

Dust and ashes: the two Neolithic cemeteries of Elsloo and Niedermerz compared

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In a re-analysis of the bandkeramik cemeteries of Elsloo and Niedermerz the vexed problem of the many missing dead is solved by reference to statistical theory and prehistoric context. Gender and status of the burials are determined from the grave gifts, although not to full satisfaction for the Niedermerz data. Several differences between the two cemeteries are noted; however, their basic matrilinear composition suggests similar social structures. Earlier analyses are discussed as well.

1. Introduction

Cemeteries constitute a rather special archaeological category: they can be thought of as sets of conscious “statements” meant for the World Beyond The Grave. The archaeologist plays the role of an anachronistic, un-initiated gatekeeper of that Afterworld; his/her problem is to re-establish communion over time by assigning meanings to these statements. Death and burial pose a crisis moment in the life of a community (Van Gennep 1909) as one of the positions in the social formation is no longer occupied — the mourners have no recourse than to fill the gap. In many societies the funeral rites provide an excellent opportunity for this re-negotiation of positions as gifts donned by survivors testify to. Even if the absolute amount of grave gifts is small they derive from a kind of *minipolach* ceremony — valuables are withdrawn from regular

use. They tell us of grief and pity, but also of the merit of sacrifice incurred by the donor.

In my PhD thesis (Van de Velde 1979) I analysed the funerary furnishings of the neolithic cemetery at Elsloo in the Netherlands as a pilot study of Bandkeramik social structure, followed by tests against settlement data. From hindsight, there were some flaws in my arguments; also, I did not discuss the ‘missing data’ and the ‘missing dead’ in Bandkeramik grave yards. The 25th *Analecta* seems a nice occasion to mend these faults. As a further test of my approach as well as for substantive and comparative reasons I will bring in Niedermerz, another Bandkeramik cemetery, just across the border with Germany. The latter has been excavated between 1969 and 1975, Elsloo in 1959 and 1966 (Dohrn-Ihmig 1983; resp. Modderman 1970). The two cemeteries have different life histories: Niedermerz has been in use for six or seven generations, coincident with the second half of the local Bandkeramik, whereas Elsloo dates from the latest two phases of the Dutch Bandkeramik and covers three or four generations only, partially contemporaneous with Niedermerz. Both cemeteries contained well over a hundred burials.

The majority of the graves held grave gifts (tab. 1). The skeletons have virtually dissolved, although a few from Niedermerz could still be examined as to their (biological) sex. One important point in my analysis will be the reconstruction of (social) gender — as distinct from

Table 1. The numbers of graves per gift category.
Sources: Modderman 1970, Dohrn-Ihmig 1983.

	Elsloo	Niedermerz
ceramics	56	48
red ochre	19	18
querns	14	10
arrowheads	13	23
blades	21	18
pyrite	3	6
thick adzes	21	17
flat adzes	15	18
no grave gifts	38	43
total graves	113	112

biological sex — among these burials: without that category hardly anything interesting can be said. Before doing so, I first have to discuss the missing dead — which may be few- and the missing data — which may be unimportant. Meantime I can also introduce the excavation data.

2. The missing dead

In their popular summary of the Aldenhovener Platte Project (which included the Niedermerz excavations) Stehli and Lüning argue that the quantitatively important yet archaeological untraceable category of lost corpses renders the few recovered graves by definition exceptional (Stehli/Lüning 1989). As they see it, the number of Bandkeramians that have lived on the Aldenhoven Plateau can be estimated as in the order of five to ten thousand. Yet at best about 120 graves have been observed in the area. We may be pretty certain that there have been no more grave pits, as the entire plateau has been removed under archaeological supervision of the recent open pit mining operations. One possible allowance should be made for burials within the settlements: there, the erosion of the top soil may have caused the loss of graves. Judging from settlement data elsewhere, their numbers will not be very large, though (Veit 1989). A comparable argument holds for Elsloo: a similar number of Bandkeramians has lived on the Graetheide Plateau where the Elsloo cemetery with its 113 graves is located. At Elsloo the archaeological conditions were also quite favourable although the surrounding plateau is still in its place and therefore may hold some surprises. However that may be, from the Stehli and Lüning argument it follows that the few graves that have been recovered (one hundred plus from among five to ten thousand, approximately 1% or 2% of the expected numbers) should be considered exceptional in *both* regions.

In my opinion this latter conclusion of exceptionality does not follow from the premiss. For, according to statistical theory a sample of a hundred or more elements should suffice to get rather precise estimates of the background population *no matter the size of the latter* (e.g. Hays 1973) provided the set is drawn at random as far as the dimensions of interest are concerned. As each of the two cemeteries contains over one hundred graves at least some of the inferences from them should be reliable, therefore; the problem is to decide which of the variables conforms to the specification of randomness. Still, when not everybody in the community has been buried in the cemetery it may be suspected that the selection has been on social grounds. Most of the inferences of my earlier analysis are precisely in that field, and if the graveyard constitutes a selection they are therefore open to statistical criticism.

However, the Elsloo cemetery has been in use for three or four generations, while eight to eleven houses stood in

the village next to it (Van de Velde 1979, 145). They will have been inhabited by 40 to 60 people at a time. Summed over the generations between 120 and 250 people must have lived and died there, then. In other words, the Elsloo cemetery received at least half when not all of the village's contemporaneous population and consequently the inferences derived from the analysis should be not too far off the mark — unless one would be willing to assume that people from other Bandkeramik settlements farther away have been buried there, too.

For Niedermerz it has been stated that a considerable but unspecified number of cremations has been lost because of the agricultural use of the land from Roman times onward. Stehli & Lüning (1989) even write that for the use life of the cemetery there must have been a supply of about 1,000 dead bodies, from among whom “only a minority” was buried as corpses, and the remainder as cremations — since lost. They apparently suppose that all the Bandkeramik people from the entire Merzbach area (five to ten settlements) have buried their dead in this cemetery, probably because they cannot positively locate the settlement it belonged to. Again, even if they are right, 112 graves should provide statistically reliable inferences for that population. But then the settlement closest by (c. 500 m) is Langweiler 8, which happens to be the largest and longest inhabited settlement of the whole area (as is Elsloo on the Graetheide), with an occupation which lasted for 14 generations. On the overview plans (see esp. Stehli 1989) that settlement consists of two or three house groups, which merge in the 11th phase/generation, the penultimate phase of the Niedermerz cemetery. To me this is a suggestive analogue to Dohrn-Ihmig's description of the growing together of the two original grave groups at Niedermerz. This certainly is far from anything like a proof for a Langweiler 8 - Niedermerz connection; the proposition is merely a suggestion. However, if so, all figures compare well with those for Elsloo. Stehli's plans of Langweiler 8 show between 7 and 11 houses per generation during the cemetery's use; together 57 houses. If on the average 5 or 6 people have lived per house, then 250 to 350 have died during the six to seven generations of the existence of the cemetery. With slightly over 100 corpses and ten cremations, approximately one third of the original population has been recovered; again, the outcome of the analyses will not be an exact replication of earlier arrangements, but as an approximation it should do — most archaeological traces have much lower recovery rates.

