2013: 58).

	Head end	Head/neck	Thorax/pelvis	Legs/feet	Foot end	Sides
Men (8)	0% (n=0)	75% (n=6)	100% (n=8)	100% (n=8)	25% (n=2)	25% (n=2)
Women (11)	36% (n=4)	91% (n=10)	100% (n=11)	82% (n=9)	36% (n=4)	45% (n=5)
Neutral (14)	21% (n=3)	64% (n=9)	93% (n=13)	86% (n=12)	29% (n=4)	14% (n=2)
All graves (33)	21% (n=7)	76% (n=25)	97% (n=32)	88% (n=29)	30% (n=10)	27% (n=9)

Table 3.5.2 Placement of reopening pits in graves with men's and women's grave goods.

It is often unclear how graves were treated after a reopening, but it seems at least some of the reopening pits in Posterholt had layered fills, suggestive of filling in stages or gradual filling by sedimentation. Unfortunately only these two vertical sections were documented, so it is difficult to be certain.

Reopening pit placement

All reopening pits reached down to the bottom level where the skeleton and grave goods lay. The reopening pits were relatively large compared to the pits observed in other cemeteries in the research area. Table 3.5.2 shows which areas of the graves were reopened. In nearly all the graves, the reopening pit covered multiple areas. Most reopening pits focused on the interior of the wooden container, especially on the thorax and pelvis area which were almost always reopened. Fewer pits went into the area of the head/neck and the legs/feet. Reopening pits did occasionally extend beyond the confines of the coffin, reaching either into the head end, foot end and/or sides of the grave pit. In only two cases (84 and 85), the entire grave had been reopened head end to foot end and sides. Both these graves contained grave goods that are usually associated with women. There were no cases where the reopening pit focused specifically on the peripheral areas of the grave.

There is little evidence that graves of men and women were reopened in different areas related to gender specific grave good distributions. The two top rows of table 3.5.2 show the placement of reopening pits in presumed men's and women's graves. There may have been a slightly heavier focus on the region around the head in women's graves, but otherwise there is little to no difference. In 22 graves the entire coffin area had been reopened. Six of these graves (75%) contained grave goods usually associated with men and eight (73%) had grave goods associated with women. The only statistically significant differences were for the reopening of the head end between graves with men's and women's grave goods ($P=0.005$, $F=-2.839$) and be-

tween graves with women's and neutral grave goods ($P=0.032$, $F=2.138$).

Reopening chronology

It is difficult to date the post-depositional interventions in Posterholt, because there is little evidence for the state of the human remains and wooden containers at the time of the reopenings. Five graves were reopened while the container was still intact (24, 46b, 77, 85, 90). Two graves were probably reopened after the container had collapsed (30, 87). For the remaining graves, it was not possible to determine the state of the container at the time of the reopening. The reopenings that took place before the container had decomposed can roughly be dated to within 35 years of the burial, according to Aspöck's scale (2005: 251-252). The reopenings that could be dated based on the state of the container took place in 580-785, 610-685, 610-715, 615-800, 620-745 and 720-785.

The excavated section of the cemetery probably dates between 580 and 750. Reopened graves are among the earliest graves in the cemetery, dating 510-590 and 510-620. Reflecting the chronology and burial frequency of the cemetery as a whole, the majority of reopened graves dates squarely in the seventh century. A smaller number of reopened burials dates to the end of the sixth and the start of the seventh century. The latest dated intact grave in the cemetery was constructed in 710-750. The latest dated reopened graves date to 610-710 and 580-750. Unfortunately, the intact graves in the southern part of the cemetery, which are presumed to be its last phase, are difficult to date precisely because they contain almost no grave goods.

Reopenings probably occurred during most if not all of the cemetery's use period. The date ranges of most datable reopenings lie between 610 and 750. Most reopenings probably took place in the seventh century. There may have been a few early cases in the sixth century when the cemetery had just come into use and a few late cases at the end of its use period. However, since most reopenings could hypothetically date to the later seventh century, it is

Objects	Reopened (33 graves)		Intact (23 graves)		Indet (24 graves)	
	Total	Average per grave	Total	Average per grave	Total	Average per grave
Seaxes	1	0,03	0	0	0	0
Shields	1	0,03	0	0	0	0
Lance heads	3	0,09	0	0	0	0
Arrowheads	8	0,24	0	0	0	0
Shears	1	0,03	0	0	0	0
Knives	8	0,24	5	0,22	4	0,17
Fire steels	1	0,03	0	0	0	0
Belt buckles	10	0,30	7	0,30	7	0,29
Plate buckles	2	0,06	0	0	0	0
Belt plates/strap ends	32	0,97	0	0	6	0,25
Brooches	1	0,03	1	0,04	0	0
Earring	1	0,03	0	0	0	0
Spindle whorls	4	0,12	0	0	0	0
Rings, miscellaneous	2	0,06	0	0	2	0,08
Pottery vessels	13	0,39	1	0,04	1	0,04
Glass vessels	4	0,12	0	0	0	0
Coins	6	0,18	2	0,09	1	0,04
Beads	97	2,94	1	0,04	74	3,08

Table 3.5.3 Grave goods found in reopened, intact and indeterminate graves. For each category of graves, the table lists the total number per type and the average per grave.

also possible that they were all carried out near the end of the cemetery's use period, possibly by the generation who constructed the final group of smaller graves at the edge of the cemetery.

Grave goods

In this section, I reconstruct which objects may have been taken during grave reopenings. The differences between the objects found in reopened and intact graves can be seen in table 3.5.3. The table shows the number of objects found in graves with reopened, intact and indeterminate status. For each category of graves, the total number of objects of a particular type is displayed in the left column. The right column contains the average number of objects per grave.

The Posterholt cemetery yielded relatively few grave goods. No swords or axes were found. There were also no shield bosses, although reopened grave 30 contained a shield grip. One seax was found in reopened grave 58.

Jewelry and dress accessories like plate buckles, bracelets, earrings and fibulae were also rare or absent. Interestingly, most grave goods were found in reopened graves. Only knives and simple belt buckles were found in roughly equal numbers in all grave types. The other object types were almost completely absent in intact graves. Belt plates and pottery vessels were particularly well represented in the reopened graves. Other object types that were mostly found in reopened graves include lance and arrowheads, spindle whorls, glassware and coins. Oddly, almost equally high numbers of beads were found in reopened and indeterminate graves, while only one single bead was found in an intact grave. The differences between intact and reopened graves are statistically significant for arrowheads ($P=0.037$, $F=2.179$), belt plates/strap ends ($P=0.001$, $F=3.867$), spindle whorls ($P=0.044$, $F=2.101$), pots ($P=0.004$, $F=3.057$), glass vessels ($P=0.044$, $F=2.101$) and beads ($P=0.018$, $F=2.485$). The differences for the other object types were not significant.

Objects	Reopened (33 graves)		Intact (23 graves)		Indet (24 graves)	
	Total	Average per grave	Total	Average per grave	Total	Average per grave
Iron	182	5,52	29	1,26	60	2,50
Copper alloy	43	1,30	0	0,00	7	0,29
Iron/copper alloy	10	0,30	0	0,00	4	0,17
Silver	1	0,03	2	0,09	0	0,00
Gold	1	0,03	0	0,00	0	0,00
Pottery	17	0,52	1	0,04	1	0,04
Glass (vessels)	4	0,12	0	0,00	0	0,00
Amber	14	0,42	0	0,00	8	0,33

Table 3.5.4 Grave good materials found in reopened, intact and indeterminate graves. For each category of graves, the table lists the total number per material and average per grave.

Object type	In pit	Outside pit	Unknown
Seaxes	0	0	1
Shields	1	0	0
Lance heads	1	0	2
Arrowheads	5	0	3
Shears	0	0	1
Knives	6	0	2
Fire steels	1	0	0
Belt buckles	8		2
Plate buckles	2	0	0
Belt plates/strap ends	27	0	5
Brooches	1	0	0
Earrings	1	0	0
Spindle whorls	3	0	1
Rings, miscellaneous	2	0	0
Pottery vessels	10	0	3
Glass vessels	3	0	1
Coins	5	0	1
Beads	90	0	7
Fragments, iron	150	0	34
Fragments, copper alloy	8	0	0
Fragments, pottery	49	0	161

Table 3.5.5 Objects found inside and outside reopening pits in reopened graves.

These findings suggests that the diggers preferred to reopen graves with grave goods, even though they did not systematically remove the objects from the graves. The diggers may also have deposited objects in the graves during reopenings. This possibility will be discussed further below. Graves that only contained a knife and simple belt buckle were often left untouched. These graves could however date

to the cemetery's end phase, when grave reopenings may have been less frequent. The objects that were left behind in the reopened graves sometimes do give clues about objects that were taken. For instance, grave 30 contained a shield grip, indicating that a shield boss may have been removed from the grave. In four other graves, the presence of large dome-shaped rivets also suggested the former

presence of a shield. Five graves yielded fragments of seax and sword scabbards. However, scabbards need not always have been accompanied by a seax or sword. Many reopened graves contained incomplete sets of belt fittings, indicating that plate buckles and belt plates had been taken. For a detailed attempt at reconstructing the original belt sets see cemetery publication (De Haas & Theuvs 2013: 76-77). The relatively low number of pots, compared to the numbers found in other cemeteries in the region, suggests that pottery may also have been removed from the graves.

Table 3.5.4 shows which materials were found in reopened and intact graves. The table only takes into account recognizable objects. Fragments are excluded, because it is often unclear whether these were part of the grave's original inventory or whether they were just mixed with the soil that was used to fill the graves. The data in this table mostly reflects and confirms the results of the previous analysis. Only a few precious metal objects were found: three of silver, one of gold. They were distributed equally over reopened and intact graves. All the other materials were found in much higher numbers in the reopened graves. Copper alloy objects were even completely absent from the intact graves. The differences between intact and reopened graves are significant for iron ($P=0.009$, $F=2.727$), copper alloy ($P=0.003$, $F=3.207$), iron/copper alloy ($P=0.015$, $F=2.576$), pottery ($P=0.008$, $F=2.788$), glass ($P=0.015$, $F=2.564$) and amber ($P=0.037$, $F=2.178$). The numbers of objects found in the indeterminate graves are low, reflecting the fact that the reopening status of graves with few finds is often difficult to determine.

As can be seen in table 3.5.5 most objects that remained in the reopened graves were found in the reopening pits. In fact, no objects or even fragments of objects lay distinctly outside a reopening pit, although there were cases where it was unclear whether an object or fragment lay inside or outside the pit. The majority of objects lay squarely inside the reopening pits. This is once again a testament to the relatively large size and breadth of the

reopening pits in this cemetery. Pottery fragments were the only exception, probably because the grave fills contained many stray pottery fragments that were not part of the graves' furnishings. If an object lay inside the reach of the reopening pit, the diggers could have seen it and left it behind on purpose, especially if the object was large. At least five graves were reopened while there was still and open space within the wooden container, so the visibility inside the grave would have been relatively good.

Addition of objects to reopened graves?

It is unclear whether objects were ever added to the graves when they were reopened. We can hypothesize that the diggers sometimes deposited objects like the lance heads and arrowheads, belt plates and pots in the graves during a reopening. This would explain the relatively high numbers of these types of objects that were found in the reopened graves. The large amount of all object types found inside reopening pits also suggests the diggers may occasionally have deposited something when they reopened a grave. However, these findings could also have come about if the diggers were simply not interested in taking certain objects from the grave furnishings and therefore left them behind. The dates of the objects and graves are also not detailed enough to allow the identification of later additions to the grave's inventory.

The fill of the reopening pit in grave 58 contained a dog's jawbone. This is a rather unique find, both for this cemetery and for Merovingian graves from this region in general. The bone may have been part of the grave's original furnishings or it may accidentally have been mixed with the fill. However an intentional deposit in the reopening pit cannot be excluded. In the same grave, a complete belt set was found in the container's northwest corner. This is an unusual position for this type of object. It may have been moved or even newly deposited in the grave during the reopening.

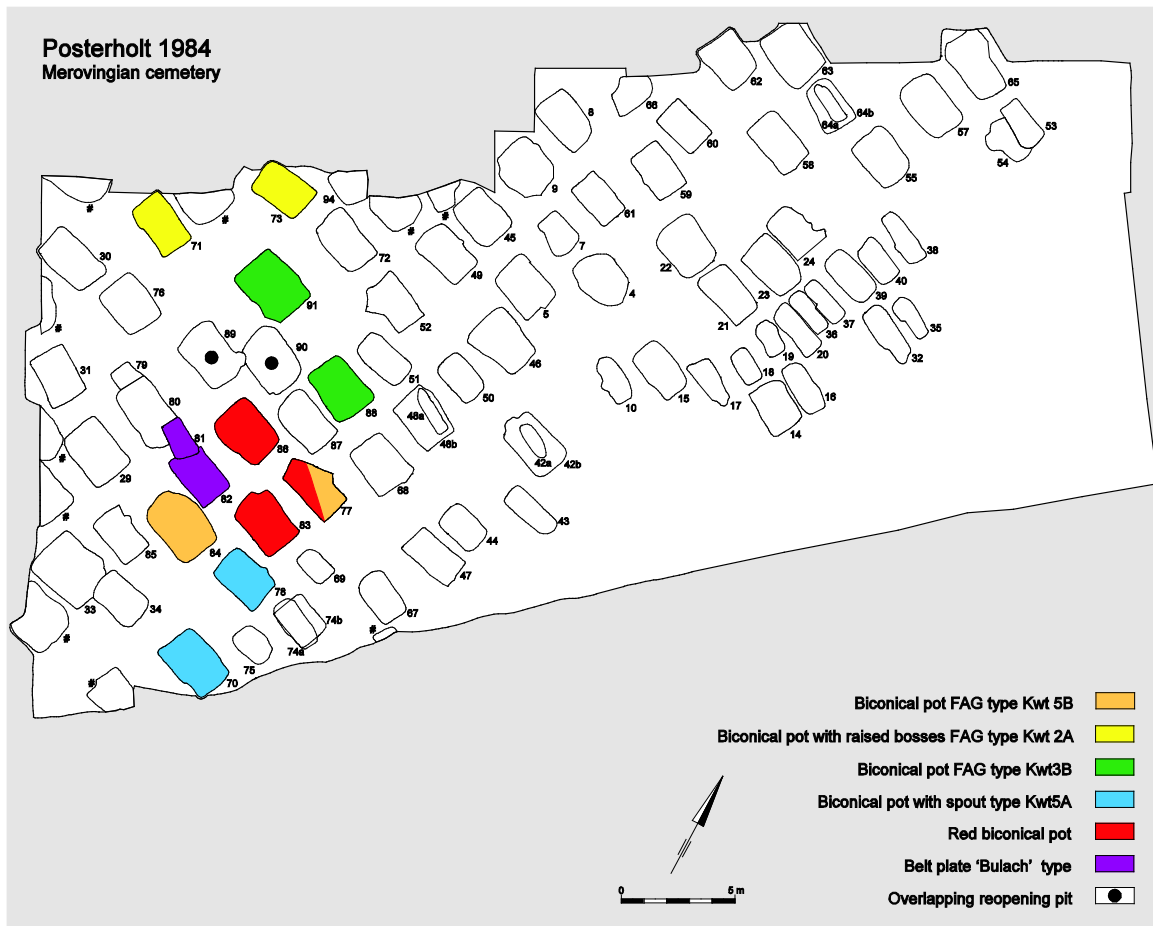


Figure 3.5.9 Distribution of fragmented artefacts over multiple graves. From De Haas & Theuws (2013: 78).

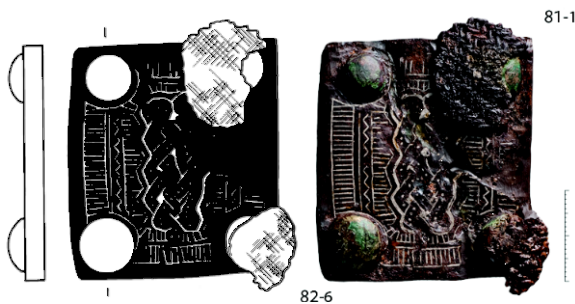


Figure 3.5.10 Broken belt plate. One half was found in grave 82 and the other in possible grave 81. From De Haas & Theuws (2013: 259).

There is some evidence for the redistribution of objects and fragments over multiple graves. In at least three cases, fitting fragments of at least three and possibly five pots were found distributed over multiple burials (graves 78/70, 77/83/86, 88/91 and possibly 71/73 and 77/84). Also, fragments of the same decorated belt plate were found in grave 82 and possible grave 81. Since the objects were not

eroded, it seems likely that they were deposited in the graves soon after breaking. As can be seen in figure 3.5.9, the graves containing these fragments lay in close proximity to one another. Perhaps these graves were reopened simultaneously and backfilled with soil and fragments from a common heap. The diggers may accidentally or on purpose have redistributed fragmented artefacts (and soil) between the graves. It seems likely that the graves which contained the largest portion of fragments were the original contexts of those objects. It is also possible that new broken objects were introduced into the graves during the reopenings, either intentionally or by accident.

Intentional damage

Since the intact graves contained relatively few objects, there are insufficient data to compare the fragmentation and completeness of objects from intact and reopened graves. It is never-

theless noteworthy that the overall degree of artefact fragmentation in Posterholt was quite high compared to other cemeteries in the dataset. Several objects from reopened graves showed indications of deliberate damage. The distributed fragmented pottery vessels mentioned above are one example, but the most striking and obvious case is the decorated belt plate of which fragments were found in contexts 81 and 82. The plate has a star shaped impact fracture that radiates out from the center to the edges. It has been restored with a high degree of perfection, so the fracture may be difficult to see on the photograph in figure 3.5.10. One would not expect a solid iron plate to accidentally break in such a way, so it may have been broken on purpose, possibly with a hammer-like impact tool (De Haas & Theuvs 2013: 77). However, the damage could also have been caused by a metal digging tool that was used to open the grave. Skeletal remains

De Haas and Theuvs (2013: 77) hold the opinion that not only grave goods, but also human bones may have been removed from the reopened graves. Although the general preservation of human bone in Posterholt was quite poor, there was a marked difference between reopened and intact graves. Of the intact graves 91% contained skeletal remains (n=21), while only 36% of the reopened graves yielded human bone or skeletal silhouettes (n=12). Perhaps the disturbances associated with reopenings accelerated the degradation of human remains, but this hypothesis is negated by the finds of bone in reopening pits and the presence of disarticulated remains in some reopened graves. Unfortunately, most human remains recovered from reopened graves were unrecognizable, so there are insufficient data to do a detailed analysis of which bones were taken.

Grave constructions

Grave reopenings in Posterholt occurred more frequently in large graves than in smaller ones. Table 3.5.6 shows the average grave pit widths and lengths of reopened, intact and indeterminate graves. On average, the grave pits of

	Reopened (n=33)	Intact (n=23)	Indet (n=24)
Width	175 cm	129 cm	167 cm
Length	253 cm	233 cm	232 cm

Table 3.5.6 Average width and length of grave pits in reopened, intact and indeterminate graves.

the reopened graves were 46 cm wider and 30 cm longer than the intact ones. However, significance testing on the differences in grave pit length and showed that they were borderline non-significant ($P=0.072$, $F=2.733$). It is unclear whether these difference in size between the reopened and intact graves are a result of conscious choices on the part of the diggers. Since many graves from the cemetery's late phase were relatively small, the difference in size between reopened and intact graves may result from the reopening of fewer small late graves and more large early graves.

3.6 Borgharen

Borgharen-Pasestraat (The Netherlands, province of Limburg, municipality of Maastricht) is a small cemetery located on the site of an abandoned Roman villa. The graves were constructed in and around the hypocaust system, and are oriented approximately west-east parallel to the villa walls. Life in the villa probably had its height in the Middle Roman Period. According to the pottery finds, activities on the site continued into the fifth century, but it is unclear whether there was actual habitation at that time. In the sixth and seventh century the site was used as a cemetery. No indications for later medieval activity were found. The villa and cemetery are situated on a bank of the river Meuse, on an elevated area that is part of a late Pleistocene gravel filled gully. The soil is dark and contains many pebbles and Roman building debris, making grave construction features very difficult to discern. It offer relatively good conditions for preservation of bone material. Since some of the graves were very shallow, it seems likely that the original surface level of the site has eroded, possibly during inundations by the river Meuse.

The first excavations were carried out in 1995 and 1999 by the municipality of Maastricht. Ten inhumation graves were found, of which eight were excavated. Unfortunately, the quality of the field documentation and publications of these excavations (Dijkman 2003; Hulst & Dijkman 2008) was insufficient for the study of grave reopenings. Therefore, graves excavated in these campaigns will not be included in the present analysis. In 2008-2009 the Dutch State Archaeology Service started a second excavation on the site, in cooperation with specialists from the University of Amsterdam. I was a master student at the time, and assisted with the excavation work. The excavators identified 14 additional graves of which seven were fully or partially excavated. The aim of the excavation was to determine whether the materials in the graves were deteriorating, or whether they could be preserved *in situ*. The excavation also served as an experiment for developing an ideal methodology for the excavation of Merovingian burials. The excavation methodology was based on a protocol developed at the University of Amsterdam (Panhuysen et al. 2011). The excavations were carried out with great care and the field documentation was exceptionally detailed. The excavators also took samples for a range of scientific tests, including DNA and isotope analyses and handheld XRF. The preliminary results of these excavations are accessible in a report published in 2011 (Lauwerier et al. 2011). In 2012 the State Archaeology Service returned to the site to finish excavating two graves that had been partially excavated in 2008-2009. The report of this third excavation was published recently (Lauwerier & De Kort 2015).

Unfortunately, the site has been subject to several cases of recent robbery by clandestine metal detector pilots, both between and during the excavations (see below). Since it was determined that the material in the graves was not actively deteriorating, the State Service decided to leave the remaining unexcavated graves *in situ*, protected by layers of sturdy woven plastic sheet, wire netting and gravel.

