

THE PACE OF CHANGE

Studies in Early-Medieval Chronology

Edited by

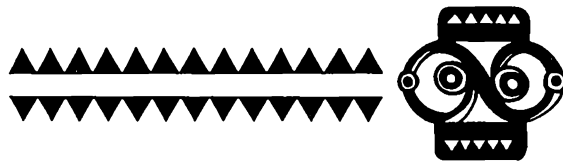
JOHN HINES

KAREN HØILUND NIELSEN

and

FRANK SIEGMUND

Cardiff Studies in Archaeology



Oxbow Books
1999

8. The chronology of the Scandinavian gold bracteates

Morten Axboe

This paper can only offer a brief preliminary presentation of my bracteate chronology, which will be treated in full in the concluding volume of *Die Goldbrakteaten der Völkerwanderungszeit* (Hauck et al. 1985–. Vol. 4, in prep.). A more detailed discussion of the methods used will be published there, as well as definitions of the variables and detailed descriptions of the groups resulting from the analyses. I shall also abstain from any attempt to summarize previous endeavours on bracteate chronology (see Malmer 1963, 76–105; Axboe 1992).

With Egil Bakka (1973, 54) I have distinguished between the *internal* and the *external* chronology of the bracteates, the first being a relative chronology based on a typological treatment of the variables inherent in the bracteate pictures themselves, the latter being their integration into the general chronology of the Migration Period, and their absolute dates. Most emphasis will be placed on their internal chronology, where I have worked out a relative chronology for the A-, B- and C-bracteates, while the relative dating of the D- (and F-) bracteates can only be tentative. The absolute dating of the beginning of bracteate production is profoundly dependent on the general dating of the beginning of Style I. On the other hand it seems that bracteates themselves can contribute to the discussion of the dating of the end of Style I and the Migration Period.

The pictures on the gold bracteates include a lot of different details: human heads or figures, animals, inscriptions, and decorative or symbolic signs like swastikas, triskeles etc. To be able to treat A-bracteates with a human bust, B-bracteates with one or more full human figures, and C-bracteates with a human head over a quadruped together on an equal basis in this analysis I have concentrated on the variables of their large human heads. Thus neither the D/F-bracteates, which only show highly stylized animals, nor some bracteates with small human heads (like Hauck's *Drei-Götter-Brakteaten* with three standing figures: M 6:11–16; IK 20, 39, 40, 51, 1–3, 66 & 165) have been included. The medallion-imitations, which in several graves can be dated to the Late Roman Iron

Age, have also been excluded, together with some closely related pieces. The database was closed in 1988; later finds have not been added.

The bracteate motifs were divided into details – eyes, ears, hair-style, diadems etc. – to obtain the types of the seriation; see Appendix A for short descriptions of the types. The units were the bracteate dies. Using sorted matrices and correspondence analysis alternately, I checked and refined my classifications to improve the parabolas in the correspondence analysis (see Axboe 1993a). The programs used were the Bonn Archaeological Statistics Package Ver. 4.5 (Herzog and Scollar 1987), combined with a program for correspondence analysis (Wright 1985) as the latter method had not yet been added to the BASP when I started my work.

For the large human heads of the A-, B- and C-bracteates I ended up with a database with 342 dies (representing c. 500 bracteates), 51 types and 2445 incidences. Figure 8.1 shows the resultant correspondence analysis, figure 8.2 a simplified version of the sorted matrix. To check the seriation and search for possible geographical variations in the material I also made separate seriations. One was for southern Scandinavia (present-day Denmark, Schleswig, Halland, Skåne and Blekinge) and included 150 dies, 47 types (details) and 1159 incidences. The other consisted of the Norwegian finds, with 54 dies, 30 types and 353 incidences. The resulting correspondence analyses are seen in figures 8.3–8.4.

It is evident that the curves of the two local seriations are slimmer and thus better than the general seriation of all large human heads in figure 8.1, but that was to be expected as the objects come from smaller areas and thus can be expected to be more uniform. It is more remarkable that it was actually possible to establish an acceptable parabola like figure 8.1 for bracteates dispersed over an area stretching from northern Norway to Hungary and from England to Poland. From a methodological point of view it might have been more appropriate to start by establishing local chronologies, based on seriations like figures 8.3–8.4 and then to try to build a supra-regional