I submit that Stehli and Lüning (1989) have been too fast in labelling and dismissing the Niedermerz data ‘exceptional’. As explained above, Elsloo can be seen as unexceptional (even fairly representative) data, too.

3. The missing data

Conceivably gift categories in the graves relate to different spheres of interaction in the past: the 'gifts' may have been tokens for the game on different societal fields (*sensu* Bourdieu). Table 1 presents counts of the grave gifts from the Elsloo and Niedermerz cemeteries as conventionally rendered; categories with less than 5 occurrences have not been entered. In the table, the number of graves with gifts is relatively small: for 21 graves at Elsloo containing thick adzes, another 113-21 = 92 interments do not contain these tools; at Niedermerz 17 vs. 95; and similarly so for the other categories. The number of graves without any gift at all is not negligible: Elsloo has 38 graves without archaeological visible grave goods, and Niedermerz 43 graves. At first sight this scarceness of gifts again suggests the impossibility of valid analysis: from the many empty entries, it might be inferred that correlations are meaningless.

On second thoughts the prospects are less gloomy, as differential preservation per (observable) category *within a cemetery* is rather unlikely: most grave gifts are found at depths of half a metre or more below the present surface, well out of reach of ploughing. Hence it can be said from a post-depositional point of view that what is not there now, has never been there (with the obvious restriction to inorganic materials); no pots now means no pots ever. In other words absence seems relevant to early practice and may not be interpreted as *missing data* — a 'nought' entry is rather more appropriate than an empty cell therefore, providing a firm footing for computations. Against this it will be observed that individual gift categories are rather thinly represented, except pots. If they each and every one relate to a different societal field, then that social formation must have been very diverse, when not fragmented. It seems more likely that sets of categories jointly refer to such fields — high correlations should be indicative here.

But then I still owe an account of the various reasons which may individually or jointly contribute to the absence of gifts. Age or rank, and gender are important social parameters in every social formation, and probably the most important ones in neolithic communities (e.g. Conkey 1991, 67); there is a fair chance that they will be expressed in the grave gifts one way or another.

On an *a priori* account, and assuming random sampling from the original population, approximate estimates can be given for the socio-demographic composition of cemeteries of communities similar to the Bandkeramik:

= regarding rank: 30% children (perinatal mortality not included), 60% adults, and 10% elders.

= regarding gender: half of the adults, or 30%, are females, the other half males; for the remainder not applicable (30% children, 10% aged) — it will be noted that I consider gender classes for adults only.

Table 2. Relative chronology of a number of graves at Niedermerz as indicated by a Principal Components Analysis ('scores'), and as presented by Dohrn-Ihmig ('phase').

scores	grave nrs.	phase	scores	grave nrs.	phase
-3.50	15	-	0.05	11	3
-2.41	40	1	0.07	34	4
-1.13	35	2	0.11	49	4
-1.05	4	-	0.12	22	3
-0.96	41	2	0.14	45	3
-0.73	20	4	0.18	14	4
-0.52	58	2	0.20	60	4
-0.39	55	3	0.26	77	4
-0.37	83	3	0.28	107	4
-0.28	51	2	0.31	31	5
-0.27	37	4	0.49	114	4
-0.26	6	4	0.97	28	6
-0.22	54	3	0.97	44	-
-0.14	32	4	1.40	23	6
-0.10	98	5	1.40	25	6
-0.09	99	5	1.40	29	6
-0.07	68	2	1.40	100	6
-0.07	46	3	1.40	102	6
-0.01	13	5	1.40	115	6

Both factors are susceptible to contingencies, too, for in a society with restricted resources not every burial will have been accorded all customary appurtenances normally due. If several independent gift categories are equally indicative of a similar status, then some of the relevant graves will possibly contain all categories and also some graves none, whereas a fair number will be doted with either of the gifts. Accordingly, it can be seen that not all missing gifts are missing data in a strict sense: there are graves with no observable gifts at all which nonetheless cannot rightly be classified as *missing data* as their indicators have never been there; at the same time they can neither positively be recognised from the grave gifts nor distinguished from truly missing data.

Therefore the numerical significance of missing data is probably not really important in the two cemeteries: the distribution of grave gifts is sufficiently stable to support further analysis.

4. Relative chronologies

The Elsloo graves have been dated mainly by means of a Principal Components Analysis of the decoration on the pots in the graves. There is no need to repeat those computations here.¹ Rather more to the point is the computation of a comparable ordering of the Niedermerz graves as Dohrn-Ihmig's chronology was achieved in a different (and so incomparable) way. At Elsloo, the relative chronology was calculated from counts of the main

elements of decoration: lines, points, hatching and stab-and-drag; also, the use of single- and multidentated spatula was incorporated. Other attributes of the pot decorations were not chronologically relevant there (Van de Velde 1979, 85). At Niedermerz multidentated spatulas have not been used on the pots in the graves; this variable was left out of the computations, therefore. Most other variables do not seem to have chronological significance either: motives nor structures, not even presence of rim decoration can be considered relevant. This leaves only four attributes for the computations for Niedermerz: the numbers of lines, points, hatches, and stab-and-drag points in the decoration. 38 among the 112 graves held decorated pots, 10 from the Northern and 28 from the Southern grave group.

Results are presented in table 2, where the factor (component) scores are shown as computed from the decoration of the pots in the graves (cf. Van de Velde 1976; 1979, 8, 20-24); the third column renders the phases from a seriation of 15 'stylised attributes' of the decoration of pots (Dohrn-Ihmig 1983, 92, 95). The correlation (Spearman's ρ) of the PCA scores and the seriation phases is 0.76, which is not bad given the fundamentally different assumptions and techniques.²

The relative chronological ordering of these 38 graves more or less confirms Dohrn-Ihmig's observation of two separate nuclei in the graveyard which in the later phases merged. In table 2 the Northern group (graves nrs 62 and higher) does not appear in the older phases; the first entry for that group (nr 83) is listed only after eight burials in the Southern group of the cemetery. The earlier graves in the Northern group which Dohrn-Ihmig incorporates (nrs 74, 84, 92, 96) have been dated by her through shards *in the graves' fillings* (Dohrn-Ihmig 1983, 95), which strikes me as unjustified. In the present table only true grave gifts (i.e. from the bottoms of the grave pits) have been entered in the computations.