Inhumation graves

The excavations on the site uncovered 26 grave-like structures of which 15 human inhumations and two horse inhumations were completely excavated. No cremation graves were found in this cemetery. The graves found during the first campaigns will not be discussed here, which leaves seven human inhumations for the present study. The graves all date between 550 and 700 and are evenly distributed over this period.

On the basis of the combined results of DNA analysis, osteological sexing and gender associations of grave goods the burials could be identified as nine adult women, six adult men, two adolescent girls, four young boys and one child of unknown sex. There was one possible case of contradiction between DNA and grave good gendering. The man in grave XIV was buried with a piece of jewelry that is usually associated with women.

At the time of writing, the DNA analyses had not yet been completed, but in a few cases genetic family relationships could already be demonstrated. The man in grave XI was probably the father of the adolescent girl in grave VI and the woman in grave XIII was the mother of at least one of the young boys whose remains were buried near her feet. Isotope analyses were done on seven individuals. Four men had non-local isotope signatures, while three women had local signatures. Given the geological diversity of the area around the site, a non-local signature does not necessarily indicate a distant origin. Similarly, a 'local' signature could also have come about in a non-local environment with a geological composition that was similar to that of the area surrounding the cemetery.

Since the soil features on the site were very difficult to read, few detailed observations about the graves' constructions could be made. As far as could be established based on the positioning of the deceased's bones, it seems that all the corpses decomposed in an open space, indicating that they were probably buried in wooden coffins.

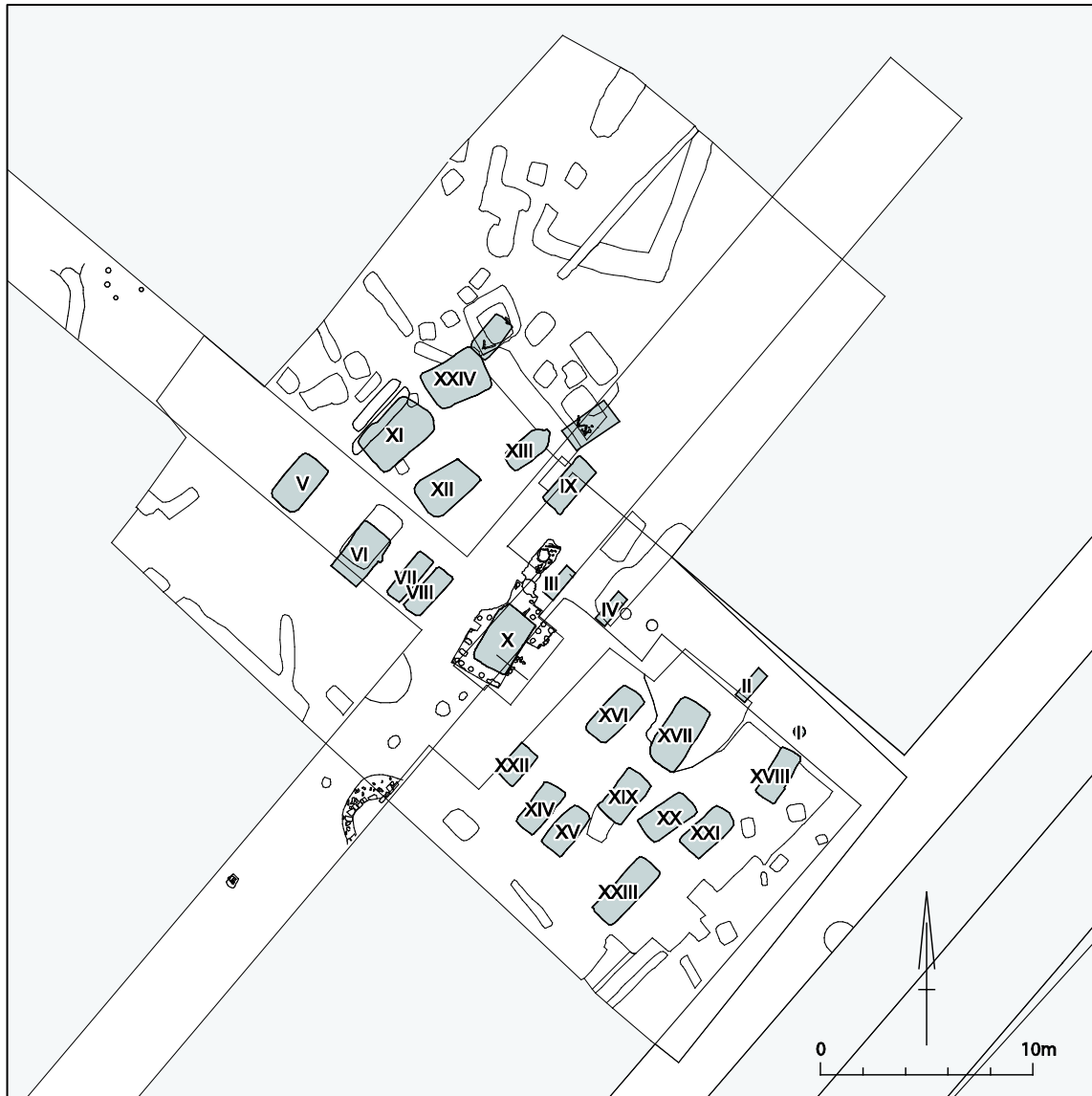


Figure 3.6.1 Map of the cemetery, plotted against the remains of the Roman villa. From Lauwerier & De Kort (2015: 210).

Horse inhumations

The two horse graves both contained young male horses that were killed with a stab to the heart, possibly with a sword. They had not been skinned. It is unclear whether the horse burials were meant to be connected with the burials of particular humans on the cemetery. As far as could be established their graves lacked wooded containers. An axe was found on the jaw of the southern horse, but otherwise the horses were buried with only a few pieces of gear. One of the horses had a local isotope signature and the other had a non-local signature. According to radiocarbon analyses of the horses' bones, the graves prob-

ably date 535-641 and 561-649. The horse graves did not show any indications of post-depositional interventions.

Post-depositional interventions

Various types of post-depositional interventions were observed in the Borgharen cemetery: ancient reopenings and additional burials, but also recent robberies. Some graves may have been subjected to multiple intervention types. The relations between the various interventions are quite complex. There are also indications for disturbances by burrowing animals. Interestingly, the graves that were affected by ancient post-depositional interven-

tions (VI, XII and XIII) are positioned in a loose row running north-west to south-east.

Recent robbery

Since its discovery, the site has suffered a lot of disturbance by clandestine metal detector pilots, both between and during the excavations. Despite security measures, two graves were partially destroyed in 2008 when the excavation was broken into during the night. The recent metal detector disturbances could often be recognized thanks to finds of plastic deep in the graves' fills. In grave XVI, pieces of plastic waste were found near the bottom of the grave. A small tissue bag could be dated quite precisely to the year 1999.

Disturbance by animals

The non-human animal bone that was collected during the excavation offers insights into the animals that may have burrowed into the graves. The graves' fills yielded surprisingly large quantities of bones belonging to small animals like mice, rats, moles, frogs and even foxes. The activities of such animals could have caused the displacement of small objects and bones in the grave. However, when the bones in question were subjected to carbon dating, it turned out that many were older than the presumed dates of the burials in which they were found. They were probably part of the soil used to fill the grave pits. Nevertheless, some bones dated to the Merovingian period and may have belonged to animals that dug their way into the graves, potentially disturbing the contents in the process.

Additional burials

Grave XIII contained two additional burials, which were probably deposited simultaneously. It is a very unusual case, since the bodies that were added to the grave were disarticulated, indicating that the soft tissues had already decomposed. The first individual buried in grave XIII was a middle aged woman. She was buried with two silver earrings. The way the woman's bones were displaced indicates that decomposition took place in the open space of

a wooden container. The grave's foot end was later reopened to deposit the disarticulated remains of two young boys. DNA analysis has shown the oldest boy was the woman's son. The younger child may also have been her son, but this is uncertain. The children's remains were probably wrapped in cloth and accompanied by two small pottery vessels, a belt, beads and an iron knife, some of which were unfortunately stolen when the excavation was broken into during the night in 2008. The disarticulated position of the children's bones indicates that their bodies had skeletonized before they were placed in the grave. Previous to their deposition in grave XIII these remains may have been buried elsewhere or stored above ground. At the time of her death the woman was probably beyond childbearing age, so it seems likely that the children died and were buried before her, and were later redeposited in her grave after she herself had died and was buried. The state of the grave at the time of the additional burials is unclear. The reopening disturbed the woman's foot bones, indicating that her feet had skeletonized by time the remains of the boys were added to her grave. This indicated that some time must have passed between the woman's funeral and the deposition of the boys' remains in the grave.

Grave XII contained the remains of two individuals, a man aged between 20 and 25 and a child of seven to nine years old, probably a boy, based on his grave goods. Figure 3.6.2 shows the distribution of the bones of the man (individual 23, in red) and those of the child (individual 16, in yellow). The arrows indicate how the bones of the man may have been displaced from their original position assuming the man was buried in a standard west-east supine position. The grave contained a number of grave goods, including a pot. The pot was broken and most of the fragments were scattered on the grave's bottom. The excavators hypothesize that the man was probably buried first. His grave was reopened while there was still an open space inside the wooden container, so that when the pot was broken, the fragments were scattered on the bot-

tom. After the container had collapsed and filled with soil, the grave was opened a second time. This time, the man's bones and some of the pottery fragments were mixed with the reopening pit's fill. Figure 3.6.3 shows the horizontal displacement of the man's bones from their presumed original positions. The pattern of the movements suggests that the diggers may have had at least two separate points of entry from which they rummaged the remains, one near the head and chest and one around the legs and feet. It is unclear whether these two entry points represent two separate reopening events, or whether these areas were opened simultaneously.

The burial of the child may date to this first or second reopening, but could also have been a separate event. The child's bones were mostly found on the higher levels of the grave's fill, not on the bottom. Panhuysen (2015: 99) argues that the child's remains may already have been disarticulated when they were deposited in the grave, as was the case with the children in grave XIII. The upper layers of the grave were probably also disturbed by bioturbation. The multiple disturbances in this grave make it difficult to be certain about the order of events that took place here.

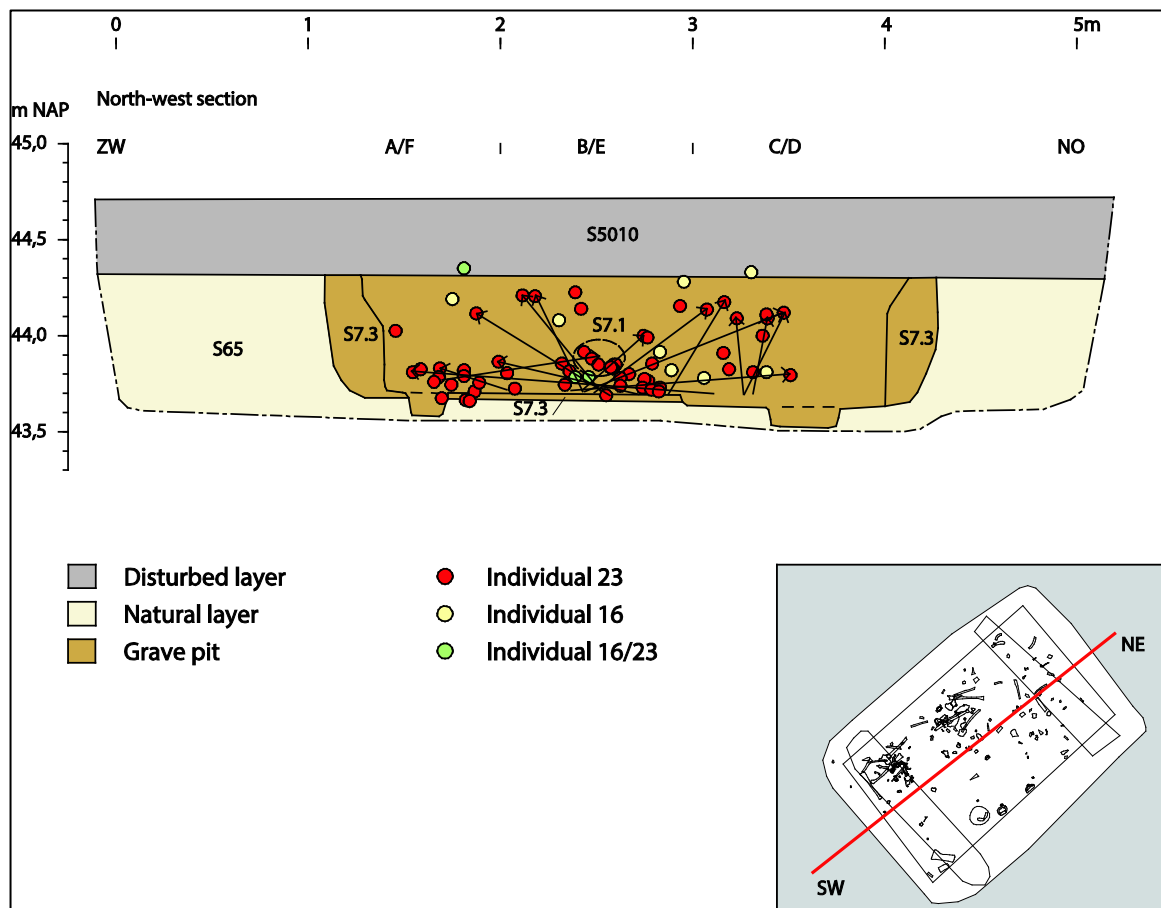


Figure 3.6.2 Vertical distribution of the remains of the man (red) and the child (yellow) in grave XII. From Lauwerier & De Kort (2015: 98).

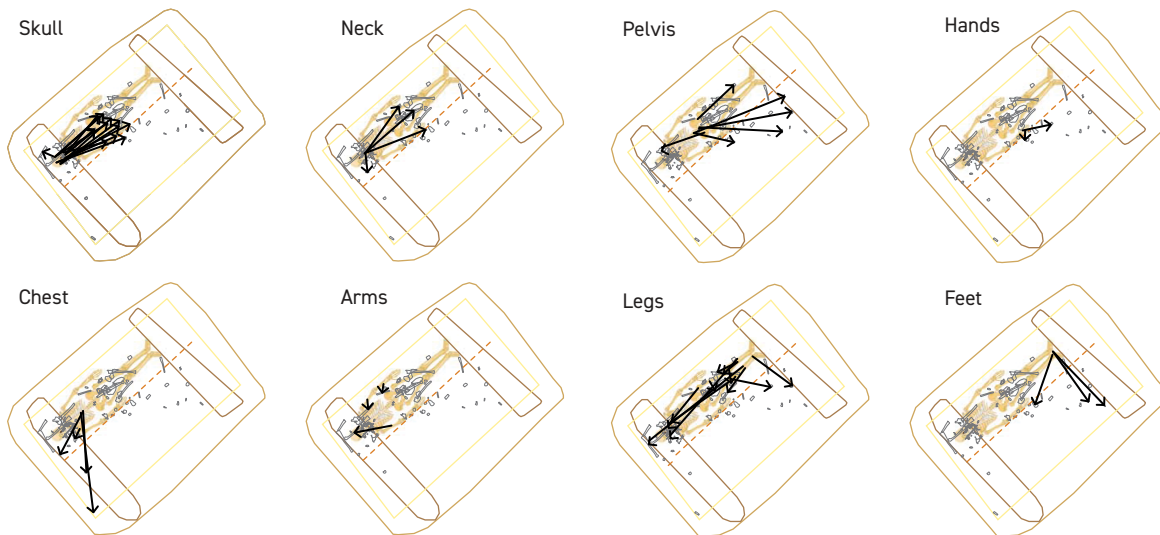


Figure 3.6.3 Attempt to track the horizontal displacement of the man's bones in grave XII. From Lauwerier & De Kort (2015: 203).

Reopenings

Besides the graves with the additional burials, only grave VI revealed traces of an ancient reopening. This grave contained the remains of a girl aged between 9 and 13, the skeletal material of the upper body had a chaotic distribution. The bones were scattered on the grave's bottom, indicating that it was disturbed while there was still an open space within the wooden container. The disturbance could be due to animal activity, but in my opinion, the activities of an animal large enough to cause such significant disturbance would most likely have resulted in a chaotic distribution of bone across the entire grave. Since the intervention is concentrated in the upper body region, it seems more likely that it resulted from intentional human activity. No outline of a wooden container was visible, but wood remains were found on the grave's bottom underneath a copper alloy bowl, indicating that it was probably furnished with a wooden container. Since the fragmented grave goods were scattered both on the grave's bottom and in the reopening pit's fill, the excavators suggest that the grave may have been reopened twice, once while there was still an open space inside the wooden container, and again after the container had collapsed. Alternatively, some of these items could have been mixed

with the grave's fill during backfilling, so they need not represent a second reopening event. If there was a second intervention, it probably dates to the early medieval period, since late medieval and sub-recent material was lacking from the lower parts of the grave's fill. Unfortunately, a detailed analysis of the displacement of bones within the grave, as was done for grave XII, has not yet been conducted for this grave.

Reopening chronology

Given the complexity of the post-depositional interventions in the Borgharen cemetery, reconstructing their chronology is complicated. In the case of grave XIII which contained the remains of the woman and the two boys, the grave goods all date to the seventh century. It is unclear whether the objects that accompanied the boys' remains were added during the deposition in the woman's grave or whether they were taken along from a previous burial site. In any case, the reburial of the boys' remains must have taken place while their relationship with the woman was still remembered, no later than 30-40 years after her death. That would place the reburials in the seventh century or at the start of the eighth century.

As discussed above grave XII may have been reopened multiple times, once while there was

still an open space within the wooden container, once after the container had collapsed (possibly for the child's burial). The grave dates to 600-640, so the first reopening could have taken place between 600 and 675 and the second after 635. Grave VI was probably reopened while the wooden container was still intact. Since this grave dates to 550-625, the reopening probably took place between 550 and 600.

Grave goods

The graves in the Borgharen cemetery are relatively well furnished with objects. This is true for both the intact and reopened graves. Given the small number of graves, a statistical comparison between the grave goods found in reopened and intact graves is not possible. This paragraph will therefore be restricted to a few anecdotal observations.

Grave XII contained several sheath fragments, rivets and a sword pommel that suggest a sword and perhaps a seax may originally have been present in this grave. It is unclear whether the objects in question were removed during the first or second reopening. Other finds from this grave include a broken but nearly complete pot, a gold coin, an arrowhead, an axe, a shield boss and grip, and a pair of stirrups.

Grave VI contained 190 glass beads, 15 silver necklace pendants, a copper alloy bowl, a glass beaker, two pottery vessels, a number of copper alloy buckles and leg strap fittings, an iron belt chain, an iron key, a kauri shell, a golden and a copper alloy coin and a copper alloy decorative pin. Given the rich furnishings of the grave, one would expect the deceased to be buried with one or more brooches. Since this was not the case, and considering the concentrated disturbance in the chest area, it is possible that the brooches were taken during the reopening. Since the grave was reopened while the wooden container was still intact, the diggers could easily have removed more objects from the grave, but it seems they chose to take only a few specific items.

3.7 Wijchen

The Wijchen-Centrum cemetery (The Netherlands, province of Gelderland, municipality of Wijchen) was discovered in 1981 by local amateur archaeologists. Excavations were started by the State Archaeology Service in 1991, when the municipality of Wijchen decided to renovate the town center. Further excavations took place in 1992 and 1996. The excavators uncovered approximately 350 inhumation and cremation graves dating to the later Roman and early medieval period. A large section of the cemetery probably remains unexcavated. Several sites in the surrounding area have yielded traces of late Roman habitation and early medieval settlements and pottery production, at least some of which were probably contemporaneous with part of the cemetery's use period.

At the time of the excavations, there were no legal requirements for the publication of archaeological finds, so the excavation material was stored for later study. Tom Hazenberg dedicated his master thesis to the analysis of the cemetery (Hazenberg 1993), but the work remained unpublished. In 2010, the cemetery finds were finally published in detail by Stijn Heeren and Tom Hazenberg as part of the NWO funded *Odyssee* backlog program (Heeren & Hazenberg 2010). The present analysis is based on this publication, in addition to a table containing height measurements for the finds, which was downloaded from the DANS Easy repository for archaeological data.³

The cemetery was situated in a river dune landscape associated with the river Meuse, near the town of Nijmegen. The site was located along the top and flank a sandy dune. The soil conditions are quite favorable to the preservation and visibility of archaeological features, even though wood was only preserved as soil discolorations. Unfortunately, this type

³ WC91_bijgift_informatie.csv downloaded from <https://easy.dans.knaw.nl/ui/datasets/id/easy-dataset:34099/tab/2>, accessed on 13-09-2012

of porous soil quickly leaches minerals from bone material, so unburned skeletal remains were poorly preserved. Unfortunately, due to the intensive use history of the site, the upper layer of the cemetery was disturbed and of many graves only the bottoms were preserved.

Inhumation graves

The excavation and trial trenches yielded 302 human inhumation graves and seven possible inhumation graves. The excavated graves date between the fifth and seventh century, with majority dating to the seventh century. No graves could be dated after 650, but some of the graves without datable grave goods may nevertheless date to the end of the seventh and the beginning of the eighth century. The unexcavated section of the cemetery may also contain graves from a later phase.

The graves were all approximately oriented west-east, with variations that probably correlate to the cemetery's chronological phases. Most graves were laid out in a row-like pattern, but there were a lot of overlaps and intercuts between older and younger graves. Most people were buried in simple wooden coffins (167 graves) or trench graves (101 graves). A small number of graves (16) were furnished with a chamber construction. The choice of grave constructions seems to have changed during the cemetery's use period. The graves dating to the cemetery's first phase (300-450) had long narrow coffins. In the second phase (450-530) wooden containers were often lacking. The third phase (530-570) was characterized by very diverse grave constructions. In the fourth phase (570-640) comparatively broad containers were favored. Most deceased were buried with at least a few grave goods, similar to what is found in other Merovingian cemeteries. A number of graves lacked preserved grave goods, but these may nevertheless have been furnished with items made from perishable organic materials like textile, bone and wood. Burned remains of such objects were found in the cremation graves.