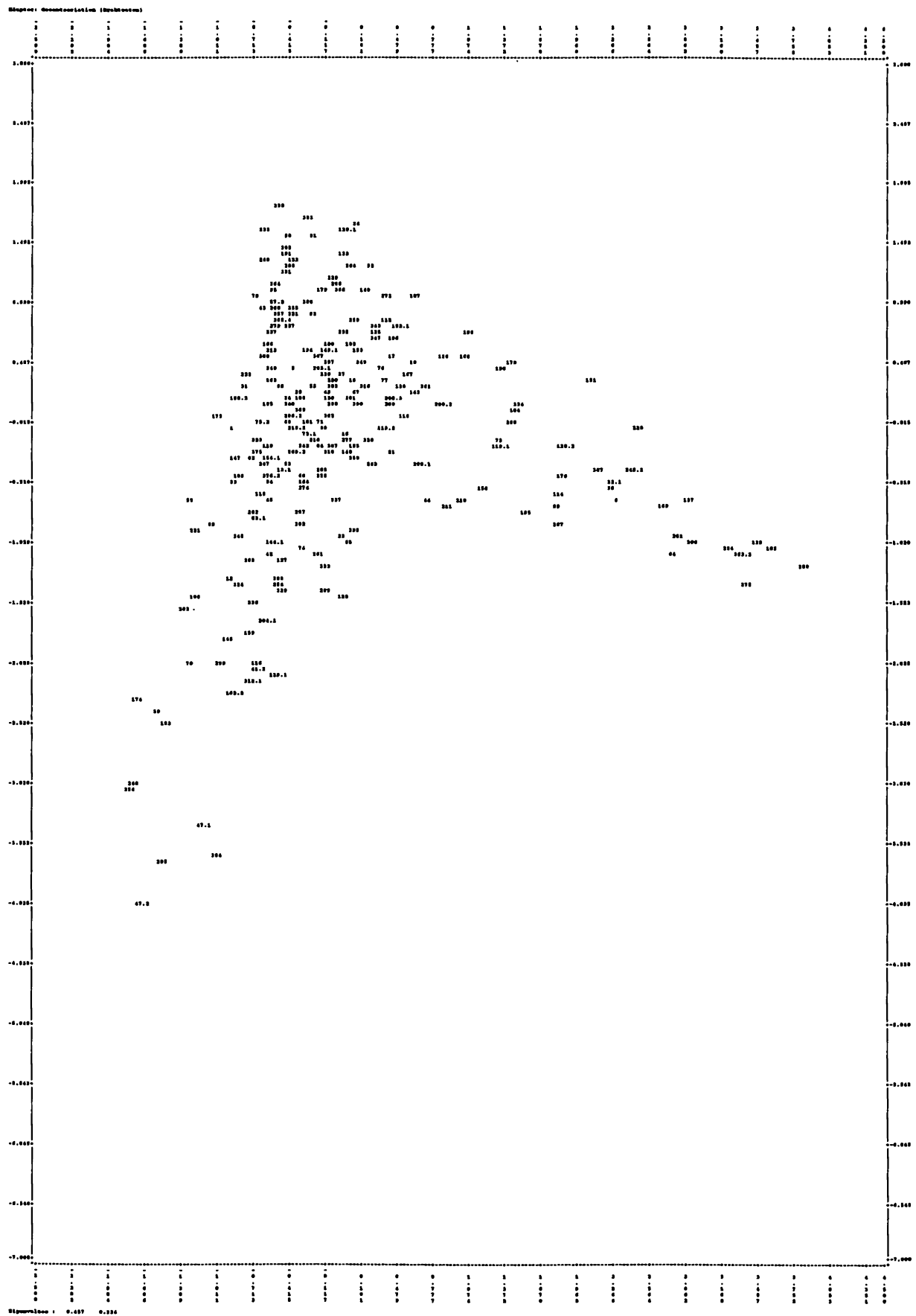


Fig. 8.1 Correspondence analysis of large human heads on 342 A-, B- and C-bracteate dies.

Korrespondenzanalyse der großen menschlichen Häupter. Grundlage sind 342 Model von A-, B- und C-Brakteaten.