5. Gendering the burials, Elsloo

As part of the present exercise I checked the logic behind my 1979 argument on the gender of the burials. I would now rephrase it partially as follows: if the Bandkeramik knew a sexual division of labour (i.e., a definition of gender grounded in the economic) then it is likely that this division was expressed with different sets of grave gifts. More specifically, if two classes of gender have been differentiated in the death rites, then two separate tool kits should be discernible in the graveyard's inventory. I also assumed that assemblages not manifestly female, should not automatically be interpreted as male burials, and *vice versa*. Finally, not everybody will necessarily have been defined according to gender, as children and aged will have been categories outside the primary division of labour, probably.

A Principal Components Analysis of the correlations among the gifts was used to get my first bearings on the data. One of the Components correlated with thick adzes, blades, undecorated earthenware, and especially with arrowheads. Another Component was neutral to these tools, but instead showed affinities with 'querns', red ochre, and flat adzes. I then hypothesised that the arrowheads were more likely a male attribute than female — to avoid unnecessary androcentric bias I added the condition that only if a consistent pattern would follow I should trust the assumption. More or less compelled by this initial argument the 'querns'/ochre Component was interpreted as a female expression. The two groups indexed by these Components were of equal size: 21 burials each.

On inspection of the geographical distribution of the graves it occurred to me that the distances between graves of opposite gender (as established above) were consistently smaller than between graves of equal gender, they seemed paired; apparently pair-bonding reflected and transcended the primary division of labour. A Nearest Neighbour Analysis brought out many more such couples, numbers of which had one element attributed to either of the two groups, with the partner graves having none or no characteristic gifts (cf. tab. 3). By extension the unrecognisable partner grave should contain the remains of the opposite gender. This resulted in a list of 71 graves (Van de Velde 1979, tab. 18) with 25 male, 13 probably male, 21 female, and 12 probably female interments — "probably" indicating the Nearest Neighbour argument. A major miss in my 1979 text was not to have presented an explicit summary, which would have strengthened my case considerably as it clearly showed the consistent patterning I was after to validate my assumptions.

Table 3. Average Nearest Neighbour distances between the graves at Elsloo. R: nearest neighbour coefficient (R=0.0 one position only; R=1.0 random dispersal; R=2.15 regular hexagonal grid). Van de Velde 1979, tab. 38.

	distance (m)	R	n
all graves	2.78	0.96	111
M - M	5.62	0.90	25
F - F	5.97	0.87	21
F - M	2.55	-	10
F - x, M - x	2.26	0.36	25

Table 4 (meant to correct my earlier omission) clearly shows *three* sets of gifts: two specific to gender and one general category. Male interments are identified by thick adzes and arrowheads as burial gifts, and female graves from lumps of red ochre and 'querns'; undecorated ceramics is a general category, as are decorated

Table 4. Frequencies of grave gift categories at Elsloo arranged according to gender classes.

Computed from Van de Velde 1979, tab. 18.

	female	male	unclear
plain ceramics	13	19	7
decorated ceramics	17	14	6
lumps ochre	15	2	1
'querns'	9	1	1
arrowheads	2	10	1
blades	7	7	1
thick adzes	2	15	-
flat adzes	6	7	2
total	33	38	42

earthenware, blades, and flat adzes³. Additionally, each grave has a selection only, rarely all of the relevant gifts: between none and all of the gender specific categories are represented, and similarly so from the general categories. I.e., there are two sets (one gender specific, and one general) incorporated in every (adult) inventory. I think this so-called polythetic composition of grave gifts — no doubt a general feature in many more cemeteries — has been the most important barrier in archaeological attempts at gender recognition (including Elsloo and Niedermerz) in cemeteries.

6. An analysis of the anomalies

When for the sake of argument the conclusions derived from table 4 are provisionally accepted, then the several anomalies in it call for consideration and explanation.

Thus, there are two graves with lumps of ochre which have been incorporated with the *male* group (nrs 1 and 14). Apart from the ochre, they also contain a small bundle of arrowheads at the knees (grave 1) or a single arrowhead with the tip behind the head (grave 14); thick adzes are present in both graves, too, as are blades in grave 1. In other words, the masculinity seems rather emphasised, perhaps to compensate for the ochre. Below, I will argue that the sexes were on an equal footing in the cemetery — hence, *macho*-exclusivity will not have been appreciated, and an occasional reference to the opposite gender may not have been too incorrect politically. In my earlier account (Van de Velde 1979, tab. 18) I incorporated grave 14 with the 'female' group; I would rather join it to the 'males' now; if so, then its partner grave (nr 13, without gifts) should switch from the 'male' to the 'female' column. The plain and decorated ceramics associated with grave 1 in the table should also be removed, as they have been found in the grave's fillings near the surface.

A thick adze in a *female* grave (nr 83) is accompanied by ochre and a 'quern', a small decorated pot, a sickle blade,

and a flat adze at the head end of the grave pit; the thick adze was found at her feet. Here again the gender (femininity now) is emphasised by the presence of the two gender specific gift categories, as if to compensate for the thick adze; as before, an explanation may be sought in the equal status of both gender classes.

In the table, there is a male grave with a 'quern' (nr 71); also a thick adze, three blades and decorated earthenware have been found with this cremation. The shape of the 'quern' is very different from the other 'querns' in this cemetery: Modderman (1970, 57) explicitly labels it a 'whetstone' (*Schleifstein*), in contrast to all other 'querns' which are called 'rubbing stones' (*Reibsteine*) in the descriptions of the graves. I submit that this anomaly may be removed from the list; below I will no more speak of 'querns' but of 'rubbing stones' instead.

In my earlier text (p. 89) I devoted some text to an "ambiguous" grave (nr 87), which I was "inclined to think of as a rich female". The gifts in that grave included a rubbing stone and red ochre, 2 blades, an adze of the rare type I, and a flat adze, too; here, an arrowhead was responsible for the ambiguity. However, this arrowhead was found higher in the grave than the other gifts, and may therefore be unintended; if so, the ambiguity of the female attribution disappears.

Another female grave with an arrowhead (nr 106) held a body that "had apparently been *killed* by the arrowhead ... as it was sticking into her skull" (Van de Velde 1979, 89, emphasis original; also cf. Modderman 1970 (II), pl. 160). Apparently, this arrowhead had a more functional than a ritual nature.