Of the 302 inhumation graves, 49 (16%) contained objects that are usually associated

with women and 55 (18%) contained objects that are usually associated with men. One double burial contained grave goods associated with both women and men. The remaining 197 graves (65%) yielded only gender neutral grave goods, or no grave goods at all. Only two contexts revealed unburnt skeletal remains of sufficient quality to allow osteological analysis. Possible grave 16 yielded two long bone fragments of woman or adolescent person. Grave 255 probably held a adult woman. Neither of these contexts contained gender specific objects.

Cremation graves

The excavation yielded at least 36 cremations, which amounts to approximately 10% of all graves. Additional human cremated bones were found mixed with the fills of the inhumation graves and the surrounding soil. These may have been the remains of disturbed cremation graves. The cremation graves and scattered cremated bones were distributed more or less evenly over the cemetery, without conspicuous concentrations. The oldest disturbed cremation graves in the cemetery probably date to the fourth century, before the earliest inhumation graves. Most cremations date to the fifth and sixth centuries. The youngest cremations can be dated to the first half of the seventh century. As far as could be established, all cremation graves consisted of small pits in which the cremation remains were buried, without any containers except possibly a wrapping of leather or cloth. Most of the graves yielded less bone than expected from a human cremation, indicating that only part of the deceased's bones were deposited in the graves. The grave goods in the cremation graves were similar to those found in the inhumation graves, although they were somewhat fewer in number. Both burnt and unburnt objects were present. The remains of four children, one adolescent and 27 adults were found. Of the adults, four individuals could be identified as male and four as female. Two additional cremations contained grave goods that are usually associated with men and women respectively. There were no cases of

contradiction between the osteological sex and the gendering of the grave goods.

Post-depositional interventions

Of the 302 inhumation graves, only 22 (7%) showed distinct traces of contemporary post-depositional interventions. A total of 63 graves (21%) had most likely been left intact after the funeral. For the remaining 217 graves (72%), there was insufficient evidence to determine whether they had been subjected to an intervention or had remained intact. Given the large number of indeterminate cases, in reality the percentages of reopened and intact graves were probably higher. If the distribution of the indeterminate group is similar to that of the other graves, we can postulate a total 79 graves with a post-depositional intervention (26%) and 223 intact graves (74%). The reopened

graves seem to be distributed relatively evenly over the cemetery. There may be a few concentrations, but given the large number of graves of which the reopening status could not be determined, it is unclear whether these concentrations reflect historical reality or whether they result from differences in the graves' preservation.

Apart from the 16 cremations that were cut by inhumation graves, there was no evidence for post-depositional interventions in the cremation graves. Perhaps these graves were not reopened like the inhumations were. However, traces of potential post-depositional interventions would have been more difficult to recognize, since the cremation graves were more shallow and had a simpler construction than the inhumations. Absence of evidence need not be evidence of absence in this case.



Figure 3.7.1. Map of the Wijchen cemetery. The black stars indicate the locations of reopened graves. After <https://easy.dans.knaw.nl/ui/datasets/id/easy-dataset:34099/tab/2> downloaded on 11-12-2014.

	Male	Female	Neutral	Total
Reopened	16% (n=9)	12% (n=6)	4% (n=7)	7% (n=22)
Intact	35% (n=19)	57% (n=28)	8% (n=16)	21% (n=63)
Indet.	49% (n=27)	31% (n=16)	88% (n=174)	72% (n=217)
Total	100% (n=55)	100% (n=49)	100% (n=197)	100% (n=301)

Table 3.7.1 Percentages of graves with typical men's, women's and gender neutral grave goods that were reopened or remained intact. The grave containing both men's and women's grave goods was excluded.

As can be seen in table 3.7.1 there are slightly more reopened graves containing objects associated with men, while there is a higher percentage of intact graves containing objects associated with women. The Z-test test showed that there was a statistically significant difference between the numbers of reopened graves with male and neutral grave goods ($P=0.001$, $F=3.445$) and between reopened graves with female and neutral grave goods ($P=0.015$, $F=2.434$). The numbers of reopened graves with men's and women's grave goods did not differ significantly, but there was a significant difference for the intact graves with men's and women's grave goods ($P=0.021$, $F=-2.311$). This lack of significant differences may be due to the low number of reopened graves and the high number of indeterminate cases. We can conclude that the diggers appear to have preferred graves with gendered grave goods over graves with neutral grave goods, but it is unclear whether they also had a significant preference for graves with men's or women's grave goods.

Intercuts

The post-depositional interventions observed in the Wijchen cemetery were reopenings and intercuts between graves. In the graves that were both reopened and cut by a later grave, it is often difficult to determine whether the intercut and reopening were separate events or occurred simultaneously. No indications were found for additional burials in existing graves. Intercuts between graves were the most common type of post-depositional intervention in this cemetery. In total, 35% (n=107) of the inhumation burials were cut by a later grave. Intercuts occurred both in reopened and in unopened, otherwise intact graves. In total,

50% of the reopened graves and 34% of the 'intact' graves had been cut by a later grave. Six graves may have been reopened solely with an intercut, without any traces of a separate reopening pit (64, 118, 131, 132, 238, 260, 283). These invasive intercuts often cut through the older graves' coffins, indicating that the wood had decayed when the intercuts took place. It is unclear whether the diggers used the intercutting grave pits as starting points from which to extend a reopening pit into the older graves, but the relatively high percentage reopened graves with intercuts makes it likely that they did.

Reopenings

After subtracting the seven graves that were probably reopened solely by a later intercutting grave, we are left with 15 graves that revealed indications straightforward reopening. Since very little skeletal material was preserved and only four graves revealed reopening pit traces, it was difficult to reconstruct the diggers' methods and the extent of the reopenings.

As far as could be determined, all reopening pits reached down to the bottom level where the skeleton and grave goods lay. Table 3.7.2 shows which parts of the graves were reopened. In nearly all the graves, the reopening pit covered multiple areas. The higher the percentage listed in the table for a particular section of the grave, the higher the frequency with which those sections of the graves were reopened. Most reopenings seem to have focused on areas inside the wooden container, especially on the thorax/pelvis area which was almost always reopened. Many reopenings also reached into the area of the head/neck and the legs/feet. Reopening pits did occasionally ex-

	Head end	Head/neck	Thorax/pelvis	Legs/feet	Foot end	Sides
Men (9)	11% (n=1)	56% (n=5)	100% (n=9)	44% (n=4)	0% (n=0)	11% (n=1)
Women (6)	50% (n=3)	83% (n=5)	100% (n=6)	66% (n=4)	17% (n=1)	17% (n=1)
Neutral (7)	14% (n=1)	57% (n=4)	86% (n=6)	71% (n=5)	43% (n=3)	14% (n=1)
All graves (22)	23% (n=5)	64% (n=14)	95% (n=21)	59% (n=13)	18% (n=4)	14% (n=3)

Table 3.7.2 Placement of reopening pits in graves with men's and women's grave goods.

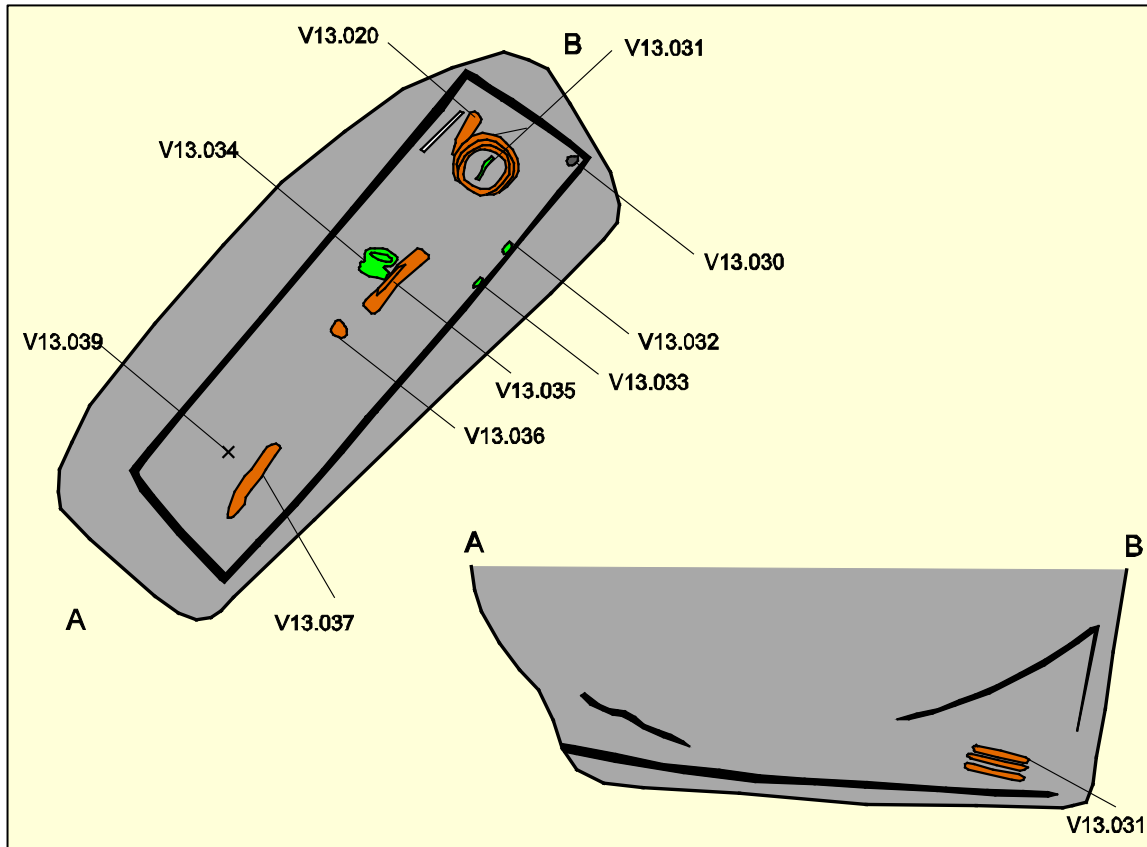


Figure 3.7.2 Grave 185. The belt fittings 13.032 and 13.033 were found at a distance from the buckle 13.034. The section drawing AB revealed a hole in the coffin lid. From Heeren & Hazenberg (2010: 444).

tend beyond the confines of the coffin, reaching either into the head end, foot end or sides of the grave pit. Only a few graves seem to have been accessed over the entire length from head end to foot end (132, 152, 283). Two of these were probably reopened by intercutting younger graves. In six graves the entire coffin area had been accessed.

There is very little difference between the reopening pits in graves containing typical men's and women's grave goods. In both grave types, the reopening pits seem to have focused most often on the thorax/pelvis region. However, the reopening pits in graves that contained objects associated with women seem to have been larger, reaching more often into the

head/neck area and to a lesser extent also into the legs/feet area. Only the difference for the reopening of the foot end between graves with male and neutral grave goods was statistically significant ($P=0.029$, $F=-2.179$).

Reopening chronology

Six graves were reopened while the wooden container was still intact (33, 53, 74, 77, 99, 185). There was only one clear case of a reopening that took place after the container had collapsed (grave 132), but this was a reopening by an intercutting grave. For the remaining graves, it was not possible to determine the state of the container at the time of the reopening.

The inhumation graves in the excavated section of the cemetery probably date between the fifth and the first half of the seventh century. The reopened graves span this entire range, from 400 to 650. However, only a few of the reopenings that took place in graves with intact coffins could be dated precisely. Assuming container collapse occurred within 35 years after the burial, the reopenings that could be dated based on the state of the container took place in 400-485, 570-675 and 605-675.

The reopening of grave 185 between 400 and 485 is probably among the earliest in the research area. The indications that it had indeed been reopened were rather subtle (see figure 3.7.2). It is fortunate that the excavators made a section drawing of this grave, which shows that there was probably a hole in the coffin lid. This cavity could have resulted from the collapse of the coffin, but the state and location of the finds in the grave offer further indications that it had been reopened and the grave goods had been rummaged. The *kerbschnitt* belt fittings 13.032 and 13.033 were found along the side of the coffin, away from the belt buckle 13.034 in the center. The grave also contained a large sword blade fragment. Since nearly all the finds lay on the coffin's bottom, the reopening probably took place while there was still an open space inside the wooden container. The upper levels of grave 185 were cut by grave 180, but this grave dates to 605-640, long after the wooden container in grave 185 had decomposed, so it is unlikely that the reopening took place during the intercut.

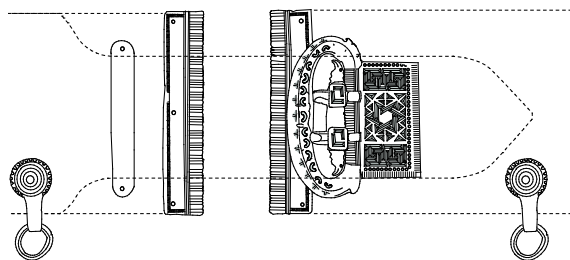


Figure 3.7.3 Reconstruction of the belt from grave 185, with the two fittings attached near the buckle. From Heeren & Hazenberg (2010: 39).

The end date of the reopenings in the Wijchen cemetery is unclear. The last dated reopening took place between 605 and 675, but reopenings after this date and even after the end of the cemetery's use period cannot be excluded. The reopening pit in grave 136 contained high and late medieval pottery, but it is unclear whether this material was deposited during the reopening or whether it consists of stray fragments that found their way into the surface indentation of the pit at a later time and were mixed into the fill by ploughing or bioturbation.

Grave goods

Because of the relatively low number of reopened graves in this cemetery, a comparison between the objects found in reopened and intact graves is of limited value. Nevertheless, a few interesting observations can be made (table 3.7.3). First of all, the average numbers of objects per grave show that most weapon types were found equally often in reopened as in intact graves. The only exception were shield bosses and lance heads, which showed higher averages in the reopened graves. On the other hand knives, simple belt buckles, belt plates, brooches, pots and beads were all found more frequently in intact graves. The differences between intact and reopened graves are significant for seaxes ($P=0.026$, $F=-2.273$), decorative pins ($P=0.045$, $F=-2.050$), knives ($P=0.013$, $F=-2.556$), belt plates/strap ends ($P=0.012$, $F=-2.589$), pots ($P=0.001$, $F=-3.406$) and beads ($P=0.001$, $F=-3.407$). This is reminiscent of the patterns observed in some other cemeteries in the research area, where typical men's grave goods were frequently left behind, while typical women's grave goods were more often removed when graves were reopened. As for most cemeteries the number of objects found in the indeterminate graves was low, reflecting the fact that the reopening status of graves with few finds is often difficult to determine.

The objects that were left behind in the reopened graves sometimes give clues about what was taken. The belt sets in the reopened graves 33 and 132 seem to be missing their buckles

or plate buckles. The seax in grave 99 and the sword in grave 185 were broken and many of the fragments were missing. Reopened grave 53 contained a shield grip, but was lacking a shield boss. However, this phenomenon was perhaps not limited to reopened and indeterminate graves. Grave 38, which appeared to be intact, was also missing a shield boss. Given the difficulty of recognizing reopened graves in this cemetery, it cannot be excluded that this grave had been reopened even though the reopening did not leave identifiable traces. The reopened graves also contained many more indeterminate fragments than the intact and indeterminate graves (the respective aver-

ages were 6.55, 0.63 and 3.47), indicating that objects were often fragmented during the reopenings.

As can be seen in table 3.7.5 the objects that remained in the reopened graves were often found inside the reopening pits. Almost no objects or even fragments of objects clearly lay outside a reopening pit, although there were many cases where it was unclear whether an object or fragment lay inside or outside the pit. Many of the objects that were left behind were quite large, especially the weapons. The diggers would probably have seen these objects in the grave and could have taken them if they wanted to.

Objects	Reopened (22 graves)		Intact (63 graves)		Unknown (217 graves)	
	Total	Average per grave	Total	Average per grave	Total	Average per grave
Swords	1	0,05	1	0,02	2	0,01
Seaxes	2	0,09	7	0,11	2	0,01
Shield bosses	4	0,18	1	0,02	4	0,02
Axes	1	0,05	3	0,05	4	0,02
Lance heads	8	0,36	8	0,13	14	0,06
Arrowheads	4	0,18	11	0,17	12	0,06
Buckets	2	0,09	0	0	0	0
Tweezers	0	0	1	0,02	3	0,01
Fire steels	2	0,09	3	0,05	4	0,02
Knives	4	0,18	25	0,40	30	0,14
Purse buckles	1	0,05	0	0	0	0
Belt buckles	3	0,14	93	1,48	38	0,18
Plate buckles	4	0,18	9	0,14	10	0,05
Belt plates/strap ends	5	0,23	42	0,67	33	0,15
Leg strap fittings	4	0,18	2	0,03	2	0,01
Belt pendants	0	0	5	0,08	0	0
Brooches	2	0,09	18	0,29	1	0
Finger rings	0	0	2	0,03	0	0
Spindle whorls	1	0,05	2	0,03	12	0,06
Ring miscellaneous	1	0,05	2	0,03	10	0,05
Pots	5	0,23	26	0,41	22	0,10
Glass vessels	0	0	3	0,05	1	0
Coins	1	0,05	5	0,08	5	0,02
Decorative pins	0	0	4	0,06	0	0
Necklace pendants	1	0,05	6	0,10	3	0,01
Beads	26	1,18	802	12,73	115	0,53

Table 3.7.3 Grave goods found in reopened, intact and indeterminate graves. For each category of graves, the table lists the total number per type and the average per grave.

The cemeteries – analyzing the data

Objects	Reopened (22 graves)		Intact (63 graves)		Unknown (217 graves)	
	Total	Average per grave	Total	Average per grave	Total	Average per grave
Iron	50	2,27	125	1,98	165	0,76
Copper alloy	16	0,73	74	1,17	68	0,31
Iron/copper alloy	1	0,05	9	0,14	15	0,07
Silver	2	0,09	16	0,25	1	0,00
Gold	1	0,05	7	0,11	3	0,01
Pottery	6	0,27	30	0,48	33	0,15
Amber	2	0,09	178	2,83	13	0,06

Table 3.7.4 Grave good materials found in reopened, intact and indeterminate graves. For each category of graves, the table lists the total number per material and average per grave. Fragments were excluded.

	In pit	Outside pit	Unknown
Swords	1	0	0
Seaxes	2	0	0
Shield bosses	3	0	1
Axes	1	0	0
Lance heads	3	1	4
Arrowheads	3	0	1
Fire steels	1	0	1
Knives	2	0	2
Purse buckle	1	0	0
Belt buckles	1	0	2
Plate buckles	4	0	0
Belt plates/strap ends	4	0	0
Leg straps	0	0	4
Brooches	2	0	0
Spindle whorls	1	0	0
Rings, miscellaneous	0	0	1
Pots	1	0	4
Coins	0	0	1
Necklace pendants	0	0	1
Beads	8	0	18
Bucket	0	0	2
Fragments iron	21	0	12
Fragments copper alloy	1	0	1
Fragments pottery	14	0	90

Table 3.7.5 Objects found inside and outside reopening pits in reopened graves

	Reopened (n=22)	Intact (n=63)	Indet (n=217)
Grave pit width	114 cm	98 cm	100 cm
Grave pit length	244 cm	214 cm	210 cm
Coffin width	71 cm	72 cm	69 cm
Coffin length	211 cm	170 cm	194 cm

Table 3.7.6 Average width and length of grave pits and wooden containers in reopened, intact and indeterminate graves.

Table 3.7.4 shows which materials were found in reopened and intact graves. The table only takes into account recognizable objects, indeterminate fragments were excluded because their origin is unclear. The data in this table largely reflects and confirms the results of the analysis of the grave good types. Relatively few precious metal objects were found, but most of them came from intact graves. Copper alloy and hybrid iron/copper alloy objects, pottery and amber were also found in higher numbers in the intact than in the reopened graves. Iron on the other hand, was slightly more prevalent in the reopened graves. The differences between intact and reopened graves are statistically significant for iron ($P=0.003$, $F=-3.117$), copper alloy ($P=0.009$, $F=-2.668$), silver ($P=0.023$, $F=-2.330$), glass ($P=0.004$, $F=-3.004$) and amber ($P=0.015$, $F=-2.513$).

Grave constructions

As can be seen in table 3.7.6, the reopened graves were slightly larger than the intact graves. On average, the grave pits of the reopened graves were 16 cm wider and 30 cm longer than the intact ones. The coffins in reopened graves were actually slightly more narrow than the coffins in intact graves, but they were 41 cm longer. Significance testing was done on the differences in grave pit length which were overall significant ($P=0.014$, $F=4.324$). With the post-hoc Tuckey test, significant differences were found between reopened and intact graves ($P=0.046$) and between reopened and indeterminate graves ($P=0.010$). The difference between intact and indeterminate graves was not significant. It is

unclear whether this difference in size between the reopened and intact graves is a result of conscious choices on the part of the diggers or whether it is caused by the changes in preferred grave pit and coffin size throughout the cemetery's use period. The size difference in the coffins suggests that reopenings may have been prevalent in the cemetery's early phase, which was characterized by long narrow coffins.

3.8 Lent-Lentseveld

The cemetery of Lent-Lentseveld (The Netherlands, province of Gelderland, municipality of Nijmegen) was excavated in the fall of 2011 by the archaeology department of the municipality of Nijmegen (BAMN), in cooperation with specialists from Leiden University, the University of Amsterdam and the VU University. Despite the fact that it was a rescue excavation, nearly all graves were carefully excavated and documented in detail. The upper levels of the inhumation graves were uncovered with a mechanical excavator. The lower levels were excavated by hand with trowels, following an adapted version of the protocol that was developed for the excavation of the Borgharen cemetery (Panhuysen et al. 2011). An osteologist was present at the excavation and samples were taken for a range of modern scientific research methods, including DNA and isotope analysis. Unfortunately the first five graves which were unearthed before the official start of the official excavation were less well documented. The excavations of site has not yet been fully published.