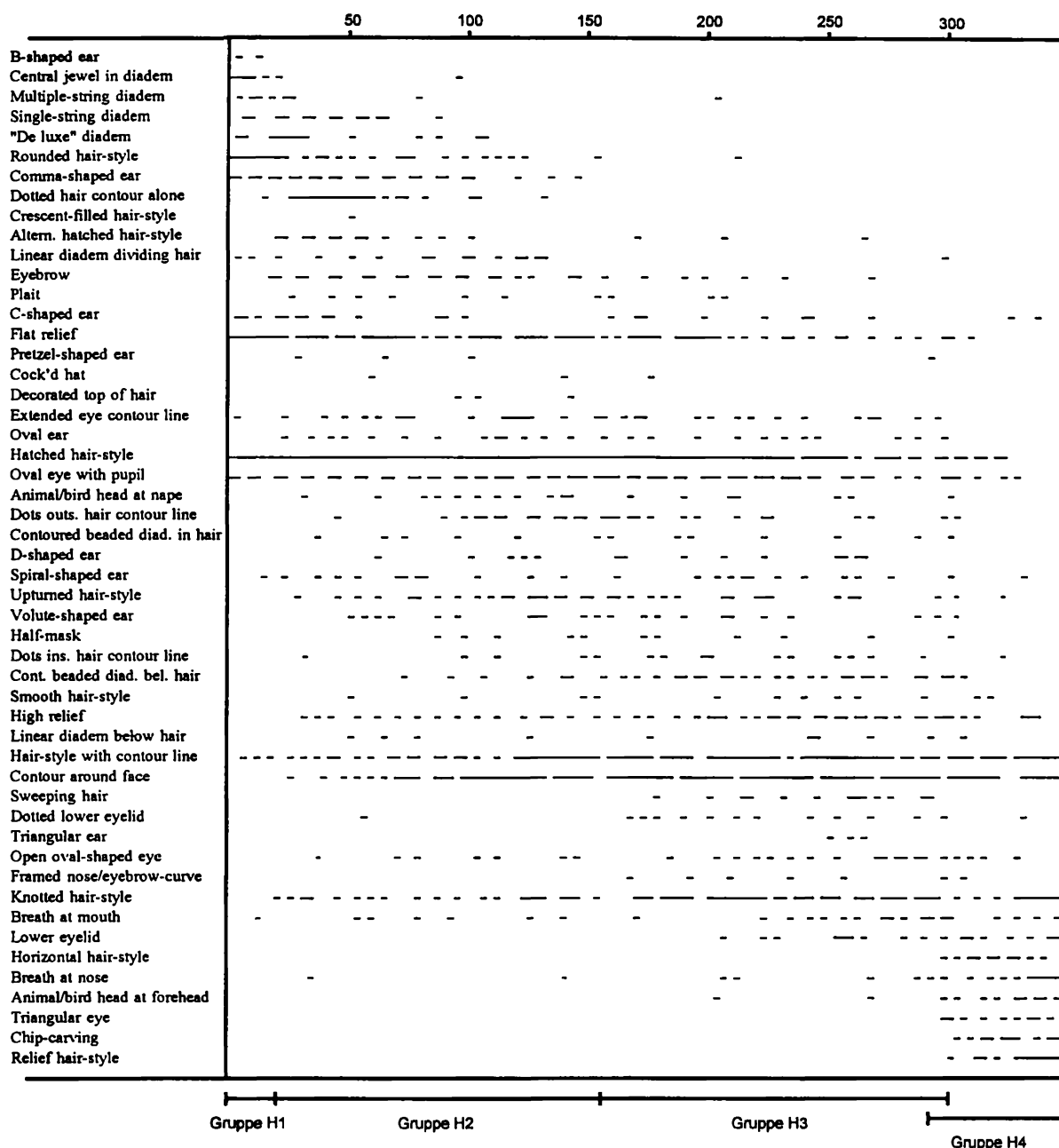


Fig. 8.2 Simplified sorted matrix corresponding to figure 8.1, with groups H1–H4 marked. See Appendix A for descriptions of the types.

Vereinfachtes Kombinationsdiagramm der A–C-Brakteaten (vgl. Abb. 8.1) mit Markierung der Gruppen H1–H4.

chronology on this basis. But to be able to include as many details and bracteates as possible, including the relatively numerous finds of unknown origin, I have chosen to use the total material as presented in figures 8.1–8.2. Attempts to seriate bracteates from other areas (e.g. central mainland Sweden, Skåne or Öland/Gotland) were, in fact, unsuccessful. In any event, the southern Scandinavian finds form the backbone of the whole corpus.

Both the general and the local seriations include several long-lived types, although removing these could possibly

have resulted in less crowded matrices and much slimmer curves in the correspondence analyses and thus in 'better' seriations. I have chosen not to exclude these types for several reasons. It can be seen from the sorted matrices that although some types may be present through most of a matrix, the beginning or ending of such types can help to characterize the early and late groups. Also some long-lived types change in frequency, e.g. being scarce in one half of the matrix and dominant in the other, and thus constitute an aspect of general stylistic change. Finally, excluding such types would leave quite a few bracteates

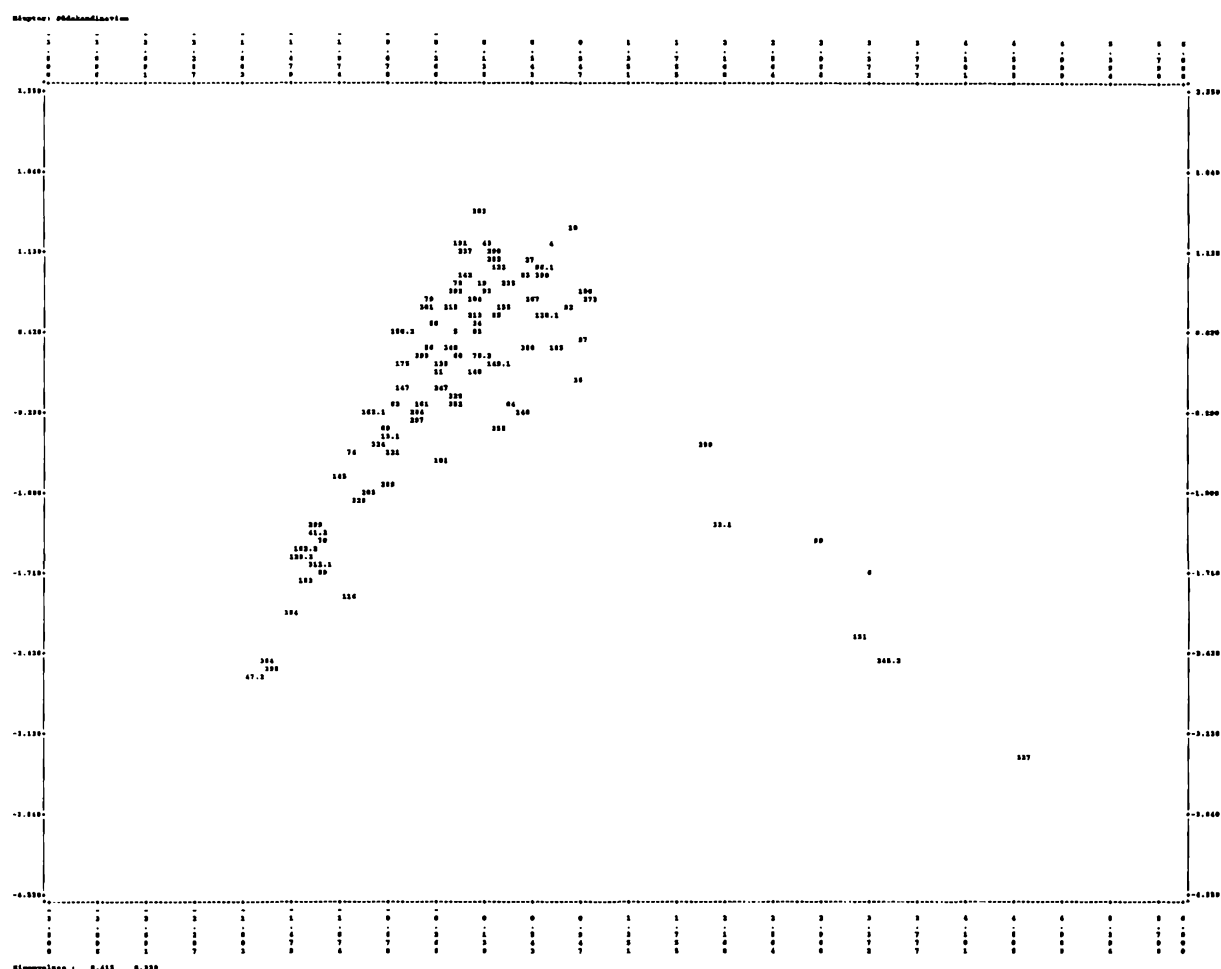


Fig. 8.3 Correspondence analysis of the large human heads from 150 dies found in southern Scandinavia. Korrespondenzanalyse der großen menschlichen Häupter. Grundlage sind 150 Model aus Südsandinavien.

with so few variables that they would have to be excluded from the seriation too.