An anomaly not apparent in table 4 is that of a male grave (nr 21) with two arrowheads (and some more goods); one of the points seems to be localised in the shoulder region, possibly in the spine, the other one perhaps in the head (cf. Modderman 1970, pl. 130; the second point is shown in the section only, not in the plan and may therefore be situated elsewhere), and may once again have been an agent of death rather than a ritual deposit.⁴

When these mutations and corrections are applied to the data in table 4, table 5 is the result. The distribution of the gift categories over female and male graves shows significant χ^2 -values for red ochre and rubbing stones as female indices, and for arrowheads and thick adzes as male indicators, leaving the other categories (decorated and plain ceramics, blades, and flat adzes) as general grave gifts.

It seems not unduly speculative to see here a confirmation of my assumptions — I may be accused of *bourgeois* ideas, yet I think that a division of labour to gender (though differently constructed from society to society) is quite universal. As Murdock noted long ago, it is the structure of this division, not its specific contents, which

Table 5. Frequencies of grave gift categories at Elsloo arranged according to gender classes, and anomalies mended. Computed from table 4, with accountable anomalies removed. χ^2 , Chi-square values computed over male and female columns; in 95% of the cases $\chi^2 < 3,84$ at $v = 1$.

	female	male	unclear	χ^2
plain ceramics	11	17	7	1.29
decorated ceramics	14	15	8	0.00
lumps ochre	15	2	-	11.57
rubbing stones	12	-	-	12.00
arrowheads	-	10	-	10.00
blades	12	7	1	1.90
thick adzes	1	16	-	11.57
flat adzes	7	7	1	0.00
total	34	38	41	

is universal (Murdock 1949, 7; also, for a recent reformulation, Conkey/ Gero 1991, 8). Something similar holds for pair-bonding, the constitution of couples from opposites, too (Conkey 1991). These inferences do not imply in any way that Bandkeramians lived in nuclear families; elsewhere I have shown that they rather formed stem extended families — in this (patrilocal) case, father and son plus their wives and their unmarried children (Van de Velde 1979, 149).

A little bit of a sideline, in my 1979 text I did not emphasise the two violent deaths I then thought to have seen (graves nrs 14 and 106); in the primary publication (Modderman 1970) no such inference was made at all. Meantime, we have been treated on the Bandkeramik atrocities in the Talheim massacre (Wahl/ König 1987) and from other prehistoric periods as well (e.g. Louwe Kooijmans in press), and we have also become more conscious of our romantic drives when pursuing the past (Shanks/Tilley 1987), so that now I do not hesitate to draw attention to the possibly unnatural end of the individual in grave nr 21 (and, perhaps, but with reservations, grave 25, too). Which means that among 113 graves, at least three are witness of a less than peaceful neolithic; it should be added that death by clubbing, or killings by adzes (as so clinically described by Wahl/König 1987) cannot be made out at Elsloo, simply because the skeletons have been dissolved before this could be discovered.

7. Gendering the burials, Niedermerz

For the Niedermerz cemetery the excavator has published her interpretations regarding gender (esp. Dohrn-Ihmig 1983). Yet there is one statement in that essay which makes me distrusting of all other points she made:

'Wealthy graves' ... are 29 in number. They are interments of male persons exclusively. ... Beyond that, the

'male' status may have additional meanings, such as e.g. 'respected'. ... Among the graves with only one or two categories of gifts the majority should be classified 'female'. It is the absence of certain grave gifts which characterises the female graves (Dohrn-Ihmig 1983, 100–102).

There are two reasons for my suspicion: one ideological (I am not really prepared to assume without further discussion a male dominated neolithic), and another methodical (if this were true of the Niedermerz cemetery, and if my Elsloo analysis above is acceptable, then there should have been major differences in social structure between the two regions. At a distance of no more than 40 kilometres this would really pose a problem).

Accordingly, I reworked the Niedermerz data along similar lines as in the Elsloo analysis. To no avail, however: the Principal Components did not distinguish between tool kits, but scaled wealth or diversity of the graves' inventories only — and this even on an absence/presence basis. Except for the arrowheads (which went into the assumptive part of the argument) no gift categories could be reasonably partitioned off as distinct or independent tool kits: to my despair all combinations seem to occur, even though lately Zimmermann (1988) has been able to establish several distinct tool kits in the Aldenhoven settlements.

Dissatisfied I turned the procedure on its head, and started from a Nearest Neighbour Analysis of the geographical distribution of the graves; if it may be assumed that the division of labour is visible in the tool kits, then graves of opposite gender should be paired. I also hoped that for a sufficient number of grave pairs at least one would be interpretable as either 'male' or 'female', from which I would then be able to derive the attributes of either gender. The Nearest Neighbour Analysis is summarised in table 6 (see also the appendix).

The distances within pairs are quite small as compared with the mean nearest neighbour distances; the prospects for further exploration seem promising. However, a listing of the grave inventories of these pairs resulted in only ten "recognisable" males, from whom ten putative females could be deduced.

The distributions of the gift categories over these pairs of graves are presented in table 7. The exclusivity of the arrowheads does not carry any weight as it was the only criterion for a 'male' attribution of a grave. It is apparent from the table that flat adzes perhaps should be considered male indices, too. Regrettably, no gift category suggests itself as a 'female' index.

Taking flat adzes in consideration for the paired graves, the previous table becomes table 8; another six grave pairs are added. Only one contradiction emerges in the arrowhead

Table 6. Nearest Neighbour Analysis of grave distribution at Niedermerz.

Average Nearest Neighbour Distance, all graves:	1.2 m	n= 112
Expected Average Nearest Neighbour Distance:	1.5 m	R = $d_O/d_E = 0.80$ (p = 0.28)
Number of recursive pairs:	27	
Average distance within these pairs:	0.7 m	

in grave 96 which can perhaps be related to its partner grave (nr 93) which contains much more flint than any of the other graves, and also 2 flat adzes. However, in this enlarged set still no specifically female grave gift is turning up, only male graves seem to be marked differentially.

Of course, the next step is to add all graves containing arrowheads and/or flat adzes (as in tab. 9); that way the solution suggested by one of the Principal Components is approximated. The problem remains that no specific female index is apparent among the surviving elements of the graves' inventories, and one is *almost* forced to agree with

Table 7. Frequencies of grave gift categories at Niedermerz arranged according to sex, as inferred from a Nearest Neighbour Analysis.

	male	female
plain ceramics	2	1
decorated ceramics	7	5
lumps ochre	3	1
rubbing stones	2	1
arrowheads	10	-
blades	2	1
thick adzes	3	2
flat adzes	6	-
	10	10

Table 8. Frequencies of grave gift categories at Niedermerz arranged according to sex, as worked out from table 7.

	male	female
plain ceramics	3	3
decorated ceramics	8	8
lumps ochre	5	1
rubbing stones	2	2
arrowheads	11	1
blades	6	1
thick adzes	4	3
flat adzes	11	-
	16	16

Dohrn-Ihmig's inferences quoted above, viz., that as far as presently perceptible male graves in Niedermerz are marked by wealth, and female graves by the absence of grave gifts. Note that even if all 'other' graves were added to the 'female' inventories still no gift category could be singled out as an index for this latter set.