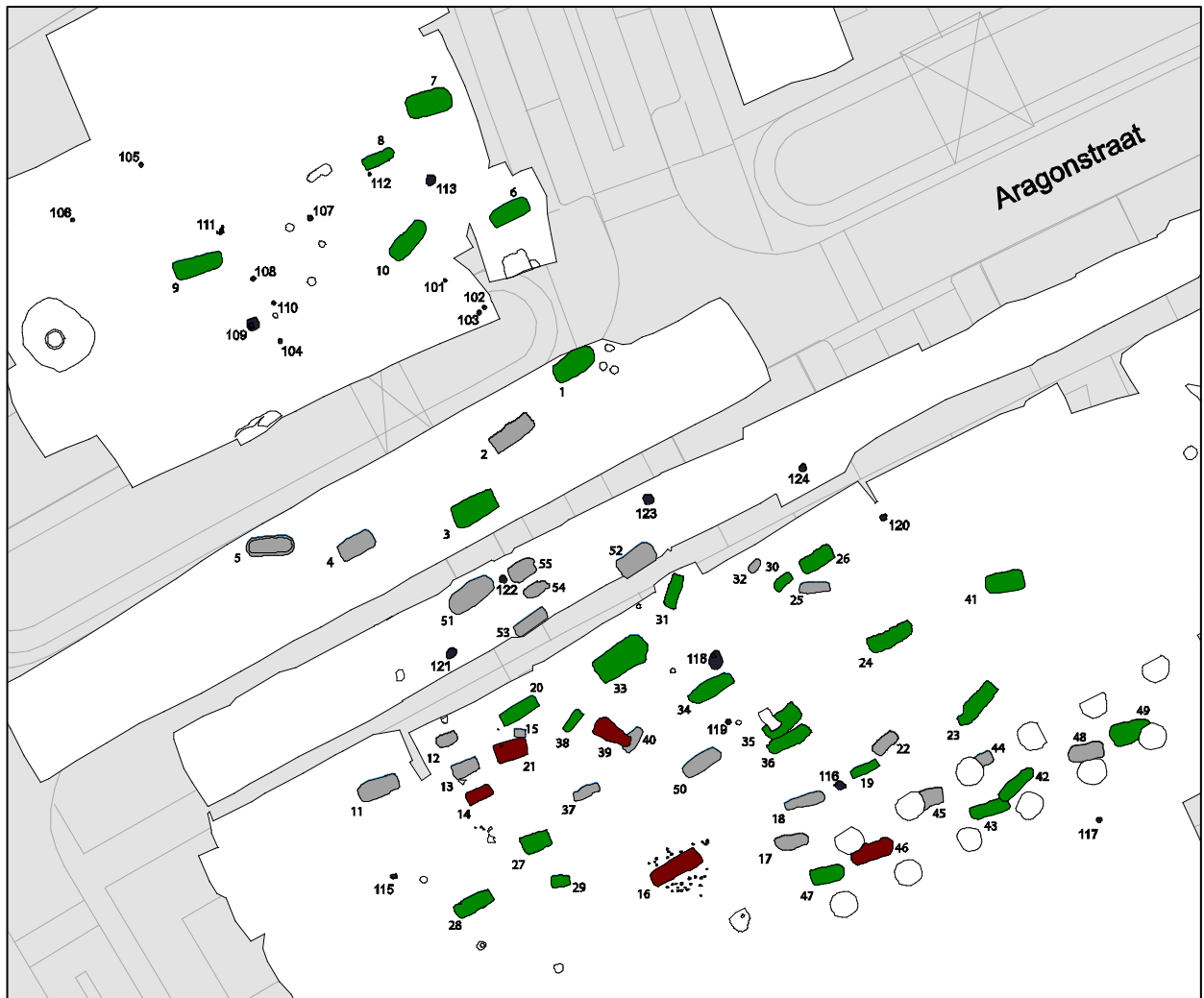


Figure 3.8.1 Map of the cemetery. Red=reopened inhumation, green=intact inhumation, light gray=indeterminate inhumation, dark gray=cremation

The present analysis of the reopened graves is based on a preliminary report (Hendriks 2013) and additional information provided by excavator Joep Hendriks and osteologist Constance van der Linde in personal communications.

The cemetery was located in the Waalsprong area, near the river Waal. The soil consisted of sediments that had been deposited during the last Ice Age. Post-glacial rivers eroded these sediments and deposited younger sediment consisting of sand, clay and silt. The cemetery site was situated between a silted up riverbed and an elevation of the gully sand. Most of the shallow cremation graves were found in the transition between the early medieval surface and later agricultural layers. The deeper inhumation graves had usually been dug into the silty clay layers and the underlying sand. The

soil conditions were quite favorable to both the visibility of archaeological features and the preservation of unburnt and cremated bone.

Inhumation graves

The excavation uncovered 50 inhumation graves and 20 cremation graves, dating to the fifth and sixth centuries. Since quite large stretches between the graves are unexcavated, it is likely that more graves remain *in situ*. A number of graves in the southern section of the cemetery were slightly disturbed by pits dug during World War II (see figure 3.8.1). An earlier excavation in 1972 and 1975 by the State Archaeology Service in the nearby Azaleastraat yielded another cemetery consisting of 120 graves, that dated to the seventh and eighth centuries (Van Es & Hulst 1991).

These graves are not included in the present analysis. At the moment of writing, the 20 cremation graves that were excavated have not yet been analyzed in detail. According to the excavators no post-depositional interventions were observed in the cremation graves. Most of the inhumation graves were oriented approximately south-west to north-east, except grave 39, which was oriented north-west to south-east. The graves were not organized in strict rows, but rather lay scattered over the cemetery. As far as could be established, nearly all the dead were buried in supine position with extended legs, except for the child in grave 15 whose remains were bundled up. Nearly all graves contained at least a few grave goods and many graves were quite richly furnished. Approximately half of the graves had wooden containers of various sizes. There were two chamber graves, 19 simple wooden containers, 27 trench graves without wooden containers and two graves where the type of construction could not be determined.



Figure 3.8.2 The bundled remains of the child from grave 15.

The combined results of osteological sexing and gender associations of grave goods could identify the burials of 15 adult women, 14 adult men, three girls, four boys and 11 children of unknown sex. There were no cases of contradiction between the osteological sex and assumed grave good gender. The child's grave 21 contained both beads and weapons, including a sword. The other graves had objects associated with one gender, or neutral grave goods.

Possible reburial

Various types of post-depositional interventions were observed in the cemetery of Lent: reopenings, intercuts between graves and possibly a reburial. There were no graves with additional burials.

Grave 15 had a rather unusual appearance compared to other graves in the cemetery. It consisted of a small amorphous pit dug above the corner of the foot end of grave 21. It did not have a wooden container. Apart from four pottery fragments and a piece of flint, it did not yield any objects. It contained the remains of a six year old child that had been curled up into a tight bundle. The child's skull was found a few centimeters above the rest of the body, separated from it by a layer of clay. Since there were no indications of a forceful *peri-mortem* decapitation, it seems likely that the soft tissues had already partially decomposed before the child was buried here. Perhaps the child was previously buried elsewhere, or the remains had been stored above ground. Alternatively, this grave was reopened after decomposition had set in to separate the skull from the rest of the body. This context is reminiscent of the disarticulated burials of the young boys at the foot end of a woman's grave in the Borgharen cemetery. It would be worthwhile to know whether the fingers and toes of the child in grave 15 were found still articulated, as



Figure 3.8.3 Bottom level of grave 46. The cranium can be seen lying on the pelvis. Photograph by municipality of Nijmegen.

this would indicate whether or not the body had started to decompose before it was deposited in the grave.

Intercuts

There were only two intercuts between graves in the Lent cemetery. The foot end of grave 39 was dug into the upper layers of the head end of grave 40. The bottom layer of grave 40 was probably not reopened. Grave 15 was dug into the upper layers of a corner of the foot end of grave 21. The pit of grave 15 was so shallow that the intercut with grave 21 only became apparent after grave 15 had been taken out and the excavators dug down to the lower levels.

Reopenings

Of the 50 inhumation graves five (10%) showed clear signs of having been reopened (graves 14, 16, 21, 39 and 46). At least 27 graves (54%) had most likely been left intact

after the funeral. For the remaining 18 graves (36%), there was insufficient evidence to determine whether they had been subjected to an intervention or had remained intact. Given the large number of indeterminate cases, the percentage of reopened graves is probably higher than 10%. If the distribution of the indeterminate group is similar to that of the other graves, we can postulate a total of eight reopened graves (16%) and 42 intact graves (84%). The reopenings seem to be confined to the cemetery's south-western section. The five reopened graves probably contained the remains of one adult man, one adult woman, one adult of whom the sex and gender could not be determined and two male children.

Reopening methods

Five graves showed indications that they had been reopened. In the four cases the graves were reopened while the wooden containers were still intact. The fifth grave may not have

been furnished with a wooden container. In the graves with wooden containers the effects of the post-depositional interventions were only visible on the graves' bottoms where the excavators found disarticulated skeletal material. Despite the relatively good visibility of archaeological features as soil discolorations, no reopening pits were observed. This suggests that the diggers may have reopened the graves by removing the grave pits' entire upper fill and the wooden containers' lids. There were significant differences between the ways the reopenings were carried out, especially in the degrees to which the skeletal remains had been rummaged.

In grave 46, the only indication that the grave had been reopened was the fact that the deceased's cranium had been placed on the pelvis. There were no cut marks on the skull and the vertebra and mandible were left *in situ*, indicating that the cranium was moved after the tissues connecting it to the mandible had decomposed. Apart from the displaced cranium, the skeleton showed no indications that it had been disturbed after the onset of decomposition. The cranium could only have been separated from the mandible and placed on the pelvis in this way if the grave was reopened after the skull had skeletonized. The fact that the reopening left no other traces indicates that the wooden container had not yet started to decompose when the procedure was carried out. It is possible that the coffin was kept above ground or only given a preliminary cover until the body had decomposed enough to allow the displacement of the skull. Curiously, this grave contained an additional *pars basilaris ossis occipitalis*, a bone from the bottom of the cranium. This bone could not be matched to any of the skeletons found in the cemetery.

The reopenings in graves 14, 16, 21 and 39 seem to have been carried out with less precision as the deceased's bones had a much more rummaged appearance. Since most of the graves were probably reopened while there was still an open space within the wooden container, it would have been relatively easy for the diggers to select any items they may have

wanted to remove without disturbing the skeleton. The fact that the bones had nonetheless been rummaged substantially, suggests that the disturbance may have been deliberate. These marked disturbances are especially interesting since the graves in question still contained many grave goods, so it seems that few objects were removed during the reopenings.



Figure 3.8.4 Reopened grave 16. The red arrows indicated the locations of the displaced articulated tibiae and fibulae.

In grave 14, which probably contained the remains of a young boy, the diggers seem to have focused on the legs, although the left arm was also displaced. Grave 16 in which an adult woman was buried, revealed a similar disturbance of the leg area and possibly the left side of the upper body. In grave 21, which probably held the remains of another boy, the entire skeleton appears to have been disturbed, except perhaps for the lower legs. One of the femora seems to have been displaced to a position on top of the sword. In grave 39, which contained an adult of unknown sex, the disturbance was limited to the upper body and the left upper leg. This grave may not have had a wooden container, so it is not possible

to determine the time frame in which it was reopened. The deceased's skull is missing. Only a fragment of a left cheekbone was left behind. Since no cut marks were found on the remaining upper vertebra, it was probably removed from the grave during a later reopening.

Reopening chronology

Four of the five reopenings took place in the open space of an intact wooden container, indicating that the reopenings were carried out within 35 years after the burial. The only exception is grave 39, which may not have had a wooden container, so it is not possible to determine the time frame in which it was reo-

pened. The reopening in grave 16 may have taken place while the body had not yet fully decomposed, since the tibiae and fibulae were displaced while they were still articulated (see figure 3.8.4). This corresponds to Aspöck's phase B (2005: 251-252; 2011: 302-306), meaning that the reopening was probably carried out within approximately 10 years of the burial. Since the restoration and analysis of the finds has not yet been completed, the graves have not received precise dates. Graves 14 and 16 could be dated between 500 and 600, so the reopenings probably took place between 535 and 635.

Objects	Reopened (5 graves)		Intact (27 graves)		Unknown (18 graves)	
	Total	Average per grave	Total	Average per grave	Total	Average per grave
Swords	2	0,40	4	0,15	2	0,11
Seaxes	1	0,20	1	0,04	0	0
Shields	2	0,40	3	0,11	2	0,11
Axes	0	0	1	0,04	0	0
Lance heads	2	0,40	8	0,30	2	0,11
Arrowheads	1	0,20	1	0,04	1	0,06
Shears	0	0	2	0,07	0	0
Knives	7	1,40	22	0,81	7	0,39
Fire steels	2	0,40	3	0,11	1	0,06
Belt buckles	4	0,80	18	0,67	6	0,33
Plate buckles	1	0,20	0	0,00	0	0
Belt plates/strap end	2	0,40	4	0,15	0	0
Belt pendants	2	0,40	7	0,26	2	0,11
Comb	0	0	4	0,15	2	0,11
Coins	0	0	1	0,04	0	0
Brooches	6	1,20	17	0,63	10	0,56
Bracelets	0	0	1	0,04	0	0
Spindle whorls	0	0	8	0,30	2	0,11
Ring misc	2	0,40	3	0,11	5	0,28
Pottery vessels	8	1,60	19	0,70	13	0,72
Glassware	0	0	2	0,07	2	0,11
Bowls, copper alloy	1	0,20	0	0	0	0
Beads	39	7,80	661	24,48	439	24,39

Table 3.8.1 Grave goods found in reopened, intact and indeterminate graves. For each category of graves, the table lists the total number per type and the average per grave.

Objects	Reopened (5 graves)		Intact (27 graves)		Unknown (18 graves)	
	Total	Average per grave	Total	Average per grave	Total	Average per grave
Iron	23	4,60	80	2,96	22	1,22
Copper alloy	14	2,80	19	0,70	12	0,67
Silver	6	1,20	6	0,22	5	0,28
Gold	0	0	1	0,04	0	0
Amber	0	0	1	0,04	2	0,11
Animal bone	1	0,20	9	0,33	5	0,28

Table 3.8.2. Grave good materials found in reopened, intact and indeterminate graves. For each category of graves, the table lists the total number per material and average per grave.

Grave goods

Although the number of graves was too small to allow significance testing, the comparison between the objects found in reopened and intact graves reveals an interesting pattern. As can be seen in table 3.8.1, on average, the reopened graves contained more objects than the intact graves. The one exception were the beads, of which far more were found in intact than in reopened graves. This is partly due to the fact that bead-containing graves are underrepresented in the reopened group because three of the reopened graves contained grave goods associated with men, and only one contained grave goods associated with women. However, even when we directly compare the numbers of beads found in intact and reopened women's graves, the numbers found in the reopened graves are still relatively low. It seems that the diggers removed very few objects during the reopenings. The fact that more objects were found in the reopened graves than the intact graves suggests that the diggers may have targeted graves containing objects of these types, even though they did not remove these objects. Alternatively, the diggers may have deposited objects in the graves during the reopenings. The graves of indeterminate status contained relatively few objects, reflecting the fact that the reopening status of graves with few finds is often difficult to determine.

Table 3.8.2 shows which materials were found in reopened and intact graves. The table only takes into account recognizable objects, fragments were excluded. The data in this table

reflects and confirms the results in table 3.8.1. Iron, copper alloy and silver objects were all found in higher average numbers in reopened than in intact graves. No golden objects were found.

3.9 Solleveld

The cemetery of Solleveld (The Netherlands, province of Zuid-Holland, municipality of The Hague) was originally discovered by an amateur archaeologist police officer searching for archaeological objects in the dunes. In 1954, he found a number of cremation urns at a sand mining site and informed the State Archaeology Service. In 1955, the Leiden Museum of Antiquities started an excavation on the site. Another excavation by the archaeology department of the municipality of The Hague followed in 1987. These investigations uncovered only cremation graves. In 2004 the provincial water agency was planning to expand its infiltration pits in the area of the site, so the archaeology department of the municipality of The Hague performed another excavation which uncovered both cremations and a small number of inhumations. The policeman's finds and the material from the three excavations were published by archaeologists of the municipality in 2008 (Waasdorp & Eimermann 2008). Perhaps more graves remain *in situ*. It is unclear whether the lack of inhumation graves in the first campaigns reflects the predominance of cremations on the site, or whether inhumations were overlooked due to poor visibility of the traces of grave constructions. The excavators also found



Figure 3.9.1 Map showing the inhumation graves surrounded by cremation graves and post holes. From Waasdorp & Eimermann (2008: 42).

many post holes on the cemetery. They speculated that these may have been part of grave markers or cremation pyres.

An early medieval settlement (Ockenburgh) was found only 300 meters away from the cemetery. Unfortunately, very little is known about this settlement, so it is unclear whether it was contemporaneous with the cemetery and whether its population was large enough to account for all the excavated graves. The cemetery was located on in a rather flat dune landscape along the coast of the Southern North Sea, on a beach ridge next to a low-lying area layered with peat and sand. Originally, the site was probably one of the highest lying man-made features in the area. The low calcium content and porous texture of the sandy soil resulted in a very poor preservation

of uncalcined bone. Almost no skeletal material from the inhumation graves was preserved. Traces of the graves' construction were reasonably well preserved. The site has been subjected to aeolian sand transport, so the cemetery's topsoil was eroded.

Inhumation graves

The excavation in 2004 uncovered three inhumation graves. One coffin grave (483), one possible trench grave which was only visible as a skeletal silhouette (305), and one boat shaped grave (479). The coffin grave and possible trench grave were cut by ditches, so they were both missing the leg section (see figure 3.9.1). The boat shaped grave is a unique find for the Netherlands. It was almost 5 meters

long and 1.5 meters wide. It did not contain a true boat, but rather a boat shaped chamber of which the sides were probably lined with re-used ship's wood that was held together with large iron nails. No rivets were found on the grave's bottom, so that was probably not lined with ship's wood. The excavators speculate that the grave may originally have been covered with a mound that was later levelled by wind erosion and ploughing. The grave was cut by a smaller elongated pit (1020, see below for details) which may either be a child's grave or a reopening pit. The boat shaped grave dated to 600-675 and together with the intercutting pit, it contained seven glass beads, a copper alloy fibula, two pieces of a copper alloy belt plate, two small knives and a possible awl. The beads suggest that a woman may have been buried in this grave. The coffin grave dated to the sixth century and contained grave goods usually associated with men, including a sword, seax, lance head, shield, belt buckle, knife and fire steel. The possible trench grave yielded only a small knife and could not be dated.

Cremation graves

The publication lists at least 32 cremation graves from the various excavations. Of these, 28 were deposited in pottery vessels, the remainder were buried in shallow pits. Most contained relatively small amounts of bone compared to the volume expected from the cremation of a human adult. It seems likely that only part of the bone was selected for deposition after the body had been cremated. In some features, the amount of bone was so small that the excavators were reluctant to call them graves at all. Since there were many post holes and other pits on the cemetery, some of these may have accidentally or purposely received a small amount of skeletal material in their fills.

The cremation graves were dated on the basis of the pottery vessels in which they were buried. The majority of the pots dated to the sixth century. A smaller number dated to the seventh century. Fifth and eighth century materi-

al was entirely absent. Apart from the pots, most cremation graves did not yield any grave goods. The only exception was grave 494, which contained the remains of a few beads which had melted onto the cremated bone. Perhaps grave goods were not used in the cremation ritual, or these objects were not selected for deposition in the grave. Only eight cremation graves yielded enough well preserved bone to merit examination by an osteologist. Of these graves, six belonged to adults and two to children aged between 2 and 4. The adults of which the age could be determined were between 20 and 40 years old. Two could be sexed as female and one as male.