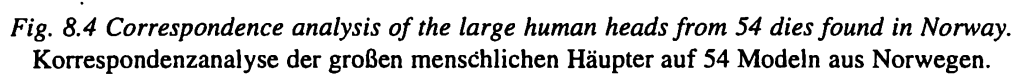
The great variation inherent in the bracteate pictures does, however, influence the shape of the correspondence analysis curves, as each die may have from 3 to 12 types of detail recorded and the types may appear on everything from a few up to 276 dies. This results in curves which are broader at the top and may have prolonged tips, as it can be shown that the objects and variables with only few incidences appear to be 'blown' away from the 0/0-point of the diagram compared to those with many incidences (Axboe 1993a, Fig. 37.5).

Correspondence analysis gives an impression of the quality and consistency of the seriation, better than the sorted matrix which was nevertheless superior for the detailed trimming of the database and also for establishing chronological divisions (see Axboe 1993a–b with further references). Basically, the typology-based internal bracteate chronology is a chronology of the production of the pieces while the next step, the external chronology, involves the period of use of objects found together and

thus the problem of the time of production compared with the time of deposition (see Steuer forthcoming; for discussions of finds relevant to bracteate chronology Bakka 1981; Hawkes and Pollard 1981, esp. 337–351).

But even an apparently coherent and purely internal seriation, based on typology, may have inherent problems, forcing us to take it with a substantial pinch of salt (Axboe 1993a). This was demonstrated by bracteates from different dies, which can be linked through the occurrence of identical punch-marks in their borders or by other specific details. Within each such set the dies can be astonishingly different and they are placed accordingly in the diagrams (Fig. 8.5; Appendix B).

Another reason not to take the seriations at face value in every detail is the fact that some bracteates – mostly of type A – were copied from Roman coins and medallions. This is evidently one of the premises for the start of the production of medallion-imitations and gold bracteates, but we must remember that Roman coins may have been available as a source of inspiration at any time throughout the entire sequence of bracteate production.



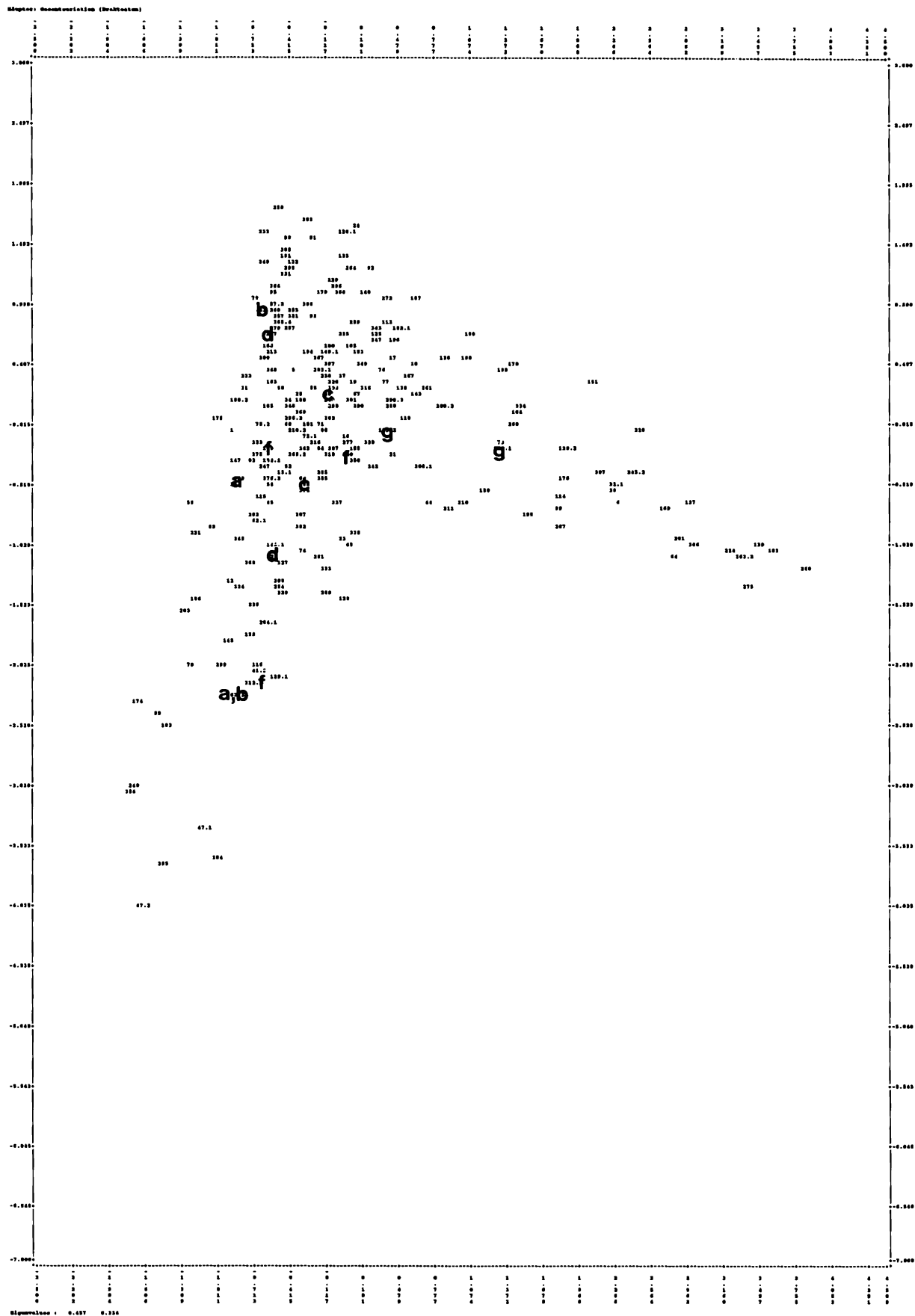


Fig. 8.5 Correspondence analysis of the large human heads with indication of dies linked through border punches or other specific details. For further information, see Appendix B.