However, if 30 graves stand out as 'male', it does not obtain that the 41 graves with no male-specific gifts (and presumably those other 41 without grave gifts at all, too) are 'females': some may belong to elder people or children (i.e., have had statuses of non-adults and thus possibly beyond the gender dichotomy), or even to 'undistinguished' males as proposed by Dohrn-Ihmig. The possibly 'female' graves inferred from the Nearest Neighbour Analysis are entered separately, and all the other graves with grave gifts have been headed as 'others' in the table, and not as 'female'. The remaining 36 graves without any archaeological obvious offerings constitute a different set, as they do at Elsloo.

8. Discussion

In the Niedermerz data, a partition of the grave goods into separate sets has not been possible: a Principal Components Analysis registered only the amount of gifts in the graves. However, from a Nearest Neighbour Analysis flat adzes have been recognised as a possible male attribute (assuming a male context for arrowheads; cf. tab. 7, 8). The graves without arrowheads or flat adzes supposedly belong to the opposite sex and/or to non-adult status categories. To assume that *all* graves not so marked were of female gender would imply a much de-emphasised, or even a negatively defined female ritual. Possibly, the partner graves of male burials stand a better chance of having been female. The remaining graves should incorporate some females, too, but also people not in that category (children, aged, some males). After all, one would expect approximately similar counts of female and male (adult) graves (as described in an earlier section), and not the dissimilarities as in table 9. On *a priori* grounds it seems probable that at least half of those "others" should have been female; no identification criterion has been found.

Table 9. Frequencies of grave gift categories at Niedermerz, with arrowheads and flat adzes considered 'male' attributes χ^2 , Chi-square values computed over male and female columns in 95% of the cases $\chi^2 \leq 3,84$ at $v = 1$.

	male	female	other	χ^2
plain ceramics	8	3	12	0.39
decorated ceramics	14	8	16	0.00
lumps ochre	13	1	3	4.98
rubbing stones	5	2	4	0.00
arrowheads	22	1	-	9.40
blades	12	1	4	5.20
thick adzes	9	3	2	0.37
flat adzes	18	-	-	9.00
with grave gifts	30	16	25	
without gifts			41	

In her account, Dohrn-Ihmig ends up with a slightly different list of male and female graves (Dohrn-Ihmig 1983, 112-114). Her starting point apparently has been — she is not explicit here — a morphological analysis of the teeth found in 30 graves (by A. Czarnetzki, and summarised in Dohrn-Ihmig 1983, 105-111). From the results, she probably has inferred the gender specific grave gift categories; unfortunately, the contents of the nine odontologically identifiable female graves are little distinctive.⁵ As in the present text, in Dohrn-Ihmig's account social gender and biological sex are not equated: four discrepancies among 22 cases are reported (Dohrn-Ihmig 1983, 107).

Regarding the gender indices, there is a difficulty with the logic of her argument, though. Dohrn-Ihmig sets out from the archaeological wisdom which associates arrowheads to male activities (p. 71, acknowledging Modderman 1970, 67), and which is not falsified by the odontological identification. She then observes that among the 24 graves with arrowheads, 19 also possess adzes. Therefore, adzes should be reckoned male attributes as well, according to her. This 'male' identification is then extended to all graves with an adze, even when they do not contain any arrowhead.

Two problems: There is also an allusion here to Pavúk's analysis of the Nitra graveyard (Pavúk 1972); however, Nitra is quite a distance away, and one wonders about its analogical relevance for the Niedermerz analysis (Hodder 1982). More important though is the following: in this part of her argument Dohrn-Ihmig does not differentiate between thick and flat adzes, yet I contend that if either or even both of the two adze types have been in use as 'general' (i.e., not gender specific) tools then the inference of adze bearing graves being male is invalid. The disjunctive distributions of both types, each occurring in 16 graves with at the most only two overlaps (or possibly one only; p. 72) indeed appear to point to different functions.⁶

A further instance can be found in my 1979 analysis of the nearby and partially contemporaneous Elsloo cemetery (Van de Velde 1979, 89). The Nearest Neighbour Analysis summarised in tables 7 and 8 also suggests separate associations of the two adze types, and going by this more restricted inference, table 9 has been calculated; for what it is worth, on the evidence of table 7 I still consider the flat adzes markers of male graves, while the thick adzes may have been in general use at Niedermerz.

9. On the status of the burials

It is difficult to establish criteria of status which do not immediately remind us of our own society. That is to say, all of the literature dealing with authority, status and power from Marx and Weber onwards to and including Foucault and Bourdieu, associates social standing with differential access to the means of production (including women-producers) and products. In archaeological texts superiority is usually translated as association with goods: wealth and status, authority and power are almost inevitably equated. Elsewhere I have sought to go beyond this facile association (Van de Velde 1990), the outcome remained similar, however — differential power was expressed in differences in material wealth in Bandkeramik society. I will therefore propose a grading of the burials according to the number of artefacts in the graves, and another one to the number of gift categories, in the awareness of a very high correlation of both measures.

Table 10. Elsloo and Niedermerz, burial rites (Van de Velde 1979, 182; Dohrn-Ihmig 1983, 96, 114).

	Elsloo	Niedermerz
inhumations with gifts	55	66
inhumations without gifts	11	36
cremations with gifts	29	5
cremations without gifts	18	5

There may be other criteria, though, for which we do not possess the apposite interpretation — cremation *vs.* inhumation, or orientation suggest themselves as possible though presently unintelligible alternatives for the counts of furnishings of the graves. Table 10 compares the numbers of burials at Elsloo with those at Niedermerz as regards to what are commonly called the burial rites. Nothing very different emerges, except for the larger number of cremations recovered at Elsloo or the larger number lost at Niedermerz: if comparable, Niedermerz should have had some 75 cremations instead of the ten reported. Table 11 presents summary data on the orientation of the graves in both cemeteries. Note that the directions of the graves in the

Table 11. Elsloo and Niedermerz, graves' orientations. a: direction of the head when perceptible; b: direction of gravepit axis when head's position indeterminable, including the graves listed in table 11a.