Post-depositional interventions

Graves 483 and 305 showed no signs of near-contemporary post-depositional interventions. However, the leg and foot section of both graves were dug away by a later ditch, so any traces of interventions in those regions of the graves would have been erased. The boat shaped grave 479 however, revealed traces of an elongated pit that was dug from the side into the middle of the grave (see figure 3.9.2). The excavators interpreted this feature as an intercutting grave, given its length of 1.4 meters probably a crouched burial. This interpretation is somewhat problematic. The pit did yield a number of possible grave goods and the remains of a human jaw, but these lay scattered in the pit and were not found in the locations expected from a Merovingian burial. Crouched burials are rare in the Netherlands, although they are not unheard of in the coastal regions. The objects and the jaw could equally well have originated from the boat shaped grave. Since there are no real indications for an additional burial in the pit and the disturbances in the boat shaped grave seem to reach beyond its confines, I am inclined to interpret it as a reopening pit, rather than an intercutting grave. This alternative interpretation as a reopening pit was also suggested by Menno Dijkstra in his synthesis of the early medieval period in South-Holland (2011: 248-252). The reopening seems to have been dug

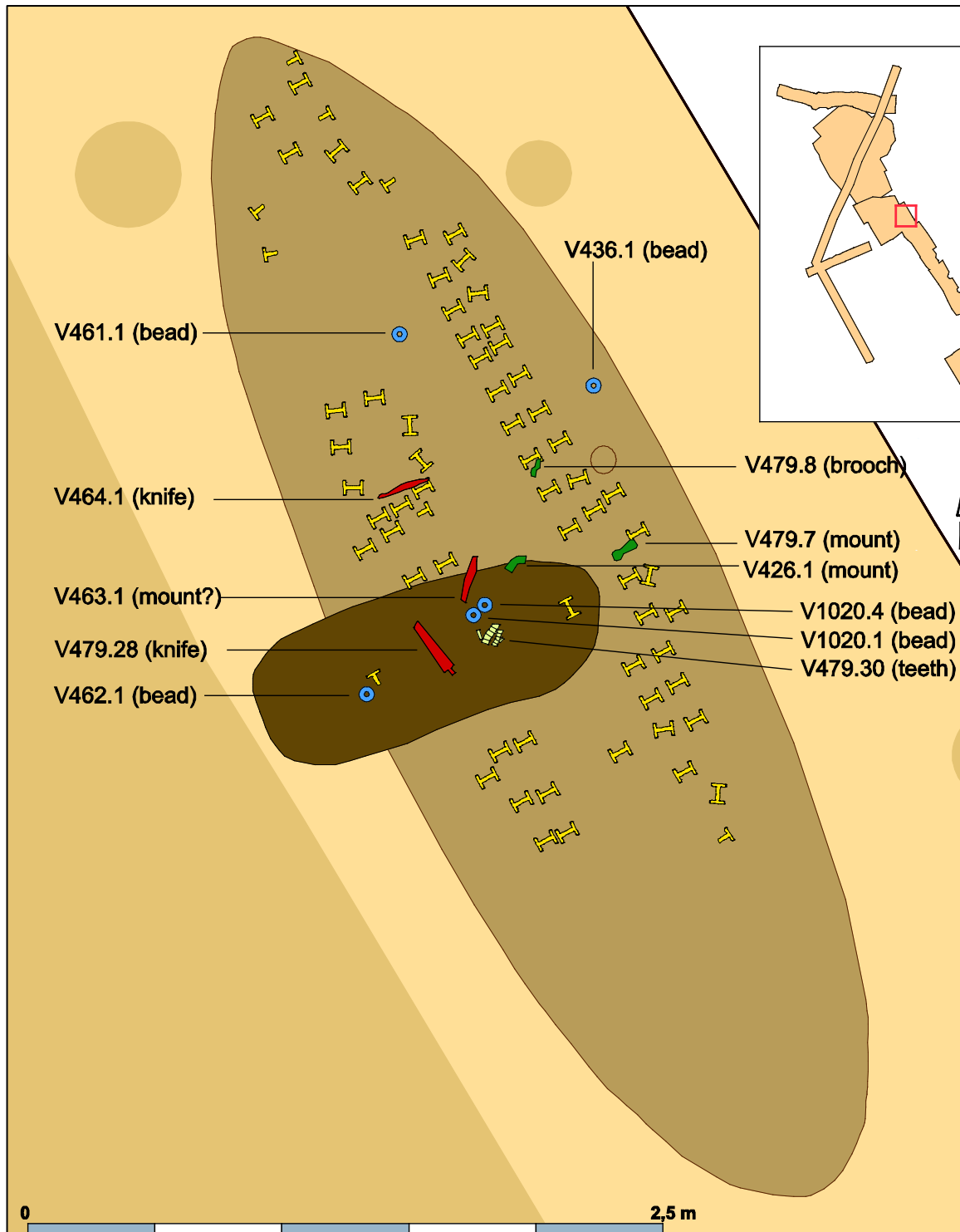


Figure 3.9.2 Schematic drawing of the boat shaped grave 479 in relation to the reopening pit/child's grave. The finds depicted are rivets (yellow), human teeth (white), beads (blue), iron objects (red) and copper alloy objects (green) . From Waasdorp & Eimermann (2008: 100).

through the boat shaped wooden walls, so the grave was probably reopened after the wood had started to decay. However, since the rivets outside the pit also appeared disturbed and the deceased's skull was found in the reopening pit, there may to some extent have been an

open space in the container that allowed the participants to rummage around and reach the skull and grave goods. Alternatively, the wood may have been intact, in which case the diggers would have had to force their way in. The grave dated to 600-675. Since the reopening

probably took place while the wooden walls were half decayed, the reopening probably dates at the end of the 35 year period it probably took the thick ship's wood to decompose, placing the reopening in the seventh century. The question arises what the diggers may have removed from this grave. The excavation uncovered seven glass beads (the exact location of two beads is unknown), a copper alloy fibula, two pieces of a copper alloy belt plate, two knives and a possible awl. The low number of beads suggests that other beads may have been taken. The copper alloy belt plate was probably originally part of a set that may have included a buckle or plate buckle and possibly another plate and strap end. The grave's exceptional construction suggests that it may also have contained exceptional grave goods. There is no way to verify this hypothesis, but it is certainly possible that many objects were removed from the grave during the reopening. It is tempting to draw a comparison with the elaborately furnished grave 483, but that would not be realistic, since it may date an entire century earlier.

It is unclear whether the cremation graves had also been subjected to post-depositional interventions. One cremation was cut by the boat shaped inhumation grave. The remains of a second cremation, consisting of burned bone and pottery fragments, were scattered in the boat shaped grave. Perhaps the cremation graves were not subjected to regular reopenings. However, traces of potential post-depositional interventions would have been more difficult to recognize, since the cremation graves were often more shallow, had been damaged by ploughing and had a simpler construction than the inhumations. Absence of evidence need not be evidence of absence in this case.

3.10 Oegstgeest

Between 2004 and 2014, the excavation company ARCHOL and the Archaeology Faculty at Leiden University excavated an early medieval port and trade settlement at Oegstgeest-Rhijngeest in the Dutch west coastal area (The

Netherlands, province of Zuid-Holland, municipality of Oegstgeest). Among the harbor and settlement remains they found a number of contexts containing human bone which are of great interest to this thesis. The finds are currently still being analyzed, but the excavation leader Jasper de Bruin and master student in osteo-archaeology Frank van Spelde allowed me to use the preliminary data (Van Spelde 2014).

Only a few scattered graves and other contexts containing human remains were found on the site. There is no evidence for a cemetery in the traditional sense of the word. As we will see below, some graves and other contexts were quite different than what we are accustomed to find in an early medieval graveyard. Most of the community's deceased were probably buried somewhere outside the settlement, in an area that has not yet been found and may not have been preserved.

The settlement was located on clay soils that are typical of the Dutch coastal area, along a branch of the river Rhine. The graves and other contexts containing human remains were found in the peripheral areas of the settlement, possibly adjacent to an old gully or creek that may have functioned as one of the settlement's boundaries. The soil conditions were very favorable to the preservation of bone. Despite the fact that many objects of wood and other organic materials were preserved on the site, especially in the waterlogged areas, no traces of wood or textile were found in the graves.

Inhumation and cremation graves

Eight inhumation graves were found during the excavations in Oegstgeest. They contained the remains of four men, two women and two children. Most of the inhumations are rather unusual compared to other graves from this period. Three men were buried in prone position, two in pits (contexts 2004-02 and 2013-01), one at the bottom of a ditch (2011-02). The man at the bottom of the ditch appeared to have been 'dumped in', indications for a formal burial were lacking. Another man lay on his side (2010-01). An older woman lay on

her back with her legs bent in an open position (2012-02). The prone man in grave 2013-01 was buried in a rather small pit and his front side including the arm and leg bones showed signs of burning. Perhaps the body was partially cremated while in a crouched position. Only children's graves 2011-01 and 2014-02 and woman's grave 2012-02 appeared normal for the period and region. Apart from human inhumations, the site also yielded three dog burials and three horse burials. One of the horse burials was dug near grave 2010-01. The remainder of the animal graves lay isolated from other burials (Buhrs 2013).

None of the inhumation graves yielded traces of a wooden container. However, the taphonomical analyses of the skeletons indicate that at least some of the burials decomposed in an open space, suggesting the presence of a wooden container. It is unclear what type of containers were used.

Only grave 2012-02 showed indications of a possible post-depositional intervention. This will be discussed further below.

In addition to the partially cremated individual in 2013-01, two possible cremation graves were found. Context 2004-01 may have been a regular cremation buried in a small pit. Context 2014-01 probably consisted of the cremation remains of one individual that were deposited at the bottom of a well.

Bone deposits

Not all human remains were found in graves or grave-like contexts such as those described above. A large number of disarticulated human bones were found in various contexts across the site, mainly in the fills of gullies and ditches. Interestingly, the majority of these scattered finds were long bones and skull fragments. This could be an artefact of selective find gathering during the excavation, but this is unlikely, since no similar patterns were found for the animal bone from the site. It therefore seems that people on the site selectively possessed and deposited human bones from the extremities and skull.

The most striking example of this preference for long bones is context 2011-03. At the bottom of this pit the excavators found a star-shaped configuration of at least 5 and perhaps six femora and tibia belonging to a minimum of two individuals (see figure 3.10.1).



Figure 3.10.1 Context 2011-03, a pit containing a star-shaped formation of human long bones. Courtesy of the Archaeology Faculty at Leiden University. Photographer: Frank van Spelde.



Figure 3.10.2 Context 2012-01, skeleton of a young woman with a disturbed abdominal region. Courtesy of the Archaeology Faculty at Leiden University. Photographer: Frank van Spelde.

Adjacent to this pit lay a second pit with selected human bone fragments of at least six individuals, mostly long bones and skull fragments; no ribs, vertebrae, finger or toe bones. All bones of which the sex could be determined, belonged to men. Since no skeletal material was missing from the graves found in

the settlement, the scattered bones found in these deposits must have been brought to the site from elsewhere. Perhaps they were taken from reopened graves in nearby (or more distant) cemeteries.

Post-depositional interventions

Only one grave from Oegstgeest showed indications of having been reopened. Grave 2012-01 held the remains of a young woman in supine position. No traces of a wooden container were found, but the layout of the bones indicated that the body had decomposed in an open space. The bones of the abdomen and chest had been disturbed but all lay on the grave's bottom, suggesting that the grave was reopened after the body had skeletonized but before the wooden container had collapsed. Since no traces of a reopening pit were found, a disturbance by animal burrowing cannot entirely be excluded.

Reopening chronology

Since very few artefacts were found with the human remains, the contexts are difficult to date. As the whole site dates to the Merovingian period and all human remains were closely associated with other Merovingian features, we can be fairly certain that all the human remains were Merovingian in date or were at least deposited on the site in the Merovingian period. The two women's graves that contained grave goods could be dated to the sixth and seventh century. Since the woman's grave 2012-01 was reopened while the wooden container was still intact, the reopening also took place in the sixth or seventh century.

Grave goods

Only two burials yielded preserved grave goods. Grave 2012-02 was furnished with numerous beads, including a large crystal bead, two fibulae, a knife, a bowl and several small metal artefacts. The reopened grave 2012-01 contained two copper alloy rings, a fibula, a bead and possibly a knife, all of which were found within reach of the disturbed area. Two other graves contained objects of which it

is unclear whether they were part of the grave furnishings. In grave 2011-01 a lead fragment was found near the skull. In grave 2010-01 a rust stain was observed near the skeleton's legs.

3.11 Oosterbeintum

The cemetery of Oosterbeintum (the Netherlands, province of Friesland, municipality of Ferwerderadeel) was discovered in 1987 when a ditch on the site was deepened in the course of land re-allotment. Since the cemetery's preservation was threatened by the calving off of the ditch and the lowered water table, the government granted permission to excavate the section of the site that was adjacent to the ditch. The excavations were carried out in 1988 and 1989 under the direction of Egge Knol by the archaeology department of Groningen University in cooperation with the VU University in Amsterdam and the Fries Museum in Leeuwarden. A detailed analysis of the excavation results appeared in *Palaeohistoria* (Knol et al. 1995/1996) and the research results were summarized for the general public in a Dutch publication by the Vereniging voor Terpenonderzoek (Knol et al. 1996).

The cemetery was located on a *terp* (also called *wierde*) in the Dutch northern coastal area. It was one of many similar anthropogenic dwelling mounds that had been built in the region's salt marshes from the Iron Age onwards. These mounds served to protect the habitation against flooding as they were located in open salt marshes, not shielded from the sea by dikes.

Before the excavation, the cemetery had been subjected to several disturbances. The site was cut by several later medieval ditches and a large part of the *terp* was destroyed by soil quarrying in the early twentieth century. Part of the cemetery's upper layer was also removed in this process, but the lower levels were left intact, possibly because the diggers were hesitant to disturb the bones in the graves. The soil of the *terp* offered good conditions for the preservation of human bone. Since the *terp* consisted of raised material the features grave constructions and potential reopening pits

were less legible than is often the case in natural soils. Due to the poor legibility of the soil and high degree of post-medieval disturbance on the site, it was not possible to identify any reopened graves on this site with certainty. The discussion of this cemetery will therefore be brief.

Inhumation graves

The excavated section of the cemetery yielded the unburnt remains of 48 humans, distributed over 42 inhumation graves and two possible inhumation graves. The excavated section of the cemetery also yielded six dog inhumations and one horse inhumation. The graves contained relatively few grave goods compared to Merovingian cemeteries from the central and southern Netherlands. As a result, the graves were difficult to date. Nine graves dated to 400-550, five to 500-625, four to 600-725 and one to 675-750.

The cemetery's layout was almost the opposite of the typical row grave cemetery. The graves had every possible orientation and the deceased were buried in diverse positions, supine and crouched with many variations in the placement of the arms and legs. Relatively few wooden containers were found. The excavators observed the remains of eight tree trunk coffins and a small number of possible indeterminate wooden containers. The positioning of the skeletal material in the graves nevertheless suggests that many bodies decomposed in an open space, presumably a wooden container. The low number of wooden container traces is probably at least partially due to the poor legibility of the terp soil.

The graves yielded skeletal remains of 48 individuals. Eight skeletons belonged to children between 4 and 10 years of age and four belonged to adolescents under 20. There were 33 adult individuals, most of whom had died before the age of 50. Of the adults, 12 individuals could be sexed as male and 14 as female. In 3 cases the age of the deceased could not be determined. In nearly all cases the gender associations of the grave goods corresponded with expectations based on the deceased's osteological sex. Grave 398 was an

exception, containing a skeleton sexed as male and grave goods that are usually associated with woman, such as two brooches, 40 beads and a bracelet. One of the skeletons belonged to an adult achondroplastic dwarf.

Cremation graves

The excavation uncovered a large number of contexts containing cremated human bone, but not all of these were cremation graves in the traditional sense of the word. At least 21 urn cremations, five pit cremations and 71 small concentrations of cremated material were found. One cremation grave consisted of a large pit over which a pyre had probably been constructed. The other cremation pits were much smaller deposition sites for bone that had been cremated elsewhere. On average the urns and pits respectively contained 286 and 386 grams of cremated human bone, indicating that only part of the deceased's bones were deposited in the graves. The 71 small concentrations of cremation remains contained between 49 and 0 gram of human bone, with 40 concentrations yielding less than two grams. Some of these concentrations may have been pyre sites or small pit cremations. Others may have been post holes of elevated pyres. Additional human cremated bone was found scattered in 17 inhumation graves. These may have been the remains of disturbed cremation graves. One pit contained only cremated animal remains, of which most belonged to one sheep/goat, but remains of various other species were also present.

The cremation graves contained even fewer objects than the inhumation graves. The combined evidence of the grave goods and carbon dating indicated that the cremation graves date between the fifth century and start of the eighth century and are thus contemporary with the inhumation graves.

From the combined contexts containing cremated human bone, the remains of 11 to 23 children and 24 to 28 adults could be identified. Of the adults, one individual could be identified as male and six as female. Eight additional cremations contained grave goods that are usually associated with women. No

grave goods associated with men were found in the cremation deposits.

Post-depositional interventions

As mentioned above, no straightforward reopenings could be identified with certainty in this cemetery, due to the many post-medieval disturbances that took place on the site. There are nevertheless a few interesting cases of potential contemporary post-depositional interventions. At least nine graves were cut by a later burial. Some intercuts touched only the peripheral areas of the older grave and were not invasive, but others cut into the area where the body lay, thereby effectively reopening the older grave.

Grave 374 may have contained an additional burial. The grave held the remains of two individuals, but it is unclear whether they were deposited at the same time or consecutively. The skull of the bottom skeleton was missing and may have been cut away by a later ditch, but it could also have been removed during the deposition of the second burial. The lower left arm of this individual is also missing. In total, five human burials (270, 273, 299, 374b, 461) and one dog burial (408) were lacking skulls. There were no indications for *peri-mortem* decapitation, so the skulls were most likely removed after the bodies had skeletonized. Similarly, a number of skeletons were missing arm or leg bones. The remaining bones were usually in a relatively good condition, so it seems unlikely the missing bones had simply decayed. The bones may have been removed during later disturbances on the site, but early medieval interventions cannot be excluded. Grave 474 on the other hand, consisted only of a skull which had been deposited facing north in an upright position, standing on the jaw. Unfortunately, the skull has not been dated, so it may belong to an older period.

The cremation graves had also been subjected to many disturbances of unknown date. Of the 21 cremation urns, only six were intact. The remainder were broken and had probably been disturbed. The excavators believe that most of these disturbances took place during

the early medieval period, by intercutting graves. Such intercuts would also account for the cremated bone found scattered in the inhumation graves. Since the upper layer of graves had been dug away by the soil quarrying, this hypothesis could not be confirmed in all cases.

3.12 Finds from the Meuse at Kessel and Roermond

The finds from the Meuse at Kessel (The Netherlands, province of Noord-Brabant, municipality of Oss) is one of best documented river complexes of its kind in the Netherlands, containing human remains associated with other types of material. The material from Kessel was recovered by amateur archaeologists working on a dredger between 1991 and 1993. The finds include large quantities of pottery, some weapons, brooches, bronze cauldrons, harvest implements, and both burnt and unburnt bones of humans and other animals. The carbon dates of the human bones show a range of 360 cal BC to 1260 cal AD, with a climax in the Late Iron Age and possibly a less pronounced peak in the Early Middle Ages. Sixteen bones were dated of which eight originated from the Late Iron Age and three from the Merovingian period. These dates are not exceptional as generally finds of human bone from river deposits in the Netherlands have been shown to range from the Neolithic to the Early Medieval period (Ter Schegget 1999: 202, 210).

The representativeness of dredge finds such as these is problematic. It is unclear to what extent the documented finds reflect the original complex. In the case of Kessel, the reliability is somewhat improved by the fact that the material was gathered by amateur archaeologists using a 16 mm sieve, rather than by dredge workers picking interesting looking objects from the gravel. The material was not eroded, indicating that it had probably remained more or less *in situ* after its original deposit and had not flushed down and accumulated on the find spot from upstream. The bones and objects must have been deposited in a bank zone

or slow-flowing arm of the river, because they seem to have been surrounded by fine clay sediment.

Ter Schegget analysed approximately 650 human bones from the Kessel complex. The material consisted mostly of long bones and skull fragments. The fragmentation of the material is mostly due to breaks that occurred during dredging. Small and fragile bones such as those of the hands and feet, vertebra and shoulder blades are severely underrepresented. The minimal number of individuals calculated on the basis of the number of right parietal skull bones was 55. In reality, the number was probably much higher. Approximately 80 to 90% of the bones belonged to adult individuals. Of the tooth and jaw fragments, 18% belonged to individuals younger than 20 years. However the majority of did not exceed the age of 30. Approximately 1/5 of the skull bones were from people over age 40. A few bones belonged to children under age 12, including one newborn. In total bones of six infants aged up to ten were found and one juvenile of about 15. Only a third of the adult remains could be sexed. Of the sexed bones, 75% were male and 25% were female (Ter Schegget 1999: 213-214). It is important to keep in mind that these are the results of the ensemble as a whole and it is unclear which portion of the bones dates to the early medieval period.

In an attempt to answer the question whether whole bodies or only certain body parts were deposited, Ter Schegget analysed the division between cranial and post-cranial skeletal elements as well as the distribution of skeletal elements over the left and right sides of the body. Since the minimal number of individuals is 55 on the basis of skull remains and 45 on the basis of femora, there were probably very few or no depositions of individual skulls. However, for the postcranial skeleton, more bones from the right side of the body were found than from the left. Statistical analysis showed that the difference was just below significance level, so it is unclear whether this was just chance or whether there was a preference or other selective process that caused

more bones from the right side of the body to be deposited (Ter Schegget 1999: 214-215).

Two bones dating to the early medieval period revealed evidence of injuries. The skull of an adult younger than 40 showed two deep cuts that were inflicted by the same weapon, either an axe or a sword. Both gashes show no signs of healing and were therefore most likely fatal. A right humerus of an adult had a number of incisions and dents with no signs of healing. According to Ter Schegget (1999: 216, 221-222) they were caused by a sharp-bladed weapon, probably a sword.

Since the complex found at Kessel contained mostly non-eroded material and showed no signs of animal damage, Ter Schegget argues that it was a genuine river deposit which could be interpreted as a multi-period cult site. This is confirmed by other typical 'cult site' finds such as bent weapons and large quantities of animal bone. In Celto-Germanic and Gallo-Roman times, the function of the cult place was probably linked with the cosmological significance of rivers in contemporary religion. Ter Schegget (1999: 223-224) wonders to what extent such cult sites were still used in the same way in the early medieval period. She offers two hypotheses to account for the presence of human remains in the complex. According to classical authors, the Celts and Germans sometimes practiced human sacrifice *in situations of crisis*. The victims were often prisoners of war. The weaponry, the predominance of young adult males and the weapon injuries on some of the bones suggest an association with warfare. Alternatively, the deposition of human remains in rivers may have been a form deviant mortuary ritual. The possibility that some of the remains in the river deposit originated from reopened graves is not considered.

From a similar but smaller complex found in the Meuse at Roermond, 75 human bones and bone fragments were recovered (mainly skulls and femora), in addition to metal finds ranging in date from the Bronze Age to the Early Middle Ages. The remains mainly belonged to young men, but bones of women and juveniles were also present. It is unclear to what extent

the metal finds and skeletal remains are associated, since most of the bone material has not been dated (Erdbrink et al. 1975; Ter Schegget 199: 206).