Korrespondenzanalyse der großen menschlichen Häupter mit Hervorhebung der Model, die durch Punzen oder andere Details eng verknüpft sind.

If the goldsmith followed his prototype closely enough the result will inevitably be placed early in the seriation, no matter how late it was actually produced.

Thus we must be aware that a typological seriation is a construct which may help us to grasp a general course of development, but which should not be the basis for statements like 'object A appears to be slightly later than object B'. Such detailed relations may in a few cases be established with the help of other criteria, e.g. the identical punch-marks mentioned above or other tool-traces (Axboe 1982, 30, 37f., 52ff.; Axboe and v. Padberg 1977; Benner Larsen 1982–83; 1985; 1987). But while these isolated connections give important information on the pieces involved and glimpses of a reality not revealed by the seriations, they are much too rare to form the basis of a chronological system.

Although archaeological chronology tends, for practical reasons, to establish more or less square-cut phases/periods/*Stufen*, etc., the methods used here favour a picture of more gradual development. No doubt this is closer to reality than the chronological 'boxes', but some sort of classification seems necessary to handle the results.

To this end I have divided the bracteate sequence into a number of *groups*, hoping by this more cautious term to avoid the impression of sharply delimited chronological entities. For the seriation of all large human heads the divisions into the groups H1–H4 is indicated at the bottom of figure 8.2 – 'H' stands for 'Heads/Häupter', while the groups in the seriation for southern Scandinavia are labelled S1–S4, the Norwegian groups N1–N3 (Fig. 8.11). Unfortunately only a few types appeared to be characteristic of one group only and thus qualified as '*Leittypen*', and none of these appears on very many dies. So to draw the limits between the groups I had to work out those zones in the sorted matrices where several types started or ended within a short space; that is, where major changes in the repertoire of the bracteate makers seemed to take place. For practical reasons I have then drawn a line within the border-zone, to enable calculations of percentages etc. Only in few cases, like Group H3–H4, are the types characteristic of each group so numerous and diagnostic that it seems sensible to let the groups overlap.

Figures 8.6–8.9 present examples of dies from Group H1–H4. They appear in strict seriation order and are chosen to indicate the development through the groups, as well as demonstrating the variation within each group.

As a general tendency my study shows a dominance of *flat relief* in the first half of the development, although *high relief* becomes increasingly important and is dominant in Group H3. In H4 *chip-carving* appears as a distinctive, late development.

The human heads in **Group H1** (Fig. 8.6) are close to the Roman prototypes, showing a rather naturalistic *rounded hair-style* without any additions at the nape. The diadems of Group H1–H2 are often of rather elaborate forms, and in Group H1 they may display the imperial *central jewel* (Fig. 8.6 nos. 1–2 and indicated on no. 4). The central jewel



Fig. 8.6 Group H1: Selection of dies. 1: IK 47,2 Broholm-A, Fyn (M 3:6). 2: IK 174 Småland(?)–C (M 9:3). 3: IK 384 Vindum Stenhuse-B, North Jutland (M 6:8). 4: IK 183 Tjurkö (III)–A, Blekinge (M 4:3). 5: IK 41,1 Darum (II)–A, West Jutland (M =4:8). 6: IK 129,2 Darum (IV)–B, West Jutland (M 5:16).

Ausgewählte Brakteaten der Gruppe H1.

is a diagnostic type for Group H1, together with the *B-shaped ear* (Fig. 8.6 no. 1 left, 3).

Group H2 (Fig. 8.7) adds new types of hair-style with a *knotted* (e.g. Fig. 8.7 nos. 1, 9, 12) or *upturned* hair-style (Fig. 8.7 nos. 6–8, 11). Both can be found later as well. This applies also to the *animal/bird heads placed at the nape* (Fig. 8.7 nos. 6–8, Fig. 8.8 no. 12), and to the *breath-signatures at the mouth* of the human head (Fig. 8.7 nos. 4, 7, 12; Fig. 8.8 nos. 6, 11; Fig. 8.9 no. 4). *Plaited hair-style* (Fig. 8.7 nos. 5, 10) and *hair-style with alternately hatched sections* (Fig. 8.7 nos. 1, 4, 8) are hardly found outside Group H2 and can be considered diagnostic of this group, as can hair *contoured with a dotted line only* (Fig. 8.6 no. 6; Fig. 8.7 nos. 1, 4, 5) and the more unusual details



Fig. 8.7 Group H2: Selection of dies. 1: IK 203 Vü-C, Skåne (M 12:2). 2: IK 282 Hov-A, Nord-Trøndelag (M 3:5). 3: IK 308 Nebenstedt-B, Niedersachsen (M 5:9). 4: IK 121 Maen-C, Halland (M 11:1). 5: IK 1: Ågedal-C, Vest-Agder (M 10:5). 6: IK 50 Near Esrom Sø-C, Sjælland (M 8:22). 7: IK 105 Lellinge Kohave-B, Sjælland (M 5:2). 8: IK 279 Holmetorp-A, Öland (M 4:18). 9: IK 81 Near Hjørring-C/Stejlbjerg(?), North Jutland (M 13:19). 10: IK 300 Gummersmark-C, Sjælland (M 6:20). 11: IK 215 Aversi-C, Sjælland (M 7:22). 12: IK 273 Near Hjørring-A/Stejlbjerg(?), North Jutland (M 3:16).