	Elsloo	Niedermerz
a. direction of the head:		
S	-	1
SW	-	22
W	1	3
NW	11	1
N	1	6
NE	-	32
E	-	2
SE	9	-
b. direction of the gravepit axis:		
W-E	10	11
NW-SE	48	2
N-S	8	12
NE-SW	3	77
not clear	44	9

two yards are at cross angles to each other: at Niedermerz the SW-NE orientation is favoured, while at Elsloo the NW-SE azimuth appears predominant. Within both sets of graves about equal numbers are aligned to opposite directions as far as still can be discerned. Dohrn-Ihmig (1983, 61) infers family relations between burials on the basis of similar alignments. If this were extended to its logical consequences it would entail either an "All in the Family" for almost the entire Niedermerz population (as in tab. 11b) or the existence of two lineages (NE heading, SW heading; tab. 11a) since the deviants are really few in number. There is also an implicit tautology behind it: in small communities like Niedermerz, people are *inevitably* kin to one another, if not by blood then by affiliation, and if not by affiliation then by neighbourhood — and possibly along all three lines together at the same time. This holds for Elsloo, too, of course.

The perpendicular orientations of the graves at Niedermerz and Elsloo may be instances of Bourdieu's "cultural distinction": being close to one another (less than 40 km distant) the communities will have been aware of each other's customs on the one hand, and on the other they will have had sufficient reasons to elaborate their differences. Modderman (1970, 75) already pointed to the differences in general orientation between Elsloo and Central German burials; he related them to different directions of the *houses* in both areas. Yet the houses on the Aldenhoven Plateau have similar directions as those in Dutch Limburg, while the gravepits do not. The 'sleep' connotation of the majority of Bandkeramik burials (the *Hocker*) suggests a travelling metaphor for death; if so they have been lain along the path

towards their destinations: the summer sunset or the winter sunrise at Elsloo, the summer sunrise or the winter sunset at Niedermerz — in order that they may be kept separate after death, too?

To continue along a different tack, table 12 shows the tallies of grave goods in the two cemeteries. All shards in a grave together have been counted as one single artefact, as are traces or smears of red ochre, and of pyrite; the other artefacts have been entered separately. It turns out that the Niedermerz graves have a wider range of numbers than those at Elsloo; moreover, at the latter place the inventories with only few gifts are more frequent than at the former.

Table 12. The numbers of artefacts in the grave inventories at Niedermerz and Elsloo.

	Niedermerz	Elsloo
0	44	38
1	16	22
2	13	21
3	7	7
4	9	8
5	6	5
6	3	2
7	2	3
8	3	2
9	2	1
10	-	-
11	1	2
12	1	2
13	1	-
-	-	-
15	1	-
-	-	-
21	1	-
-	-	-
47	1	-

Indeed, the total count of grave goods is appreciably smaller at Elsloo than at Niedermerz (246 vs. 322) although the numbers of graves are almost equal; consequently the average numbers of artefacts in the inventories are different, too (2.18 vs. 2.90 per grave). This difference is mainly caused by the two graves with many arrowheads (11, 20 pieces) and one with many blades (25) at Niedermerz which together account for two thirds of the difference. The greater wealth at Niedermerz as suggested by the average numbers of *artefacts* per grave is not very impressive then. When the *categories* are counted instead — viz. presence of ceramics may be attested by a single shard or by 4 pots, etc. — the two distributions look only marginally dissimilar (tab. 13) and the averages do not differ appreciably (about 1.4 categories per grave in both places).

Table 13. The numbers of gift categories per grave at Elsloo and Niedermerz.

	Elsloo	Niedermerz
0	38	44
1	34	30
2	18	12
3	12	8
4	5	11
5	4	6
6	2	-

Allowing for the many more graves with arrow tips at Niedermerz — with their obvious connotations of hunting or war — the differences between the two cemeteries seem to be contingent only, and certainly not of a qualitative nature.

10. Gender and social position

Table 14 presents the gift categories by gender at Elsloo and Niedermerz. As regards the small number of putative female graves at Niedermerz with only 0, 1 or 2 categories not too much weight should be attached, as women's graves

Table 14. Niedermerz and Elsloo: gender vs. status as indicated by the numbers of gift categories per grave.

	Niedermerz				Elsloo			
	m	f	?	Σ	m	f	?	Σ
0	14	6	24	44	5	3	32	40
1	4	1	25	30	12	9	9	30
2	5	-	7	12	9	9	-	18
3	3	4	2	9	7	5	-	12
4	3	3	5	11	4	5	-	9
5	1	1	4	6	1	2	-	3
6	-	-	-	-	-	1	-	1
total	30	15	67		38	34	41	

cannot positively be discerned there: their scanty occurrence in the table is entirely due to analytical bias. The at first similar frequencies for the two genders there may even turn out to be an *under*-representation, as the number of female graves in that table is exactly half that of the male burials; if the numbers were equalised, more female graves would be in the wealthier categories than male ones (the 'undecided' category amply allows for that). Needless to say that this is the opposite of one of Dohrn-Ihmig's inferences:

"If the social standing of the dead in the community is ... mirrored in the grave inventories [at Niedermerz], then the position of the men should have been higher than that of the women, in common with many other traditions" (Dohrn-Ihmig 1983, 102).

On the other hand, if the figures are not too much biased by the low numbers, the distributions from both cemeteries hardly differ in their steepness: Niedermerz had only a few more gifts in the wealthier graves than had Elsloo, be they male or female.

11. Social group membership

Two related topics have still to be discussed: the spatial subdivisions of the cemeteries, and the Bandkeramik definition of group membership.

Dohrn-Ihmig has described the existence of two groups or descent lines in Niedermerz on the basis of the spatial distribution of the graves. The oldest graves are in the centres of the northern and the southern halves of the cemetery, neatly separated by a low rise in the field. More graves have been added later, and in the final phases the two groups have merged (cf. the section on chronologies). A Kmeans cluster analysis of the geographical distribution of the graves supports that conclusion; even with four or five groups imposed, the border between the north and the south halves remains between the same graves (nrs 64/65 and 66) which is precisely the axis of the ridge between the two centres. Dohrn-Ihmig, though, puts the border a few metres to the South, between graves 61 and 62 (Dohrn-Ihmig 1983, 68); she does not present her reasons for that line.

At Elsloo I laboriously derived a grouping of the graves into four geographical sets on the assumption of similar inventories per set (Van de Velde 1979, 96). I ended up with two only slightly dissimilar alternative groupings (p. 98) and preferred one above the other mainly on the basis of a more even count of male and female graves in the groups. The rejected solution is almost identical to the one turned out by a Kmeans cluster analysis of the grid co-ordinates of the graves: for three, four and five groups the same borders between the groups are indicated. Being grounded in both sociological and distributional reasoning I still prefer the other partition for the strictly geographical clustering result; as Dohrn-Ihmig also did for Niedermerz. The four geographically defined groups at Elsloo held different counts of the several gift categories; this distribution could quite simply be related to generalised linear exchange relations between the four groups. At Niedermerz only two groups are represented in the cemetery; if they reflect social groupings and if our understandings of neolithic societies are correct, they have exchanged gifts in a symmetrical system (cf. Van de Velde 1979, 101 plus references). That is, between them the two groups would of necessity have exchanged women and smaller presents to lubricate their relations; some gift categories should be more frequent in one group than the other, and different categories the other way around.