3.13 Comparison between cemeteries

This section summarizes the findings from all the cemeteries in the dataset. It also contains a comparison of the results from the research area with studies about grave reopenings from other regions of early medieval Europe. For these comparisons I will use a variety of sources that offer information on reopened graves, but I will rely most on the studies from English Kent and German Bavaria by Klevnäs (2013) and Zintl (2012). These are the only ones that are comparable to the present study with regards to both the size of the dataset and the level of detail with which the material is examined. Such comparisons are not unproblematic, because the research areas are quite distant from one another, both in kilometers and socio-political context. However, as we shall see, there are remarkable similarities between the practices of grave reopeners in these regions.

I gathered data from eleven cemeteries excavated across the modern Netherlands and Belgian Flanders (see figure 3.13.1). These cemeteries yielded a total of 1169 inhumation graves and 201 cremation graves. Unfortunately, most of the cemeteries were not completely excavated, so their true size is unknown. There is considerable variation in the numbers of inhumations and cremations found at these sites (table 3.13.1). The largest cemetery is that of Broechem, which consisted of 431 inhumation graves and 65 cremation graves. The smallest number of graves was found in Oegstgeest, which yielded only eight inhumations and two cremations. On all sites except Solleveld, considerably more inhumations than cremations were found. Interestingly, the cremation graves usually contained far less bone than what normally remains after an adult human body is cremated, indicating that only part of the bone was deposited in the

graves. In Dommelen and Borgharen cremations were completely absent.

The size of the cemeteries is to some extent related to the contexts in which they were found. The relatively small numbers of graves from Dommelen and Oegstgeest lay in settlement areas. The larger cemeteries were not located in settlements, but may nonetheless have been positioned adjacent to inhabited areas. In the cases of Wijchen, Lent-Lentseveld and Solleveld, the cemeteries were found in the vicinity of settlements that were at least partially contemporary.



Figure 3.13.1 Map showing the locations of the cemeteries discussed in this study. Drawing by Frans Theuws.

	Inhumations	Cremations
Broechem	431	65
Meerveldhoven	54	9
Dommelen	24	0
Bergeijk	117	7
Posterholt	123	3
Borgharen	15	0
Wijchen	302	36
Lent-Lentseveld	50	20
Solleveld	3	32
Oegstgeest	8	2
Oosterbeintum	42	27
Total	1169	201

Table 3.13.1 Total numbers of inhumation and cremation graves from the cemeteries included in this study.

Cemetery	Male	Female	Neutral
Broechem	15%	25%	59%
Bergeijk	15%	24%	62%
Posterholt	10%	23%	67%
Wijchen	18%	16%	65%

Table 3.13.2 Percentages of graves with typical men's, women's and neutral grave goods in the largest cemeteries from the research area.

There was some variation in the percentages of presumed men's and women's graves found in the cemeteries. Unfortunately, the preservation of bone on most sites was rather poor, so the differentiation of men's and women's graves had to be based largely on the grave goods. When both grave goods and skeletal material were available, there was usually a good match between artefact based gender and osteological sex. As can be seen in table 3.13.2, the cemeteries of Broechem, Bergeijk and Posterholt had relatively few graves containing typical men's objects compared to graves containing objects associated with women. In the Wijchen cemetery, the percentages of graves with men's and women's grave goods were more even. The differences in the numbers of presumed men's and women's graves may have been caused by variations in the frequency with which men and women were buried with gender specific grave goods. For instance, young children of both sexes may have been

buried with beads and other items that are usually associated with women (Halsall 1995: 149, 162). However, similar differences between numbers of men's and women's graves were also noted by Panhuysen (2005: 282–283) in his osteological study of skeletal material from the early medieval cemeteries in Maastricht, which was not influenced by gender specific grave goods. These differences led him to hypothesize that cemeteries may have been considered complementary to one another, allowing people from a single community or family to bury their dead at preferred sites according to perceived social categories such as gender (Panhuysen 2005: 282–283).

Additional burials

Inhumation in inhumation

There were relatively few graves in which an additional inhumation had been deposited at a later time. However, given the poor preservation of skeletal remains in many cemeteries in the research area, it is unclear to what extent the low number of additional burials reflects historical reality. In the large cemetery of Broechem, only one grave with an additional burial was found. No indications for additional burials were observed in the cemeteries of Meerveldhoven, Wijchen, Lent-Lentseveld, and Solleveld. In the farmyard cemetery of Dommelen, the number of graves with multiple burials was relatively high compared to the other cemeteries in this study. Of the 24 inhumation graves on this site, between four and six graves contained multiple burials. In only one case the second burial had definitely been added to the grave at a later time. In another case it was unclear whether the two burials were deposited simultaneously or consecutively. The other graves contained burials that had been deposited at the same time. In the Borgharen cemetery there were two graves with additional burials. One was the grave of an adult man, to which the remains of a child had been added. The other belonged to an adult woman, at whose feet a bundle with the disarticulated remains of two young boys had been deposited at a later time. DNA analysis

showed that at least one of the children was the woman's son. In both cases, the additional remains were probably deposited during post-depositional interventions. In Posterholt five or possibly six graves revealed indications that they have been reopened for the deposition of additional burials. In most cases the excavators at this cemetery observed outlines of multiple superimposed wooden containers, and sometimes skeletal material of multiple individuals was found. Given the relatively poor preservation of bone in this cemetery, more additional burials may have gone unnoticed. In Bergeijk one grave contained both typical men's and women's grave goods, suggesting that the grave may have contained two burials, but this could not be confirmed as no bone was preserved. The grave goods' distribution in another grave also indicated that the grave may have contained two burials. It is unclear whether these were deposited simultaneously or consecutively.

In some cases, it was difficult to distinguish between additional burials and intercutting graves which had so much overlap that they were very similar to an additional burial, as for instance in Broechem graves 65, 55 and 54 and Dommelen graves 13/14 and 17/18. This suggests that early medieval people may not necessarily have distinguished between the various types of post-depositional interventions defined in this study, but instead considered them more as different sides of a range of practices. This also fits with the reopenings that took place during intercuts, which will be discussed below. Similar cases where an additional burial or intercut may have been combined with the reopening and displacement of an older burial were found in Germany and Kent. In the German cemetery of Aubing several graves were reopened before or when they were cut by an overlying burial (Dannheimer 1998: 26-29). In Bavaria the cemetery of Harting-Katzenbühl yielded two mound graves which were reopened and rummaged during the deposition of a new burial (Zintl 2012: 334-337). The Anglo-Saxon cemeteries of Polhill and Mill Hill each yielded one case of a grave that was reopened before or during

the construction of an intercutting grave (Klevnäs 2013: 75-76).

Cremation in inhumation

In a few cases concentrations of human cremation remains were deposited in inhumation graves. It is not always clear whether the cremation remains were added to the inhumation graves during the funeral, or whether the deposition was part of a post-depositional intervention. It seems that both options were possible. Even if the cremated bone was found in a reopening pit, it could have been deposited in the grave during the original funeral. In Broechem, five reopened graves contained additional cremations, but in three cases the cremation remains were found outside the reopening pit. These were probably not deposited during post-depositional interventions. In Meerveldhoven one cremation was found in a reopened inhumation. In Bergeijk one reopened inhumation grave and two graves of indeterminate status contained cremated bone. Unfortunately, the remains are lost, so we cannot verify whether the bone was human.

Intercuts

Intercuts between graves were a very common type of post-depositional intervention in the research area. The percentage of graves cut by another grave varied from cemetery to cemetery. The highest percentages of intercuts were found in the large cemeteries of Wijchen and Broechem, where respectively 35% and 24% of graves had been cut by a later grave. In the smaller cemeteries, the percentages of intercuts were much lower (Meerveldhoven 15%, Bergeijk 10%, Posterholt 9%) or almost absent such as in Borgharen, Lent-Lentveld, Oegstgeest and Solleveld. The reason for these differences is probably that the cemeteries with fewer intercuts had shorter use periods, so the locations of the older graves were still visible and there was more space left to dig new graves without superimposing them on old burials. Intercuts occurred both in reopened and in otherwise intact graves. There were a few cases where the grave pit diggers seem to have expanded the grave pit in order to gain

access to the contents of the cut grave (for instance in Broechem grave 969, Meerveldhoven grave 43 and Posterholt grave 33). But usually intercuts and reopenings seem to have been separate events.

Some intercuts accessed the contents of the cut grave and could perhaps be considered a type of reopening. It is often unclear whether the diggers deliberately aimed to rummage through the contents of the older grave. Such invasive intercuts usually seem to have taken place after the coffin of the cut grave had decomposed. As is also argued by Zintl and Klevnäs, some invasive intercuts may have been unintentional and may have come about because the surface marking of the older grave had faded so it was no longer recognizable to the grave diggers who were looking for an empty spot in the cemetery (Zintl 2012: 333; Klevnäs 2013: 37). In many other cases, the intercuts were non-invasive, cutting only the edges of the older grave's pit or a small section of the wooden container. Interestingly, there was quite a lot of variation between the intercuts in different cemeteries. For instance in Bergeijk, Meerveldhoven and Dommelen, nearly all intercuts were non-invasive, while in Broechem and Wijchen many intercuts were invasive and accessed the older graves' contents. Similar to the higher overall percentages of intercuts, invasive intercuts seem to have been more common in the large cemeteries with a longer use period, most likely because after one or two hundred years of use these cemeteries had fewer empty spaces and the decomposed wooden containers of older graves made it easier to dig a new grave pit into them. In some cases the older graves may no longer have been recognizable above ground, so the grave diggers did not know their pit cut an old grave, at least until they encountered bones and grave goods.

Reopenings

All the cemeteries in the research area held at least a few reopened graves. Of all the inhumation graves included in this study, at least 208 were reopened after burial. There is no evidence for the reopening of cremation graves other than a small number of cremation graves that were cut by later burials. As in Anglo-Saxon Kent (Klevnäs 2013: 32), the lack of evidence for reopenings in cremation graves may be due to taphonomic factors rather than a real absence of reopened cremations. Table 3.13.3 shows the absolute numbers of reopened, intact and indeterminate inhumation graves per cemetery. Due to differences in preservation, it was more difficult in some cemeteries than in others to distinguish between reopened and intact graves, which is reflected in the varying the numbers of indeterminate graves. For the cemetery of Oosterbeintum, it was not possible to identify any reopened or intact graves with certainty. The varying percentages of indeterminate graves complicate the comparison of reopened and intact graves between the cemeteries. This problem can be overcome by excluding the indeterminate group from the calculation and only taking into account the reopened and intact graves, as is done in table 3.13.4. These are the percentages I will use to compare reopening rates in the Low Countries with those in other the regions discussed below, as the authors working on these regions also calculated their percentages that way. The cemeteries of Borgharen, Solleveld, Oegstgeest and Oosterbeintum were left out of this table because they had too few graves to calculate meaningful percentages. The cemeteries in the table are ordered according to the percentages of reopened graves, with the highest percentage at the top. The reopening percentages vary between 59% (Posterholt) and 16% (Lent), with an average of 41%. Graves from certain chronological phases had much higher reopening rates than others, as will be discussed below.

Comparison between cemeteries

Cemetery	Reopened	Intact	Indet
Broechem	104 (24%)	125 (25%)	203 (47%)
Meerveldhoven	9 (17%)	18 (33%)	27 (50%)
Dommelen	2 (8%)	9 (38%)	13 (54%)
Bergeijk	28 (24%)	31 (27%)	58 (50%)
Posterholt	33 (42%)	23 (29%)	24 (28%)
Borgharen	3 (-)	0 (-)	12 (-)
Wijchen	22 (7%)	63 (21%)	217 (72%)
Lent	5 (10%)	27 (54%)	18 (36%)
Solleveld	1 (-)	2 (-)	0 (-)
Oegstgeest	1 (-)	7 (-)	0 (-)
Oosterbeintum	0 (-)	0 (-)	42 (-)
Total	208	305	573

Table 3.13.3 Total numbers and percentages of reopened, intact and indeterminate inhumation graves from the cemeteries in this study.

Cemetery	Reopened	Intact	Use period
Posterholt	59%	41%	(500) 600-750
Bergeijk	47%	53%	580-750
Broechem	45%	55%	400-750
Meerveldhoven	33%	67%	575-700
Wijchen	26%	74%	400-700 (600-700)
Dommelen	18%	82%	670-750
Lent	16%	84%	535-635

Table 3.13.4 Percentages of reopened and intact graves, indeterminate graves excluded for purposes of comparison.

There is no clear pattern that accounts for the differences in reopening percentages between the cemeteries. Similar seemingly erratic differences between reopening rates of neighboring cemeteries have also been noted in other regions of the early medieval world (Fingerlin 1971: 16-54; Roth 1978: 60; Klevnäs 2013: 35-36; Zintl 2012: 306). The three cemeteries with the highest percentages (Posterholt, Bergeijk and Broechem) are all located in the southern Netherlands and Belgian Flanders, but so is Dommelen, which has one of the lowest reopening percentages. Bergeijk, Meerveldhoven and Dommelen are in fact situated within a rather short distance of one another and have quite varied reopening percentages (47%, 33% and 18% respectively), so regional distribution alone cannot explain the differences in reopening intensity. However, the graves in Dommelen do mostly date rather late compared to those in the other cemeteries, so the low number of reopenings may be relat-

ed to a decline of reopenings in late graves, which is also seen in the late phases of some of the other cemeteries. This suggests that the variation in grave reopening percentages between the cemeteries may be related to differences in the cemeteries' use periods. The cemeteries with the lowest reopening percentages have graves that date comparatively early (Lent and to some extent Wijchen) and late (Dommelen). However, the cemeteries with relatively high numbers of reopened graves also have many early (Broechem) and/or late (Bergeijk, Posterholt) graves. In Bergeijk and Posterholt, very few graves from the last phase were reopened, but the graves from the phases before the end of the seventh century were opened in such numbers that these cemeteries nevertheless have the highest reopening percentages. In most cases, the reopened graves were distributed relatively evenly over the cemeteries, without forming clearly defined concentrations. However, the cemeteries of Bergeijk and

Posterholt both had a section with almost no reopened graves. The graves in these sections probably nearly all date to the cemeteries' end phase in the late seventh and first half of the eighth century, when fewer graves were being reopened. Similar changes in grave reopening behavior over time may be the cause of the less pronounced patches with few reopened graves in the cemeteries of Broechem and Meerveldhoven.

In the adjacent German Rhineland, Siegmund found similar widely varying reopening percentages, from about 5% at Walsum to over 80% at Junkersdorf, with an average of at least 32% (Siegmund 1998: 237-238). Here, the variations in reopening percentages may also relate to changes in reopening intensity between chronological phases. The reopening rates in the Low Countries and the Rhineland hover neatly between those found in Bavaria and Anglo-Saxon Kent. In the Bavarian cemeteries studied by Zintl (2012: 306), the reopening rates were relatively high. More than 50% of the graves in this study were reopened, with an exceptional percentage of at least 90% in Burgweinting-Schule and 72% in Geisling. However, there were also a few cemeteries where almost no graves had been reopened, such as Burgweinting Kirchfeld, where the western group did not yield any reopened graves and only 9% of the graves in the eastern group had been reopened. Noterman (2016: 169) states that the reopening percentages of the cemeteries she studies in northern France vary between 15% and 50%. In Kent, Klevnäs (2013: 35) found that in the most heavily affected cemeteries between 8% and 44% of the graves per cemetery had been reopened, with an average of 21%. On the less heavily affected sites, the numbers of reopened graves were often limited to one or two per cemetery. For the row grave area in general, Roth calculated an average reopening rate of 39% on the basis of evidence from 60 sites. He too however, observed significant regional variations and local differences between cemeteries (Roth 1977: 287-288, 1978: 60-61, 73).

It is unfortunate that we have no data about grave reopenings from the northern Nether-

lands. The cemetery of Oosterbeintum was too badly disturbed to assess whether early medieval grave reopenings had taken place there. Other cemeteries from the region were not excavated or published with the level of detail needed for the study of grave reopenings. There are a few unpublished cemeteries in the province of Drenthe that could potentially yield information about reopened graves in the southern Netherlands (Wijster, Zweeloo, Aalden and Hijken). According to Van Es (personal communication) there is little evidence for grave reopenings in Drenthe, except perhaps for the chamber graves in the cemetery of Hijken.

Grave reopenings rates according to gender and age

There are some interesting differences between the percentages of reopened graves with men's, women's and neutral grave goods. In all four cemeteries where the number of reopened graves was large enough to calculate meaningful percentages, graves with men's objects had higher reopening percentages than graves with women's and neutral objects (see table 3.13.5). The graves with so called neutral, non-gender specific grave goods had the lowest reopening percentages. This is especially interesting since there were considerably more graves with neutral and women's grave goods than graves with men's grave goods in these cemeteries (see table 3.13.2). It is tempting to see a causal relationship here. If men's graves were preferentially reopened to remove gender specific grave goods, that could be the reason why there are relatively few graves with typical men's objects in them. However, as will be discussed below in the section on grave goods, the diggers often seem to have left many gender specific objects behind in men's graves, making it less likely that graves with men's objects are underrepresented due to grave good removal.

Cemetery	Male	Female	Neutral
Broechem	42%	22%	19%
Bergeijk	59%	39%	9%
Posterholt	100%	61%	27%
Wijchen	16%	12%	3%

Table 3.13.5 Reopening percentages of graves with men's women's and neutral grave goods.

It is not possible to know whether a grave with typical men's or women's grave goods actually contained the remains of a man (Effros 2000, 2006: 212-214) but that is not an insurmountable prohibition in this case. The important point to note is that the diggers seem to have purposely targeted graves with gendered objects over graves with non-gendered objects and graves with typical men's grave goods over graves with women's objects. The question whether actual biological males or females were buried in these graves will largely have to remain unanswered. We should keep in mind that one of the reasons why there are so many reopened neutral graves, could be that the diggers removed gender specific objects during the reopening, thus turning originally gendered graves into neutral ones. However, I am inclined to think that this effect was small, as at least some small gender specific objects or fragments thereof usually seem to have been left behind in the reopened graves, as we shall see below.

In theory, the higher numbers of reopened graves with men's grave goods could at least partially be due to differences in above ground marking of these graves. If the male gendered graves were more clearly or durably marked, that could account for the fact that they were reopened more often than women's graves. However, there is virtually no physical archaeological evidence for grave markers. It is therefore unclear in what way the graves may have been marked. The targeting of specific grave types does suggest that they were recognizable above ground in some way.

A similar distribution of reopened men's and women's graves was observed in Anglo-Saxon Kent, although the difference was less pronounced than in the Low Countries. In the 8

sites with the highest reopening rates, the graves of 74 men, 54 women and 63 unsexed individuals were reopened. Because men were overrepresented in two of the cemeteries, this amounts to 22% of men's graves, 19% of women's graves and 15% of unsexed graves (Klevnäs 2013: 42). Also in German Bavaria, a slightly higher percentage of men's graves was reopened versus women's graves, but the difference was small, 60% of men's graves were reopened versus 51% of women's graves (Zintl 2012: 313-314). Both Klevnäs' and Zintl's analyses are based on osteological data. Although there was a high degree of correspondence between skeletal sex and the gendering of grave goods in these areas, it would be interesting to see if the difference in reopening rates between graves containing gendered grave goods associated with men and women is more pronounced than that between graves with individuals of male and female osteological sex. Unfortunately, neither Zintl nor Klevnäs tested for such patterns.

Only a small number of children's graves could be identified in the research area, some on the basis of the skeletal remains found in them, others only on the basis of the fact that they were too small to accommodate the remains of an adult. See Panhuysen (2012: 138-140) for an explanation of age determinations based on grave length. Of the 53 children's burials (under 13 years old) in the dataset, 7 had been reopened while 16 had remained intact. The status of the other 30 graves could not be determined. Of the combined graves of children and adolescents under 21 years, 11 had been reopened and 42 were intact. It seems that the graves of children, and especially those of adolescents were opened relatively infrequently compared to those of the population as a whole. However, children's graves were not completely avoided by the grave reopeners either. A similar pattern was observed in Anglo-Saxon Kent. Klevnäs (2013: 41) found that children's graves seem to have been reopened less often than those of adults, and that the children's graves which had been reopened were usually adult sized. These differences may partially result from the fact that

it is more difficult to identify reopenings in children's graves because their skeletons are more susceptible to decomposition and they were provided with fewer grave goods. However, it is possible that the diggers simply preferred to reopen larger graves over smaller ones. They may also actively have avoided the graves of children, identifying them on the basis of their size which could be estimated from surface markers. Apart from the possible avoidance of children's graves no other age-related patterns were found. Reopening seems to have affected adults' graves of all categories equally. In Bavaria, the graves of children and adults were opened equally often. However, the graves of older adults were reopened more often than those of younger adults (Zintl 2012: 312-313). The low amount of skeletal material from the Netherlands and Belgian Flanders is insufficient for a similar analysis.

The chronology of grave reopenings

In the methodology section, I discussed the method of dating grave reopenings on the basis of the state of the body and the wooden container, as it was developed by Edeltraud Aspöck (2005: 251-252; 2011: 302-306). She proposes that an average wooden grave container may take approximately 35 years to decompose, so there are potentially 35 years during which there is an open space inside the grave. In this open space, objects and bones can be moved and deposited on the grave's bottom. After this period, the grave will have collapsed and filled with soil, so any post-depositional interventions that take place at this point will result in the mixing of grave goods and bones with the container's fill. This period of 35 years is only an estimate, as the actual time it may take a wooden container to decompose depends on many factors, such as the type, thickness and treatment of the wood and environmental circumstances such as the acidity, moisture and porosity of the surrounding soil. This dating method is further complicated by the observations from the Meerveldhoven cemetery, which show that the open space inside the containers was often at least partially filled with sediment long before

the wood had decomposed. It is unclear whether analogous processes took place at the other cemeteries in the research area, but it seems likely that they did, at least on sites with a similar sandy or loamy soil. This information somewhat clouds the clarity of Aspöck's dating method. Already before the container had collapsed, grave goods and bones could be mixed with the sediment that had accumulated on the container's bottom. I tried to work around this issue by using a broad definition of the grave's bottom. Any object found within a height of about 15 cm from the grave's actual bottom was entered into the database as being 'on the bottom' of the grave. Nevertheless, these considerations need to be taken into account when we attempt to date grave reopenings with indications of an open space inside the container. Reopenings that took place in an intact container may not always be recognizable both because of the accumulation of sediment, and because the diggers may deliberately have mixed objects and bones into the soil with which they backfilled the grave.