Ausgewählte Brakteaten der Gruppe H2.

crescent-filled hair-style, decorated top of hair, and pretzel-shaped ear (not illustrated).

The Roman rounded hair-style has almost disappeared in **Group H3** and the diadems appear mostly in stylized forms, like in figure 8.8 nos. 1, 6, 7, 9–12. Four types of motif-detail can be considered diagnostic of this group. The two most numerous are the *sweeping hair-style* where the hair starts vertically from the forehead and continues unbroken to the tip of the knot (Fig. 8.8 nos. 6, 8), and the *dots below the eyelid* (Fig. 8.8 nos. 10, 11). Rarer are the *framed nose/eyebrow-curve* (Fig. 8.8 no. 12) and the *triangular ear* (not illustrated).

Characteristic of **Group H4** is the frequent use of *chip-carving*, which, *inter alia*, may appear as infill in the relief

hair-style (Fig. 8.9 nos. 2, 5–6). Also characteristic is the *horizontal hair-style* where the hair starts horizontally over the forehead (Fig. 8.9 no. 4), as well as a *triangular eye* (Fig. 8.9 nos. 4–6). Complete diadems are found no more, but the parallel lines between the hair and the back of the animal found, for instance, on figure 8.9 no. 6 may be considered as the last survivals of the diadem ties. Nor do the heads at the nape appear in Group H4. They may have been replaced by the *animal or bird heads at the forehead* (Fig. 8.9 no. 6) which, like the *breath-signatures at the nose* (Fig. 8.9 no. 6), belong primarily to Group H4.

Much more could be said about the occurrence and development of other seriated details, like eyes, ears, contours, infilling of hair-style, etc., but this must be

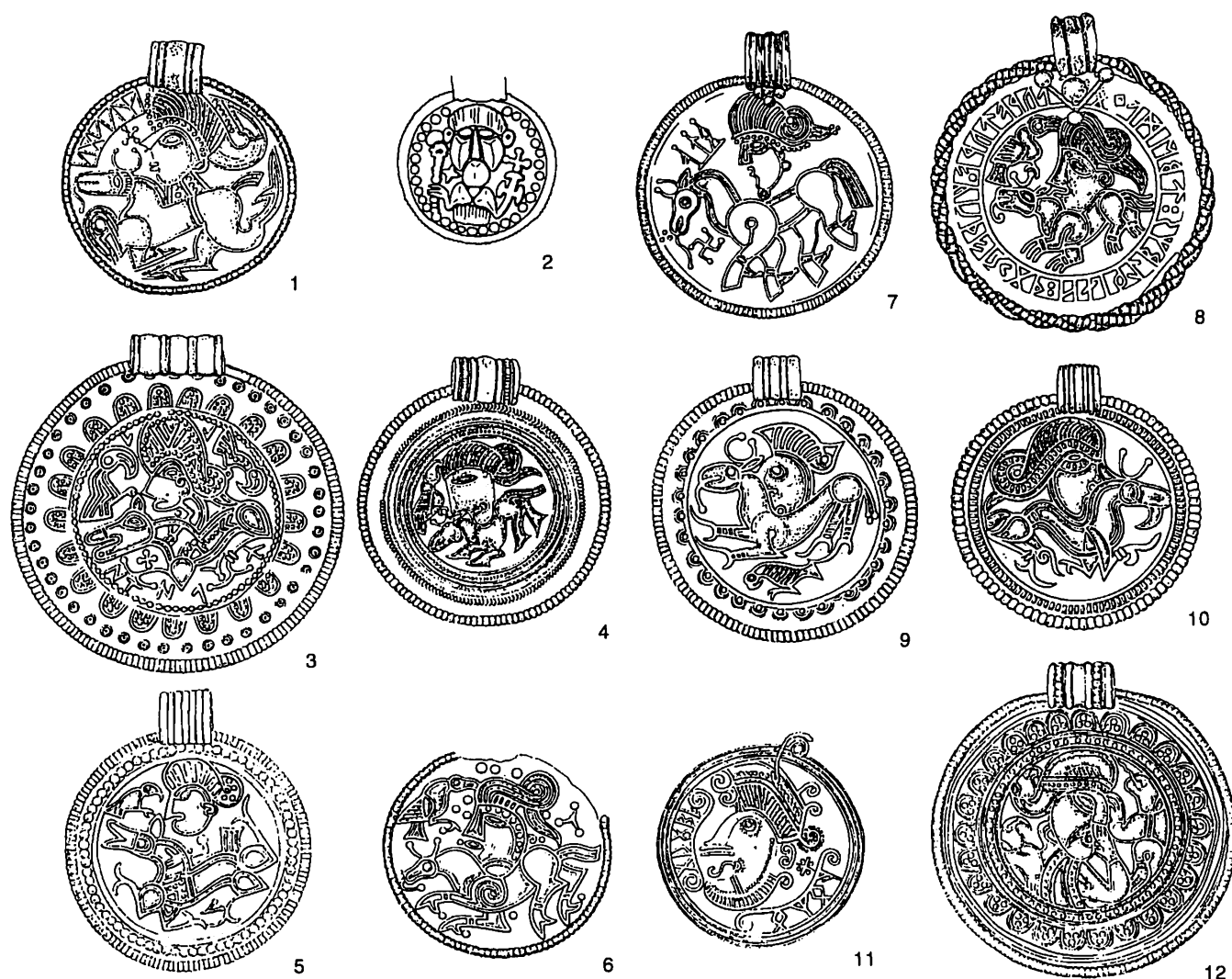


Fig. 8.8 Group H3: Selection of dies. 1: IK 244 Fredrikstad-C, Østfold (M 8:3). 2: IK 391 Gudme II-B, Fyn (Axboe 1987). 3: IK 25 Bjørnsholm-C, North Jutland (M 7:3). 4: IK 220 Near Böja-C, Västergötland (M 13:22). 5: IK 96,1 Kläggeröd-C, Skåne (M =7:2). 6: IK 19 Bakkegård-C, Bornholm (M 14:9). 7: IK 185 Tjurkö (II)-C, Blekinge (M 14:17). 8: IK 377,1 Near Vadstena-C, Östergötland (M 14:11). 9: IK 178,1 Sojs-C, Gotland (M 14:20). 10: IK 4 Åkarp-C, Skåne (A 238/2). 11: IK 76 Wurt Hitsum-A, Friesland (M 4:12). 12: IK 187 Tossene-A, Bohuslän (M 4:22); this die is placed in the transitional zone H3/H4.