Table 15. Distribution of artefacts over the grave groups
 $\chi^2 < 3.84$ for $v = 1$ and 95% significance.

	North	South	χ^2
plain ceramics	11	14	0.00
decorated ceramics	15	40	7.73
hematite	7	13	0.93
rubbing stones	3	8	1.47
arrowheads	15	57	10.13
scrapers	5	1	2.66
blades	31	25	1.79
other flint	13	4	5.90
thick adzes	5	11	1.01
flat adzes	11	13	0.00
total	51	60	

Table 15 shows the counts of artefacts in the two groups; significant deviations from marginal equality are seen only with decorated ceramics, arrow tips, and 'other' flint. Correcting for the 'specialist' graves (arrowheads, flint blades, other flint), only decorated ceramics and blades have significantly unexpected distributions over the two groups, the Southern grave group being dominant in both cases; again, important gift categories seem to have vanished from the inventories (also cf. the section on gender, above). It seems to me that on the evidence at hand (two deviant categories among ten) inferences about group relations become no more than educated guesses, and the case must be dropped.

Finally, the Bandkeramik definition of group membership. In my 1979 analysis (see esp. p. 112) I noted that in the Elsloo cemetery the structures of ceramic decoration (curvilinearity and rectilinearity of design) were asymmetrically distributed over the sexes. In male graves rectilinear and curvilinear decoration occur side by side, in female graves only one or the other. An explanation can be provided by assuming matrilineal affiliation — males being wedded to the other moiety than that of their birth (group exogamy may always be assumed) they would be associated with both moieties at death, while the females expressed their birthright until their final hour. The matrilineal inference was corroborated by the subsequent analysis of the settlement debris.

One of the reasons for writing the present paper is curiosity about the state of affairs in this respect on the Aldenhovener Platte. Table 16 sums up the evidence for Niedermerz, and compares it with Elsloo. Apparently, the Niedermerz Bandkeramik had similar combinatory rules for the pottery in the graves. It is clear that the groups have been exchanging labels/names/symbols — one way or another they sought to express a kind of (habitual) relationship which in our language is translated as

matrilinearity. With all the differences between Niedermerz and Elsloo Bandkeramik, one of the most basic structures of these societies, viz., the rules of intermarriage and alliance are similar; they even find expression in the same medium: pottery decoration.

12. On the balance, concluding remarks

My final discussion bears on method, technique, and a number of substantial differences and agreements between the two Bandkeramik cemeteries of Niedermerz and Elsloo.

This essay began with a discussion of the representativity of Bandkeramik graveyards regarding their cultural and demographic background populations. Contrary to received wisdom there should hardly be problems in the two cases analysed. Firstly, with over one hundred graves each, the statistical basis for inferences is sound, no matter the number of missing dead. Secondly, on the demographic side that figure which is sometimes estimated to run into the thousands, can more realistically be put at two hundred at the most (and that is a conservative estimate). Hence, (social) inferences from the cemeteries will not be wildly off the mark although the statistical condition of (socially) random selection for incorporation into the graveyard has probably not been met.

As regards missing data in the graveyards, its incidence should be rather small (barring organic materials) as most grave gifts have been buried at depths of 50 cm or more, out of reach of plough and erosion. As long as the bottoms of the graves — where the gifts have been deposited — are visible in the excavations, nothing would suggest differential post-depositional processes *within a graveyard as a whole*. Both at Niedermerz and at Elsloo the grave gifts were elements of polythetic sets: sometimes only one, sometimes two, and sometimes no gifts were given to the dead.

To analyse the grave gifts I used a number of computational techniques in conjunction: Principal Components Analyses as an heuristic, but Nearest Neighbour Analyses were necessary to extend the outcome to more data. After these general approaches I also had to regroup the graves' inventories manually, assisted by χ^2 -tests to arrive at my final results.

The Elsloo and Niedermerz graveyards show partially different styles of burials. Generally, the Niedermerz graves have slightly more contents than the Elsloo ones. Noteworthy is the preference for a NE-SW orientation of the graves at Niedermerz in contrast to the general NW-SE direction at Elsloo. Also in the former graveyard two lineages have buried their dead, and in the latter four groups made use of the burial ground.

The Dutch grave gifts lend themselves to an interpretation in terms of a gender division, whereas the Rhenish material is difficult in this respect. In both places male

indicators are arrow tips and adzes: thick adzes at Elsloo, and flat ones at Niedermerz. At Elsloo rubbing stones and red ochre are indicators of female gender but an equivalent female set of gifts cannot be reconstructed from the surviving remains at Niedermerz. That way, females come to be defined as “¬M” (‘non-male’), as if there were no independent female sphere attested in the grave gifts at Niedermerz. As other dimensions have been represented in similar ways in the two cemeteries (e.g., male representation, emphasis on main orientation, amounts and ranges of gifts in individual graves, pair-bonding, grouping in larger groups, matrilinearity, etc.) it looks as if female burials at Niedermerz have been marked by gifts made from perishable material such as shells or wood, since lost.

There are two consequential differences between Dohrn-Ihmig’s analysis and mine. Firstly, she considers all adzes a male index — it then follows that almost all graves with two or more gifts belong to males, leaving the poorer graves to females and ‘undistinguished’ males. My Principal Components Analysis suggests a separation of thick and flat adzes (in line with an earlier analysis of the use wear of these tools by Dohrn-Ihmig), which results in a less lopsided distribution of wealth over male and non-male graves. Secondly, her end list of ‘male’ attributes for the Niedermerz cemetery also includes rubbing stones and red ochre (also contrary to my findings), precisely the indices of ‘female’ burials at Elsloo. If the Elsloo cemetery were interpreted following the Niedermerz criteria then hardly any female, only poor graves would be left there — which is my major problem with the Niedermerz study.

There are also notable similarities between the two cemeteries, of which the signification of matrilineal affiliation of the dead is sociologically the most important. Perhaps because of these matrilineal tendencies, female graves have comparable amounts of grave gifts and so equal statuses for Bandkeramik women and men can be inferred at both graveyards. This is contrary to Dohrn-Ihmig’s interpretation of the data where males are accorded higher statuses.