A second problem arises when we try to compare absolute dates of cemeteries, graves and reopenings. Nearly all graves in this study were dated solely on the basis of grave goods and occasionally coins. Only a few contexts are dated with absolute methods such as radiocarbon dating. Despite the rather short phases defined by some authors (for instance Siegmund 1998 and Müssemeier et al. 2003), typo-chronological seriation-based dating is not always reliable, especially since we do not know how long certain objects may have circulated among the living before they were deposited with the dead (Kars 2011: 16-32). This is further complicated by the fact that none of the cemeteries in the research area have their own local typo-chronology. As a result, all the graves in this study were dated with typo-chronologies developed for cemeteries in the German area. In addition, the cemetery of Meerveldhoven was published in 1978 and has not yet been re-analyzed with modern typo-chronologies. The dates used in this chapter were taken from the publication and

may therefore differ from the way these graves would be dated if the cemetery's chronology was reevaluated with the modern typochronologies that were used for the other cemeteries in this study.

Only in approximately half of the reopened graves was it possible to assess the state of the wooden container at the time of the reopening. In 50 cases, it could be shown that the reopening took place while the wooden container was still intact. Another 56 were probably reopened after the container had collapsed (see table 3.13.6). According to Aspöck's scale, this corresponds to 50 graves that were reopened within approximately 35 years of the burial and 56 graves reopened more than 35 years after the burial. The percentage of graves that were reopened with intact or collapsed containers varies quite a lot between the cemeteries. In Broechem, only about one third of the graves was reopened while the wooden container was intact, while in Bergeijk the numbers of graves with intact and collapsed containers were almost equal and in Lent no graves could be shown to have been reopened after the container had collapsed. For the most part, the numbers are too small to draw any conclusions about the practices in particular cemeteries.

There was only one case where the state of the skeletal material offered indications for the reopening time. In Lent grave 16, the deceased's tibiae and fibulae were displaced while they were still articulated, indicating that the reopening was carried out while the body had not yet fully decomposed. This corresponds to Aspöck's phase B, meaning that the reopening probably took place within approximately 10 years after burial. In Bavaria, Zintl found at least 37 cases of reopenings that took place in Aspöck's phase A or B, when the body was still fully or partially articulated. These reopenings are a minority group in the Bavarian dataset, but quite a substantial one nonetheless (Zintl 2012: 326-327). Such early reopenings may also have been relatively common in the Netherlands and Belgian Flanders, but the lack of preserved skeletal remains inhibits us from detecting them. Zintl also found many graves

that had been reopened while there was still an open space inside the wooden container, even though not all of the Bavarian graves were documented with enough detail to allow observations on the state of the container and the vertical distribution of the grave goods. In the cemeteries that were excavated to modern standards, at least one third of the reopenings seems to have taken place in an intact container (Zintl 2012: 328). In Kent, most graves were reopened after the body had skeletonized, but before the open space inside the wooden containers had filled with soil. However, a small number were reopened while the bodies were still partially articulated. There is also some evidence that graves were reopened while the organic components of grave goods, such as the string on a bead necklace, were still intact (Klevnas 2013: 43-47).

Assigning absolute dates to the grave reopenings turned out to be quite difficult. Not all reopened graves could be dated, and for the dated graves, it was often not possible to determine the state of the wooden container at the time of the reopening. In those cases, the dates of the graves are only an approximate terminus post quem for the date of the reopening. In many cases, the dates of the reopened graves spanned most of the cemeteries' use periods, so these dates were not very helpful in dating the reopenings. None of the reopenings could be dated on the basis of objects that had beyond doubt been deposited in the grave during the reopening.

Together, the cemeteries in the dataset span the entire Merovingian period. However, there is considerable variation in the use periods of the individual cemeteries. The large Belgian cemetery of Broechem was the only one with graves dating to all phases of the Merovingian period. Wijchen in the central Netherlands also had graves from nearly all periods, but burials at this cemetery probably ceased slightly earlier than in Broechem. The cemeteries of Meerveldhoven, Bergeijk and Posterholt in the southern Netherlands were probably almost exclusively used in the seventh and the beginning of the eighth century.

Cemetery	Use period	Reopening dates
Broechem	400-750	560-685/735 (475-800)
Meerveldhoven	575-700	700-735?
Dommelen	670-750	700-735
Bergeijk	580-750	580-750 (800)
Posterholt	580/610-750	580/610-785 (800)
Borgharen	550-700	550-725
Wijchen	400-700 (600-700)	400-675 (750/800)
Lent	500-600? (most graves not dated yet)	535-635
Solleveld	500-700	630-700
Oegstgeest	500-700	500-735

Table 3.13.7 Use periods and reopening dates of the cemeteries in this study. For details, see the chronology discussions in each of the cemetery sections in this chapter.

Cemetery	Intact	Collapsed
Broechem	20	41
Meerveldhoven	1	5
Dommelen	2	0
Bergeijk	7	6
Posterholt	5	2
Borgharen	3	1
Wijchen	6	1
Lent	4	0
Solleveld	(1)	0
Oegstgeest	1	0

Table 3.13.6 Numbers of reopenings that took place in intact and decomposed wooden containers.

In the settlement of Dommelen, which is also in the southern Netherlands, burials did not start before the end of the seventh century. In Borgharen on the other hand, which is located on the southernmost edge of the research area, burials started in the second half of the sixth century and continued only until the end of the seventh century, as they did in Wijchen. For the cemeteries of Solleveld and Oegstgeest on the coast and Lent in the central Netherlands, there is currently insufficient dating evidence to be certain of their use periods. It is also important to keep in mind that many of the cemeteries were not excavated completely, so they may still hold graves that date to other periods than those represented in the current dataset.

The earliest datable grave reopening in the research area took place in Wijchen grave 185 and can be dated to 400-485. This may be an exceptional case, since other datable grave reopenings from this cemetery and the others all dated after 500/550. This near absence of early reopenings could be due to the general lack of early graves in examined cemeteries. As seen above, some of the sites with the most reopened graves only come into use around 600. If the study had included more cemeteries with fifth century graves, perhaps we would also have found more fifth century grave reopenings. On the other hand, it is also possible that the data accurately reflect historical reality and grave reopenings really were mostly a sixth and seventh century phenomenon.

The end date of the grave reopenings is even more problematic than the starting date. All reopenings that took place in graves with a collapsed wooden container can only be dated with a *terminus post quem*, which inherently means that they have no end date. Generally speaking, the years 750 to 800 are thought to be the time at which the Merovingian cemeteries were definitively abandoned. By association it is also taken as the hypothetical end date of the grave reopenings that took place there. However, the real end date of the reopenings is unclear and could lie some years before or many years after 750/800. In theory, the grave reopenings may have continued well into the Carolingian period, at least until the graves were no longer recognizable. There are

only a few cases with indications for a post-medieval reopening, specifically the graves from Borgharen that were probably searched by metal detector pilots.

The duration of the graves' visibility above ground depended on the presence and nature of grave markers, if there were any. No grave stones and very few other traces of permanent or semi-permanent markers were found, but the graves may have been marked by depressions or protuberances of the soil or by variations in the vegetation growing on or around the grave. Even though we have no traces of markers, it seems likely that the graves were marked, given the fact that the diggers were able to target specific grave types and specific areas within the graves. This is also suggested by written sources such as the *Lex Salica* title 55, which mentions various types of grave markers, including mounds, honorary columns and wooden huts for the dead, depending on which version of the text is read (Fischer Drew 1991: 118; Schmidt-Wiegand 1994: 257). If these structures were superficial, they need not have left archaeological traces. Klevnäs (2013: 37-38, 46) likewise argues that all or most graves in Kent were marked because intercuts between graves were rare and the grave reopeners were usually able to dig their pits in the center of the targeted graves. The marking could simply have consisted of soil heaped on the grave, although there is also evidence for more elaborate markers. If intercuts are indeed an indication that the older grave was no longer visible, grave markers in Kent may have become unrecognizable within a century. Zintl (2012: 310-311) suggests that the diggers in her research area may have been able to localize graves on the basis of slight variations in the landscape such as small depressions in the soil and deviations in the vegetation on and around the grave. Such small natural markers may indeed have been sufficient, especially when combined with knowledge the diggers may have had about the deceased's identity and the grave's construction.

It is also possible that the grave reopenings stopped before the burials on the cemeteries

came to an end. This may for instance have been the case in Posterholt and Bergeijk, where few to none of the graves from the last phase were affected by post-depositional interventions. In Posterholt however, it is also possible that all the reopenings took place around the end of the seventh and in the eighth century, which would mean that they could have been carried out by the generation whose own intact graves form the cemetery's end phase. The same could be true for Meerveldhoven. This illustrates a point also made by Zintl that we do not know whether graves were being opened more or less continuously, or whether there were periods of higher and lower reopening intensity (Zintl 2012: 330). On the other hand, there are few indications that graves were opened simultaneously, except perhaps for the small number of graves from Bergeijk and Posterholt, which contained the distributed fragments of single pots. Similar cases of objects or bones distributed over multiple graves were also found by Neugebauer (1991: 115), Aspöck (2005: 252-253, 2011: 308, 315) and Klevnäs (2013: 57). Generally speaking we can conclude that most of the reopenings in the research area took place in the later sixth and seventh century, with a few early cases in the fifth and a number of late cases in the eighth century.

These findings correspond to some extent with the traditional estimates of Roth that grave reopenings started in the sixth century, grew in intensity in the seventh and then stopped, even though he based his conclusions on the dates of reopened graves, rather than on the dates of the reopenings themselves (Roth 1978: 64, 73). Later studies from Germany often argue for a concentration of grave reopenings in the middle and third quarter of the seventh century, largely based on the dates of reopened graves (summarized by Klevnäs 2013: 15). This could also be true for some of the cemeteries in the Low Countries, but certainly not all of them.

The pattern found by Zintl in Bavaria is comparable to that in the Low Countries. Grave reopenings probably took place during all phases of the Merovingian period, but they

seem to have occurred most frequently from the end of the sixth into the seventh century (*jüngere Merovingerzeit*), and to a lesser extent the first half of the eighth century (*späte Merovingerzeit*). As in the Netherlands and Belgian Flanders, not all phases were equally well represented in Zintl's dataset and many cemeteries did not span the entire Merovingian period, so it is sometimes unclear to what extent the differences in reopening rates between the phases are influenced by variations in the total number of graves from these phases (Zintl 2012: 301-304). Perhaps the more concentrated dates of the reopenings in some of the German cemeteries result from the relatively small size of the datasets. When more reopened graves are examined, the dates of the reopenings have a larger chance of being more diverse.

In Anglo-Saxon Kent grave reopenings may have started in the early sixth century and become more frequent in the seventh. Reopenings may have peaked in the middle of the seventh century, but they could also have occurred spread over a longer period of time. The graves all seem to have been reopened while the cemeteries were in use. The reopenings may have ceased in the last quarter of the seventh century, as there are no reopened graves that must date to that period and most of the heavily affected cemeteries seem to have an end phase without reopened graves (Klevnäs 2013: 47-49).

Unfortunately, there was insufficient dating evidence from the research area to define distinct phases of grave reopenings. We can assume that most if not all the reopenings in the dataset date to the Merovingian period, but there were not enough datable reopenings to divide them into meaningful subcategories. The following analyses will therefore treat all the reopened graves as one group. The reader should be aware that some of the differences between graves and cemeteries could be related to changes in reopening practices over time.

Reopening methods

Apart from a few exceptions, the graves in the research area were usually opened in quite

similar ways. The diggers made a pit, usually starting somewhere on top of the wooden container, and dug their way down into the grave. If the container was still intact, they would have needed to break into it. For some graves there are indications that the diggers removed the whole container lid (for instance Broechem 94, Bergeijk 27, and four graves from Lent), but in other cases they may have just made a hole in it. In grave 35 from Bergeijk, the diggers may even have taken the whole coffin from the grave pit.

In many cases the reopening pit was clearly visible during the excavation as a distinctly colored fill within the features of the grave construction. In other cases, however, no traces of a reopening pit were observed, and the post-depositional intervention was only noticeable from the disturbance of the objects and bones on the grave's bottom. Not all soil types were equally legible and not all excavators were equally attentive to the details of the grave constructions and the disturbances that may have affected them. Nevertheless, there are quite a number of cases where it is surprising that no traces of a reopening pit were found (see for instance the graves from Lent discussed below). In these graves, the reopening pits may have been backfilled with their original fills. Perhaps the diggers also removed the graves' entire fill to lift the coffin's lid. For Lent the excavators were adamant that their careful excavation methods would have revealed even the most subtle traces of a reopening if there had been any. Since no such traces were observed we concluded the graves may not have been fully closed in the time between the burial and the reopening, allowing for easy reopenings that left no traces in the graves' fills.

Disturbances of the graves' contents sometimes indicated that the actual interventions reached beyond the documented edges of the reopening pits. Similar observations were made by Zintl (2012: 39) for the reopened graves in Bavaria. Nevertheless, the diggers may have used hooks or sticks to rummage the contents of the graves, especially when there was an open space inside the wooden contain-

er. In these cases, the diggers may sometimes have made only relatively a small opening in the container, through which they could insert an arm or a tool, thus extending their reach beyond the confines of the pit. Most reopening pits reached down to the graves' bottoms, but in the Broechem cemetery there were a few cases of shallow pits, which were limited to the grave fill's upper levels (graves 15, 987, 1030). It is possible that these were not really reopening pits at all. They may have resulted from slumping fill when the graves' wooden containers decomposed. However, given the fact that most graves in the research area were furnished with such containers, one would expect such depressions to have been much more common if they were the result of collapsing containers. Since these shallow pits' positions in the graves were similar to those of regular reopening pits, they may indeed reflect an early-medieval grave related practice. Similar shallow reopening pits were observed by Zintl (2012: 337-338) in four graves in her research area.

Most graves seem to have been reopened only once and with a single pit, but there are a few exceptions. Broechem grave 84 had an unusually large wooden container which showed traces of at least three separate reopening pits in its fill. Grave 186 revealed two separate reopening pits, a small one in the region of the head, and a larger one in the area of the pelvis and legs. Grave 989 also had separate reopening pits in the areas of the head and feet. Grave 141 showed two intercutting reopening pits with distinctly different colored fills. It is unclear whether these pits were dug simultaneously or whether they represent consecutive reopening events. The intercutting pits in grave 141 suggest at least some time passed between the digging of the pits, since one must have been filled with earth before the other was dug. Meerveldhoven grave 50 also contained two possible reopening pits, although the excavators did not interpret them as such. No traces of reopening pits were found in the Borgharen cemetery, but it could nevertheless be established that grave XII had been reopened at least twice, based on the distribu-

tion of grave goods and skeletal material in the fill. The number of cases where multiple reopenings can be shown to have taken place is relatively small, but given the difficulties involved in recognizing multiple interventions that took place in one grave, it is possible that additional cases are hidden in the dataset. There are more graves like grave VII from Borgharen, where grave goods were found both in the fill and on the grave's bottom. It would be interesting to subject these to detailed analysis as was done for the Borgharen case, to see whether they may also have been subjected multiple reopenings.

There were a few cases where multiple graves were reopened with a single pit (Broechem 414/445 and 296/288, Dommelen 3/4, Posterholt 80/82 and 89/90). There was no evidence for the use of true search trenches to locate graves. In Bavaria, Zintl also found a few sets of two graves that seemed to have been reopened with a single pit, but these were very rare (Zintl 2012: 338; also Neuffer-Müller & Ament 1973: 18-19). In the cemeteries of Bergeijk and Posterholt, a number of graves shared fragments of single pots. Since these graves were positioned closely together, the distribution of these pottery fragments could be an indication that the graves were opened simultaneously and backfilled with soil from the same pile, which was mixed with the pottery fragments.

As in Bavaria (Zintl 2012: 332-333, 338-339), in nearly all cases the reopening pits seem to have been dug directly over the area containing the coffin, indicating that the diggers probably knew the graves' locations and were familiar with their general layout. Some reservations are appropriate here, because the old topsoil in these cemeteries is usually not preserved, so we can't verify whether the reopening pits were also this well directed in the upper layers of the grave's fills. The reopening pits usually focused on the interior of the wooden container, especially on the area of the deceased's thorax/pelvis (or presumed area, in cases where no skeletal remains were preserved). The region around the deceased's head and legs/feet was less frequently affected

by reopenings. A number of reopening pits extended beyond the confines of the wooden container into the head end, foot end and sides of the grave pit. This happened more frequently in graves where the coffin had decomposed and no longer formed a physical barrier that constrained the digger's activities. The reopening pits were often wider in the upper levels of the grave, becoming more narrow and focusing on a specific area as they went down.

In a few cemeteries, there may have been small differences between the ways men's and women's graves were reopened, but these were barely statistically significant. In addition, the differences that were observed did not correspond with the traditional hypothesis that men's graves were usually opened in the leg region and women's graves were opened in the head and chest area (for instance Stoll 1939: 8; Steuer 1998: 519; Stork 2001: 428; Effros 2006: 199; Bofinger & Przemyslaw 2008: 51). In Broechem, there may have been a heavier focus on the region around the head in men's graves. The Meerveldhoven cemetery yielded too few graves for a proper analysis, but interestingly one grave that was reopened only in the leg region contained grave goods associated with women. In the cemeteries of Bergeijk, Posterholt and Wijchen, the head regions in women's graves may have been reopened slightly more often than in men's graves, but there were also many women's graves where the entire wooden container or even the whole grave was reopened. The situation in Kent was very similar, with small differences between the reopening pits in the graves of men and women in some cemeteries, but no strong patterns across the whole dataset (Klevnäs 2013: 52). In Bavaria, there were no significant variations in the placement of reopening pits in the graves of men and women, but Zintl did note a difference in which parts of the grave's bottoms were usually affected. In women's graves, the diggers more often rummaged the entire western and/or middle part of the grave, where the deceased's head, chest and pelvis were located. In men's graves the diggers more often focused on the pelvis area.

She suggests that this pattern reflects the common distribution of especially metal, but also other grave goods in men's and women's graves (Zintl 2012: 338-341).

In many cases, it was unclear whether the intervention pits were backfilled after the reopenings. However in Broechem the excavators noted that the reopening pits' fills were usually rather homogenous, suggesting that they had been filled with a single load of soil. In Posterholt on the other hand, at least one reopening pit had a layered fill, suggesting that it had been filled in stages over a longer period of time, as would happen with natural sedimentation. However, another grave from Posterholt did have a homogeneously filled reopening pit. This suggests that various practices concerning the backfilling of reopened graves may have existed side by side. Many reopening pits also yielded objects that had been mixed with the fill, at least in the lower levels, indicating that these pits were probably at least partially backfilled. For Kent, Klevnäs concluded that the reopening pits were often backfilled, sometimes with the same material as the original fill, sometimes with a different material. A few graves were not backfilled at all. Klevnäs (2013: 57-58) suggests that filling with a different material than the original fill could indicate delayed backfilling, possibly by other people than those who reopened the grave. In Bavaria, Zintl (2012: 355) notes that in at least in the one cemetery where sections were occasionally documented, the reopening pits seem to have been backfilled. For future cemetery excavations in legible soils, it would be worthwhile to document more sections as opposed to only excavating in levels. Sections offer much more insight into the vertical stratigraphic composition of grave and reopening pit fills. Aspöck (2005: 255, 2011: 309) notes that the reopening pits in the Langobard-era cemetery of Brunn am Gebirge in modern day Austria were probably not completely backfilled after the reopenings, as the fills contained the shells of snails who are unable to dig themselves into the soil. These snails could only have crawled into the pits if they had remained mostly open after the intervention.

Future cemetery excavations should sample the graves' various fills, to look for such evidence.

Special cases

It is unfortunate that so little skeletal material is preserved for the cemeteries in the research area, especially because many of the cases where skeletal material is available reveal very interesting practices. In the woman's grave XII from Borgharen, the disarticulated remains of two young boys were deposited at the foot end. At least one of the boys was the woman's son. This find potentially represents three post-depositional interventions. First each of the boys' graves were probably reopened to retrieve their remains, although they may also have been stored above ground. Second, the woman's grave was reopened to deposit the boy's bones at the foot end. The Bergeijk cemetery also yielded one presumed woman's grave which was reopened only at the foot end. Unfortunately, almost no bone was preserved here, so we cannot verify whether the intervention pit may have contained a child's burial.

In grave 46 from Lent-Lentseveld the deceased's cranium had been placed on the pelvis. There were no cut marks on the skull or vertebra. The mandible was left *in situ*, indicating that the cranium was moved after the tissues connecting it to the mandible and spinal column had decomposed, probably during a grave reopening. Apart from the displaced cranium, the skeleton showed no indications that it had been disturbed after the onset of decomposition. The grave did contain an additional skull bone from a second individual. In grave 39 from Lent the deceased's skull was missing entirely. Once again no cut marks were found on the remaining upper vertebra, so it was probably removed during a reopening. Despite very careful excavation and a legible soil, the excavators observed no traces of reopening pits in these graves. Lent grave 15 contained the remains of a six year old child that had been curled up into a bundle. The child's skull was found a few centimeters above the rest of the body, separated from it

by a layer of clay. The body was deposited in small amorphous pit dug above the corner of the foot end of another child's grave. As in the other cases, there were no indications of a forceful *peri-mortem* decapitation. The child's grave may have been reopened to separate the skull from the body. Alternatively the soft tissues had already partially decomposed before the child was buried or the child was previously buried elsewhere. This context is reminiscent of the disarticulated burials of the young boys at the foot end of the woman's grave in the Borgharen cemetery. Most reopened graves in the Lent cemetery (14, 16, 21 and 39) had a rather rummaged appearance. Since most of the graves were probably reopened while there was still an open space inside the wooden container, it would have been relatively easy for the diggers to select any items they may have wanted, without disturbing the skeleton. The fact that the bones had nonetheless been rummaged substantially, suggests that the disturbances may have been deliberate. This marked rummaging is especially interesting since the graves in question still contained many grave goods, so it seems that few objects were removed during the reopenings.