Ausgewählte Brakteaten der Gruppe H3.

reserved for Hauck et al. (1985-) vol. 4. Generally speaking my investigation seems to conform to Mackeprang's intuitive chronology (1952): a development from Roman-inspired pieces with soft, low relief to a Germanic style with a frequent use of chip-carving. I have not compared these results with Malmer's chronology (1963) as his seriation uses other elements, though the basic principle of gradual change remains the same.

As shown in figures 8.6–8.9, A-, B- and C-bracteates occur in all four groups (*contra* Bakka 1973, 54f., who considered that 'not a single A-bracteate' should be referred to Mackeprang's Period 3; similarly Hines 1984, 201f.). This is further demonstrated in figure 8.10. As definitely the most numerous of the seriated types (see

IK 3,1 p. 76) the C-bracteates naturally dominate the picture, apart from Group H1 where the A-type is predominant. It should, however, be remembered that the A-type is the most likely to be affected by the 'renaissance'-phenomenon mentioned, where renewed inspiration from Roman prototypes may result in anachronistic 'typologically early' bracteates. Thus the number of A-bracteates in Group H1 may be too high, although a larger share here than later is to be expected. For the rest of the diagram the proportions between the three types seems surprisingly stable; it is not the case that the A- or B-bracteates disappear much earlier than the C-bracteates.

I shall not comment in detail on the local seriations for

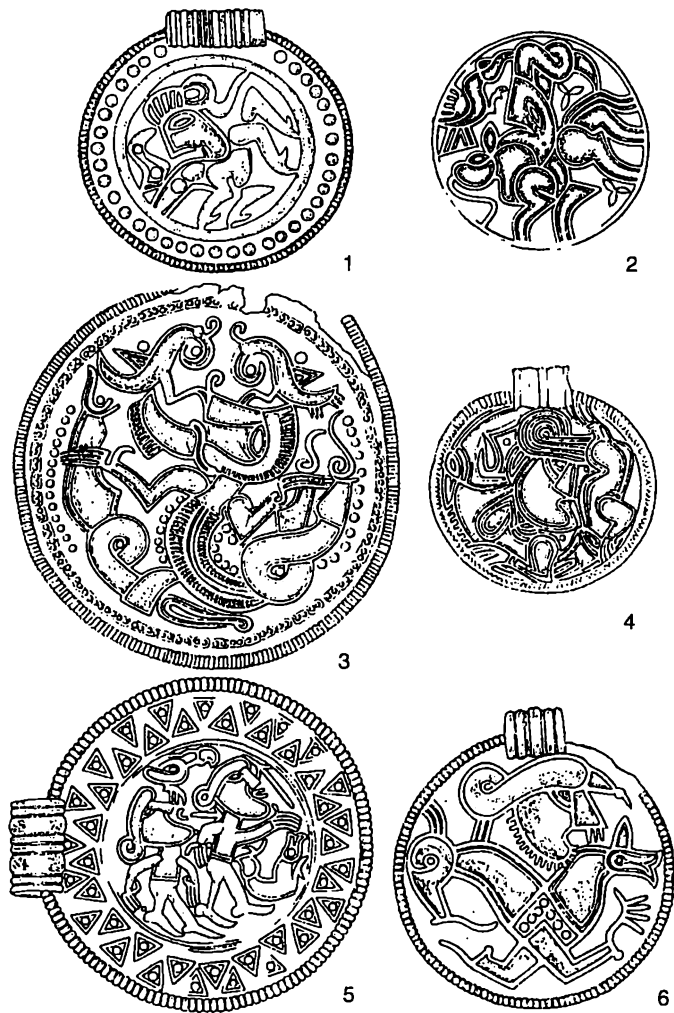


Fig. 8.9 Group H4: Selection of dies. 1: IK 280 Holmgårds Mose-C, North Jutland (M 13:34). 2: IK 334 Silleby Mellangården-C, Södermanland (M 14:10). 3: IK 176 Söderby-B, Uppland (M 5:3). 4: IK 120,2 Haugan-A, Vestfold (M 4:23). 5: IK 6 Års-B, North Jutland (M 6:6). 6: IK 46 Dokkum(?) -C, Friesland (M 7:16).

Ausgewählte Brakteaten der Gruppe H4.

Norway and southern Scandinavia (Fig. 8.3–8.4) but just draw attention to a few points. As already mentioned, the curves of the two correspondence analyses are slimmer than that of the general seriation, as was to be expected. But it is also evident that most of the southern Scandinavian dies lie in the left (i.e. early) half of the curve in figure 8.3, while the right (late) part is much more sparsely filled. The Norwegian dies in figure 8.4 show the opposite situation: few early pieces and more later. This would indicate that bracteate production started in southern Scandinavia, as already claimed by Mackeprang (1952, 29f.) and suggested by Malmer (1963, 195). It also fits well with the fact that 16 of the 22 dies in Group H1 come from southern Scandinavia. On the other hand southern Scandinavia is

still represented by 9 of the latest 37 dies (Group H4 proper, excluding the transitional zone H3/H4), so that production here probably continued to the end of the bracteate period.