It should be emphasised that the inference of matrilinearity is crucially dependent upon the correct derivation of male and female grave gift categories. If the analysis would prove insufficient on this point, then this arrangement cannot be maintained as the structure shown by table 16 would cease to exist. However, in my 1979 essay I have shown that the highly structured distribution of Bandkeramik settlement debris can be explained only from matrilineal arrangements between the lineages in the villages (Van de Velde 1979, 150), and not in any other way; this provides a kind of *construct validation* for the matrilineal inference from the graveyard, and beyond that even for the gender indices at the root of it.

Table 16. Distribution of decorative designs by gender.

C: curvilinear design; R: rectilinear design data for Elsloo from Van de Velde 1979, 195.

	Elsloo				Niedermerz			
	M	F	x		M	F	x	
C or R	7	16	3	26	9	8	14	31
C & R	6	-	2	8	4	-	3	7
total	13	16	5	34	13	8	17	38

Finally, the basic social structure is apparently similar in both cemeteries: matrilinearity is fairly evident. Yet the geographical separation of the two habitation areas — Aldenhovener Platte for Niedermerz, and Graetheide for Elsloo — has had historical effects in the emergence of different cultural specialities (a geographical variation on the theme of ‘cultural distinction’, as described by Bourdieu) such as an emphasis on hunt or war at Niedermerz, a slightly more egalitarian society at Elsloo, and that weird phenomenon of distinct main orientations of the grave pits. That way it has been shown that within our category ‘Bandkeramik’ considerable variation (albeit on common themes) should be acknowledged, even over relatively small geographical distances.

notes

1 In fact, although the original ordering has been established through the SPSS-package on a mainframe computer, and my present statistics are worked out in SYSTAT on a Macintosh PC, there was a one-to-one correspondence of the outcomes as regards the relative chronology.

2 The high correlation between the two orderings attests mainly of Dohrn-Ihmig’s profound knowledge of the local Bandkeramik sequences (e.g. Dohrn-Ihmig 1973) as it seems rather unlikely that our widely divergent techniques would have such remarkably similar results. For instance, her description of the decoration at the basis of the seriation is logically inconsistent as the attributes are of a composite nature instead of either irreducible elements or an exhaustive array of all possible combinations (Van de Velde 1976). Also, the method of seriation is logically faulty as all variation in the data is supposed to be on one single dimension only (Audouze 1974), which is interpreted as chronology; social, economic and geographic differences (sources of variation) are not considered. Finally, the computing technique of seriation is mathematically suspect as there is no stable outcome irrespective of the order of data entry (Graham *et al.* 1976). It should be remarked that until recently the other members of the former Aldenhovener Platte Project (e.g., Stehli, and even Ihm) used the same technique for their chronologies. Principal Components Analysis has less assumptions, and yields stable results; also the use of attributes rather than types in the computations is logically more consistent.

3 In 1979 I also incorporated undecorated ceramics with the male grave furnishings. This category is indeed assymmetrically distributed among the putative gender classes, with a preponderance in male graves, while the reverse is true for decorated ware. However, as discussed below, closer analysis shows that the differences are not significant.

4 Something similar may have been the case with the interment in grave 25 (cf. Modderman 1970, pl. 132) although the evidence is more ambiguous.

5 There are some minor inconsistencies in her text. E.g., grave 84 is labeled 'female' on p. 107, but is incorporated among the 'male' graves in the table on p. 112; or grave 72 which is 'male' on p. 107, vs. 'undefinable, probably female or child' on p. 113.

6 Why Dohrn-Ihmig ignores an earlier analysis of hers (Dohrn 1980) is not clear to me. On the bases of usewear and hafting she

distinguished thick adzes from flat ones, worked as planes and as chisels, respectively. Moreover, in a study of adze distributions (in which I did not differentiate to type) I found that they were significantly related to the larger settlements, and within the villages to the larger houstypes (Van de Velde 1990) — from which it can be inferred that there is more about them than simple technotools. The one unquestionable double occurrence in the Niedermerz cemetery (grave nr 93) being precisely in a grave with a very 'outlandish' inventory renders it a dubious contribution to Dohrn-Ihmig's argument; the other twin occurrence (grave nr 60) could have been occasioned by the later cremation grave nr 61 cutting into it (Dohrn-Ihmig 1983, 72).

With separate distributions of the two types as in Niedermerz, it is small wonder that one Principal Component shows bipolar characteristics for the two types, with loadings of -0.75 and $+0.66$, and correspondingly strong separation of the associated graves. However, Dohrn-Ihmig reports that a Factor Analysis did not bring out a separation of the two (Dohrn Ihmig 1983, 72).

APPENDIX:

LISTINGS OF GRAVES ACCORDING TO GENDER, NIEDERMERZ

From a Nearest Neighbour Analysis the following recursive pairs have been derived (with approximate distances between parentheses): 1-3 (1.7m), 4-9 (1.3m), 5-6 (0.4m), 10-14 (0.8m), 11-12 (0.8m), 15-16 (1.3m), 18-19 (0.8m), 22-23 (0.4m), 27-28 (0.8m), 31-115 (0.8m), 34-35 (0.4m), 43-44 (0.4m), 47-48 (0.8m), 50-51 (0.8m), 55-58 (0.8m), 56-57 (0.4m), 64-65 (0.8m), 68-71 (1.3m), 69-72 (0.8m), 75-83 (0.4m), 86-87 (0.4m), 93-96 (0.4m), 94-95 (0.4m), 98-102 (0.8m), 99-107 (0.8m), 100-103 (0.4m), 109-110 (1.7m).

If the pairing of the graves is indicative for pair-bonding, then the following graves would qualify as 'female', assuming arrowheads and flat adzes as 'male' indices (between parentheses the 'male' partner graves): 01 (03), 10 (14), 15 (16), 22 (23), 28 (27), 44 (43), 47 (48), 50 (51), 58 (55), 65 (64), 68 (71), 95 (94), 96 (93), 98 (102), 103 (100), 107 (99).

Table 17. The probably male graves at Niedermerz as indicated by the presence of arrowheads and/or flat adzes compared with an odontological determination

cols. 1: catalogue numbers of probably male graves

cols. 2: anthropological determination (from Dohrn-Ihmig 1983: 107)

Other graves listed as 'male' by Dohrn-Ihmig (1983: 112), and not included in the table above: 8, 13, 14, 16, 23, 24, 28, 30, 44, 49, 84, 86, 89, 91, 106.

1	2	1	2	1	2
02	-	39	f ?	66	m
03	-	41	m	71	?
07	-	43	-	77	m
13	m ?	45	-	90	-
14	?	48	f ?	93	-
16	?	51	m ?	94	m
23	-	55	m ?	96	-
24	m	60	f ?	99	m ?
27	m	62	-	100	m ?
37	-	64	-	102	-

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