Similar cases of graves with skulls that were moved or removed post-decomposition without any signs that the grave had been reopened, were described by Simmer (1982: 40-41) for western France. In some cases, the body was placed in the grave in such a way that there was no room for a skull, indicating that the skull was most likely removed before burial. These were usually not cases of *ante* or *peri mortem* decapitation, because the spinal columns of these burials were intact, including the two upper vertebrae. Simmer suggests that these graves may contain reburied remains, of which the bone positions were reconstructed by the burying group. Alternatively, it is possible that the remains were kept above ground or given a preliminary cover in the grave until the skull could be removed and the grave pit backfilled. Post-depositional skull manipulations are also found in early medieval graves from other parts of Europe. In some cases the

cranium and/or mandible are missing, in other cases the cranium was intentionally placed in an unusual position or location. Aspöck analyzed a large number of graves with missing skulls in the Langobard period cemetery of Brunn am Gebirge in modern day Austria and the Anglo-Saxon cemetery of Winnal II in England. In Brunn am Gebirge, skulls were missing most often, but other bones especially ribs and arms were also often missing. Leg bones were still present in most cases. Bone preservation in this cemetery was not very good, so especially fragile bones such as ribs may also be missing because of natural disintegration. In a number of graves, certain bones may have been intentionally broken by the diggers. The graves where the skull was missing had usually been reopened after the bones had skeletonized, but often while there was still an open space inside the wooden container. In two reopened graves additional skulls were found on the bottom. In one burial, the original skull and an additional female skull were both placed on the male deceased's pelvis. In another, the skull had been moved to the chest area. Two graves contained additional femora, but these were found in the reopening pits' upper fills, and may not have been deposited during the reopenings. In Winnal II the bodies in a number of graves showed unusual body positions and dislocated, missing and damaged bones. As in the other cemeteries discussed here, some of the abnormalities in these 'deviant burials' may not result from primary burial practices, but from actions carried out during the reopening of the graves. For instance, bodies with 'amputated' hands or skulls, may simply have been moved after the onset of decomposition, as the joints connecting them to the body are the first to disarticulate. At least 25 graves in this cemetery were reopened relatively soon after burial, before the body had fully skeletonized (Aspöck 2011: 307-309, 315-316). Klevnäs also found substantial evidence for post-depositional skeletal manipulations in the Anglo-Saxon area. There were several graves with additional burials where the skull of the original burial was moved, often to be placed between the

legs of the new body. In the majority of regular reopened graves the skeletal remains had simply been rummaged, but in eleven cases there was evidence for more deliberate manipulations. Most of these were found in cemeteries outside Kent. Ten cases involved displacement and occasionally removal of the skull. In one grave the only recognizable manipulation was a curiously reversed femur. More cases of skeletal displacement were found, but they may have resulted from natural taphonomic processes rather than deliberate manipulations (Klevnäs 2013: 76-78). Zintl found eleven graves with post-depositional skull manipulations in the Bavarian cemeteries. In these cases, the skull had been turned around and deliberately placed upside down or on the opening in the bottom. These skull manipulations affected both the graves of men and women, and one child. Most cases seem to have taken place while the wooden grave containers were still intact, and some even before the body had fully skeletonized (Zintl 2012: 354-355).

At the Oegstgeest settlement a large number of disarticulated human bones were found in various contexts across the site, mainly in the fills of gullies and ditches. The majority of these scattered finds were long bones and skull fragments. The inhabitants may have selectively gathered and deposited bones from the extremities and the skull. The most striking example is the pit containing a star-shaped formation comprising the long bones of at least two individuals. Adjacent to this pit lay a second pit with selected bone fragments belonging to a minimum of six individuals. All bones of which the sex could be determined, belonged to men. Since no skeletal material was missing from the graves found in the settlement, the scattered bones found in these deposits must have been brought to the site from elsewhere. They may have been taken from reopened graves in nearby (or more distant) cemeteries. Very little research has been done so far on which bones are usually missing from reopened graves. This is a difficult subject because bones may also disappear through natural decomposition. Klevnäs notes that there are no indications that the diggers in her

research area targeted specific types of bones. She suggests that where bones are absent, the diggers may simply not have made an effort to backfill with the same material as was dug out (Klevnäs 2013: 52). Similar sentiments are expressed by Zintl for Bavaria (2012: 352-253). It is unfortunate that the poor bone preservation in most of the Low Countries does not support this type of research, as the data from Oegstgeest do point in the direction of selective collecting of bone, either from graves or from other sources. The finds from the Meuse river near the town of Kessel are another example of early medieval human bones found outside a typical funerary context. The bones were not eroded, so this was probably an original deposition site. The site had a long multi-period use, from the Late Iron Age to the High Middle Ages. Of the large amount of bones found, sixteen were carbon dated and three of these originated from the Merovingian period. Of the sexed bones, 75% were male and 25% were female. However, it is important to keep in mind that these are the results of the ensemble as a whole and it is unclear which portion of the bones dates to the early medieval period. The finds did not show a preference for bones from particular parts of the body, suggesting that whole bodies may have been deposited here. A similar site may have been located near Roermond. The bones from this site have not been dated yet, but a percentage of the retrieved objects are Merovingian. Such river deposits may have been one of the places where objects and bones from reopened graves were taken to.

Grave goods

‘Bei Männerbestattungen ist das Ziel der Be-
raubung meist Spatha, Sax oder beide Waffen,
sowie der Gürtel. Die Lanze ist hingegen stets tabu;
den Frauen wird meist der Metallschmuck geraubt,
wogegen die Perlen (Glas, Amethyst, Goldblech-
scheiben) ebenfalls tabu zu sein scheinen [...].’
(Roth 1978: 73-74)

‘With the men’s graves, the aim of the robbery was
most often the spatha, seax or both weapons, as
was the belt. The lance on the other hand, was

always taboo; from women the metal jewelry was
usually robbed, while the beads (glass, amethyst,
gold foil discs) also seem to have been taboo [...].’
(My translation)

The comparison between the objects found in reopened and intact graves revealed much variability, making it difficult to establish which objects may have been taken from, or added to the reopened graves. To some extent, the observed patterns corresponded with the observations of Roth from 1978, but there were marked differences. First and foremost, it was interesting to see that the reopened graves usually yielded many objects that had apparently been left behind by the diggers, usually within reach of the reopening pits. In fact, in most of the cemeteries, certain object categories were found more often in reopened than in intact graves. This was most pronounced in Posterholt, where the reopened graves contained more objects of nearly all categories than the intact graves. This could be an indication that the diggers sometimes added grave goods to the graves when they reopened them. However, this pattern is probably at least partially caused by the fact that in most of the cemeteries, the graves of the last phase were furnished with fewer grave goods and were reopened less often than the graves of earlier phases, thus lowering the average number of objects found in intact graves. In addition, the people involved in grave reopenings may have selected graves with large numbers of objects and particular grave good types. If graves with certain object categories were reopened more often than others, without the objects in question being removed, that would also help account for the higher numbers of objects in the reopened graves. The diggers’ preferences for certain grave types or grave good assemblages seem to have varied between the cemeteries. The majority of the objects from the reopened graves in the research area lay within the reach of the reopening pits, which makes it less likely that they were simply left behind because they were overlooked. The diggers may have however have missed some items, particularly if the reopening took place after the wooden container had collapsed and filled with soil, as

was the case for about half the grave reopenings in the research area. There are no indications that there were general taboos on certain object types, which led these objects to be consistently left behind as was suggested by Roth. Nor are there any indications that objects with a Christian or other religious symbolic associations were regularly left behind, as suggested by Roth and Koch (Koch 1974; Roth 1978: 68-69). In Bavaria, Zintl (2012: 342-344) also did not find any indications for such taboos.

A similar systematic comparison of the objects from reopened and intact graves has not yet been done for other regions, so the opportunities to contrast my analyses with those of others are limited. However, Klevnäs and Zintl did make notes on which objects seem to have been present and absent in the reopened graves from Kent and Bavaria, so I will compare my results with theirs. It is important to keep in mind that the objects discussed here are only those which survive on an archaeological timescale. The graves originally probably contained many materials such as textile and wood which decomposed long before the graves were excavated. Depending on the local soil conditions, bone, shell and ivory also did not survive. Some of these materials would have started to decay almost immediately after they were deposited in the grave and may therefore not have been available or have appeared attractive to the grave reopeners. We do not know whether textiles stained with the liquids of the decomposing corpse or wooden bowls which had partially rotted away would have been of interest to them. Perhaps they did take such items, as they also seem to have removed severely corroded metal objects. There is some evidence that the diggers may have preferred graves containing larger numbers of objects. This issue is complicated because we do not know what the original contents of the reopened graves was. Nevertheless, experience has shown that the diggers usually left behind enough fragments of the grave goods to allow us to make an estimate whether the grave in question was originally on the 'rich' or 'poor' side. The preference of graves

with gendered objects over neutral objects which was discussed above, could be related to the fact that neutral gendered graves generally contained fewer objects than graves with typical men's and women's objects. The late graves with few grave goods in the cemeteries of Bergeijk and Posterholt were mostly left untouched, but this could be due to a decrease in the occurrence of reopenings towards the end of the Merovingian period, rather than active avoidance of these graves by the diggers.

For Kent, Klevnäs (2013: 65-67) found indications that the diggers probably targeted well-furnished graves over less well-furnished or unfurnished graves, possibly based on their size. In German Bavaria, Zintl did not note a clear preference for 'rich' graves on the part of the diggers. In most cases, they reopened nearly all the graves in a particular cemetery, and left most of the graves in other cemeteries intact, irrespective of the number or quality of objects they contained. Only in the cemeteries of Harting-Ost and Burgweinting-Villa, comparatively well-furnished graves seem to have been reopened slightly more often than graves with fewer or no grave goods. As in the Low Countries, this may partially be related to the fact that late graves both contained fewer objects and were reopened less often than graves that date earlier (Zintl 2012: 321-323).

Relatively few seaxes and especially swords were found in the graves in the research area, the cemeteries of Wijchen and Lent excepted. Perhaps swords were systematically targeted by the diggers so few to no graves containing these objects were left intact. The removal of swords and seaxes by grave reopeners is likewise attested in the sword fragments and sword belt and scabbard fittings that were found in a number of reopened graves. However, there were also a few reopened graves in the research area that did contain swords and seaxes. Some of these were fragmented, but not all. These objects usually lay within the reach of reopening pits, suggesting they were left behind on purpose. The preferential removal of spathas and seaxes by grave reopeners is also suggested by Klevnäs (2013: 70-71) and Zintl (2012: 347-348) for Anglo-Saxon Kent

and Bavaria. The early medieval cemetery of Brunn am Gebirge in Austria also yielded few weapons, especially swords (Aspöck 2005: 256). The removal of shields and shield elements from reopened graves is demonstrated by the finds of rivets and sheet metal with wood remains attached from the reopened graves in some of the cemeteries, especially Bergeijk and Posterholt. Arrow and lance heads on the other hand were often left behind, as they were found in much higher numbers in reopened than in intact graves. Interestingly, they often lay within reach of the reopening pit. The lance heads would have been difficult to overlook because of their size, so they may have been left behind intentionally. This was not the case in Bavaria, where lance heads were rarely found in reopened graves, and usually lay outside the reach of the reopening pit. Zintl also has indications for the removal of shields. Arrowheads on the other hand, were often left behind by the Bavarian diggers, as they were in the Netherlands and Belgian Flanders (Zintl 2012: 348-350). Klevnäs did not find evidence for the targeted removal of shields in Kent. Like in the Low Countries lance heads were often left behind, but this may in part be due to their usually inconspicuous location in the peripheral areas of the grave, where they could easily be overlooked. No arrowheads or axes were found in the Kentish reopened graves, but these objects are generally rare in Kent, so it is unclear whether or not they were removed during reopenings (Klevnäs 2013: 70-71). Belt fittings were also quite numerous in reopened graves, but the diggers may sometimes have removed some of them, as is attested by incomplete sets of belt plates that were found in a number of reopened graves. For example graves 82 and 69 from the Bergeijk cemetery yielded single belt plates with silver-inlay that are normally part of a set of multiple belt fittings that include at least a decorated plate buckle and often also a counter plate and back plate, which were not found in these graves. Zintl (2012: 350) makes similar observations for the Bavarian cemeteries. Belt plates and other fittings were frequently taken from the

graves, but they were also often left behind, even when they were in the reopened section of the grave. Klevnäs (2013: 68-69) found no indications for the removal of belt fittings in Kent, although she does not exclude that they may occasionally have been taken. Of the typical women's grave goods, it is less clear which objects may have been targeted. The diggers may have removed a wide range of objects. They almost certainly took many beads, since the average numbers of beads in reopened graves are in nearly all cases much lower than in the intact graves. Nevertheless, substantial numbers of beads were left behind, so the diggers were not systematically removing all of them. The removal of beads was not seen by Klevnäs in her research area (Klevnäs 2013: 68). However, because she only had a relatively small number of bead-containing reopened graves, she was mostly limited to comparing the presence and absence of beads between reopened and intact graves, and not the actual numbers of beads found in them. A similar methodology may also be the origin of Roth's (1977: 289, 1978: 69-70, 73) hypothesis that beads were taboo to grave robbers. Zintl's (2012: 345) observations for Bavaria are similar to mine. Reopened graves often still contained beads, but they were far fewer in number than those found in intact graves. Klevnäs (2013: 68) suggests that the grave reopeners in Kent probably preferentially removed brooches. Zintl (2012: 346-347) also sees indications for the targeted removal of brooches and other types of personal adornments such as bracelets and earrings from the reopened women's graves in Bavaria. In some reopened graves, small fragments of brooches were found. She suggests that the general lack of such objects in her research area may indicate that grave reopeners systematically targeted graves containing these items. Brooches and other women's jewelry were also a relatively rare find in the Dutch cemeteries, especially in the reopened graves. The lack of brooches is probably at least partially due to the fact that many graves date to the seventh century, when brooches were deposited in graves less often than in the previous centuries. However, in

the few cemeteries where brooches were found, they were largely lacking from the reopened graves (except for Lent, where the average number is higher for the reopened graves), indicating that they may indeed have been taken during reopenings. Other typical women's grave goods are also rarely found, especially bracelets, finger rings, earrings, belt pendants and keys. As with the swords, it is unclear whether their absence is an indication that these objects were taken, or whether they were just never deposited in graves to begin with.

In the Low Countries, gender neutral grave goods, such as knives and pottery vessels, were usually found in higher numbers in the intact graves. This indicates that they were probably often removed during reopenings, but there are a few notable exceptions. These may reflect the preferences of local grave reopening participants, but could also have resulted from changes in the grave good deposition custom and grave reopening rates over time. Zintl (2012: 350-351) found relatively large numbers of pots and fragmented knives in the Bavarian graves. She could not show conclusively whether they were often taken by the diggers. In Anglo-Saxon Kent, knives were present in reopened graves in disproportionately large numbers, leading Kleynäs (2013: 67) to argue that they may have been left behind systematically because of their cultural associations. Pottery vessels on the other hand, were underrepresented in reopened graves, indicating that they were taken by the diggers. When looking at the materials recovered from intact and reopened graves, there is so much variation between the cemeteries that it is almost impossible to discern a pattern. The materials most often found in both reopened and intact graves were iron, copper alloy, pottery and glass. Relatively few precious metals were found in the cemeteries from the research area. This may be because precious metal objects were not often deposited as grave goods, especially in the seventh century to which many of the reopened graves date. Alternatively these objects may have been systematically targeted by the diggers, and are therefore lack-

ing from the graves. In some cemeteries the average numbers of pottery, iron and copper alloy were higher in intact graves, in others they were higher in reopened graves. There were even cemeteries where the numbers of pottery were higher in intact graves, while the numbers of iron and copper alloy objects were higher in reopened graves, but not vice versa. It seems that objects of all materials were eligible to be taken from the grave or left behind. The variations in the numbers may be related more to the changes in grave good customs and reopening rates over time and between locations, than to the preferences of the local grave reopening participants. In all cemeteries, the numbers of glass objects were higher in intact graves, because this category consists mostly of beads and thus reflects the fact that there were fewer beads in the reopened graves. The possible deposition of objects during reopenings is exceedingly difficult to trace. In the research area, no clear cases of intentional deposition of objects in reopened graves was found, except perhaps for the dog's jawbone found in the reopening pit of grave 58 from Posterholt. A few graves also contained additional burials that may have been deposited during a reopening, as was the case in Dom-melen grave 3. However, if objects were added to graves, they would often have been relatively close in date to the grave's original furnishings, and thus have been indistinguishable from them. The fact that reopened graves quite often contained higher average numbers of certain object types than intact graves certainly allows for the possibility that objects were sometimes deposited during reopenings. In Bavaria, Zintl (2012: 325) was also unable to identify objects that had been added to the grave, other than a number of additional burials and the remains of a dog in Obertraubling-Köstlmeierfeld.

The objects found in reopened graves were often broken, with part of the fragments missing. When a reopened grave contains partial fragmented objects, these could have been broken as a result of actions that took place during the reopening, but they may already have been broken as part of the original funer-

al rites (Ament 1976: 309-310), or because of the force exacted by the collapse of wooden grave containers. It is also possible that they were not intentionally deposited in the grave at all, but were just accidentally mixed with its fill. However, the comparison of reopened and intact graves showed that the reopened graves in the research area contained many more indeterminate fragments than the intact graves. In addition, recognizable objects from the reopened graves generally showed lower percentages of completeness. This damage and fragmentation may to some extent have been accidental, resulting from actions that were necessary to reopen the graves. However, there are several examples of objects that seem to show signs of intentional damage, such as the distributed fragmented pottery vessels from Bergeijk and Posterholt that were mentioned above. The Posterholt cemetery also yielded a broken belt plate with an impact fracture. In the Bergeijk cemetery several fragmented weapons were found, including a lance head and two possible swords. In Bavaria and Kent, Zintl and Klevnäs also found many objects that had probably been fragmented during grave reopenings. Including a few cases of possible intentional damage, such as a shield boss with gold foil decoration from Burgweinting-Villa that was badly damaged, probably during a grave reopening which took place soon after burial, before the deceased's remains had skeletonized (Zintl 2012: 342, 354; Klevnäs 2013: 67;).

Grave constructions

For all sites where there were sufficient data to do a comparison of the size of reopened and intact graves, the grave pits and containers of the reopened graves were generally larger than those of the intact graves. For instance, in the Broechem cemetery the grave pits of the reopened graves were on average 26 cm wider and 37 cm longer than those of the intact graves. As Klevnäs (2013: 36) notes, reopenings themselves could have enlarged the grave cuts, causing some of the size difference between intact and reopened graves. This could have been a factor in the Low Countries, were it

not that the coffins in the reopened graves were also 15 cm wider and 31 cm longer than those in the intact ones. The cemeteries of Meerveldhoven, Bergeijk, Posterholt and Wijchen presented similar patterns. Because all the cemeteries lacked their original surface and were missing part or all of their topsoil, the depth of the grave pits could not be measured reliably in most of the cemeteries and was therefore excluded from this analysis.

It is unclear whether these differences in size between the reopened and intact graves are a result of conscious choices on the part of the diggers or whether they are caused by parallel changes in reopening frequency and preferred grave pit and coffin size throughout the cemeteries' use periods. Since the graves in the research area tend to be smaller towards the end of the Merovingian period and grave reopenings also seem to have become rarer in the final phases, it is possible that the difference in size between reopened and intact graves resulted from more large early graves being reopened than smaller late graves. However, the decrease in size over time is not equally clear in all cemeteries. In Broechem especially, there may not be a correlation between smaller grave size and late date of the graves. This suggests that the diggers may indeed have had a preference for larger graves. The difference in size between reopened and intact graves could also be caused by the fact that children's graves were often relatively small and were reopened less frequently than the larger graves of adults. However, since the distinction between children's and adults' graves was largely made based on grave size, we could also turn this around and say that it seems like children's graves were reopened less frequently because the diggers selected larger graves, regardless of whether they contained the remains of adults or children. Because so few graves in the research area yielded skeletal material, these hypotheses cannot be tested. The apparent preference for larger graves could also be related to better and prolonged visibility of larger graves on the surface, for instance because they had more soil heaped on top of them, created deeper slumping impressions, or were marked

with more robust structures.

The grave reopeners may also have had a preference for more elaborate or less common grave types. In the Broechem cemetery, there were only seven graves with unusual or elaborate grave constructions such as chambers, two part coffins and tree trunk coffins. Of these seven, six had been reopened. In Meerveldhoven, which also yielded a number of elaborate grave constructions, the pattern was less clear. The chamber graves were slightly overrepresented among the reopened graves, while the intact graves more often had partitioned and simple coffins.

The preference for reopening larger graves and elaborate grave constructions has also been noted in other regions of the early medieval world. In Bavaria, the reopened graves were on average deeper and in some cases also larger than the intact graves, even though Zintl (2012: 309-310) was able to exclude children's graves from her analyses. She did not have

sufficient data on grave constructions to detect any patterns in this regard. In Anglo-Saxon Kent, reopened adults' graves were on average both deeper, longer and wider than the intact ones. Klevnäs (2013: 36-37) suggests that the diggers may have selectively targeted bigger graves because these were usually also more elaborately furnished with grave goods. Additionally, she takes into account the possibility that larger graves may have been more easily visible to the diggers.