The material from southern Scandinavia, like the general seriation, permits a division in four groups (S1–S4). As almost half of the total material comes from southern Scandinavia the divisions in these two seriations can be coordinated quite well; however the groups appeared somewhat clearer in the smaller and more homogeneous body of material so that it appeared reasonable to let Groups S2 and S3 overlap slightly. In the Norwegian seriation only the transition between the two latest groups could be synchronized with the transition H3/H4, and the earlier Norwegian dies could only be divided into two groups. We thus get the groups N1–N3.

The relationship between the general and the local seriations is illustrated in figure 8.11. The basis for this comparison is the general seriation, with Group H1–H4 at the top of the diagram. Below is shown where the dies of Group S1–S4 and N1–N3 are placed in the general seriation. It can be seen that the divisions for southern Scandinavia correspond pretty well with the general seriation (the scattering at the group divisions is due to some extent to the seriation method), and that dies from southern Scandinavia are present from start to end of the general seriation. In respect of Norway, it is evident that production starts late: there are no Norwegian dies in Group H1 and relatively few in H2. The bulk of the Norwegian bracteates are placed in the later half of the sequence.

One more thing should be said about the Norwegian seriation. To obtain the parabola in figure 8.4 it was necessary to remove four dies from the database: IK 24 Bjørnerud-A (M 4:17), IK 146 Røgenes-C (M 9:25), IK 244 Fredrikstad-C (M 8:3) and IK 331 Selvik-A (M 4:19). Before that the curve was much more blurred and the dies in question tended to form a third arm at the top of the parabola. This may indicate that the shape of the curve is not determined by chronological factors alone, or that the objects in question do not conform to the same line of development as the rest (pers. comm. Karen Høilund Nielsen). In this case the explanation could be that the four bracteates were imported, perhaps from western Sweden/southern Scandinavia. None of them were, however, placed very early in the Norwegian development, neither in the general seriation nor in the Norwegian, so that it seems unlikely that they should be considered as early imports which might have given an impetus to indigenous Norwegian bracteate production.

In the general seriation the human dot-and-circle eyes (e.g. Fig. 8.6 nos. 5–6) were concentrated at the early and late ends of the sorted matrix and thus disturbed the correspondence analysis. They were therefore omitted as chronologically insignificant and are not included in the diagrams in figures 8.1–8.2. But they fit nicely into the local diagrams: for southern Scandinavia in the early part (with one late exception), for Norway in the late part. Here, then, we may have an example of local variation.

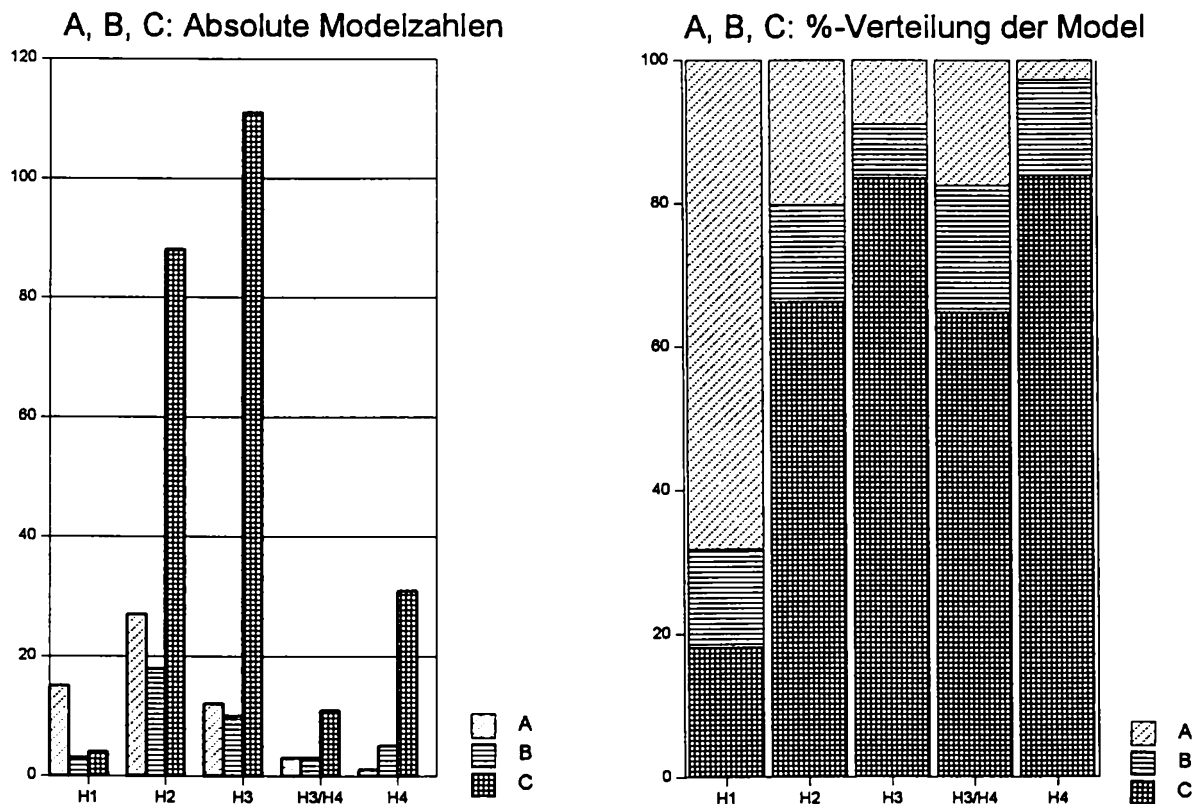


Fig. 8.10 The occurrence of A-, B- and C-dies in Group H1–H4. Left: absolute numbers, right: percentages. Vorkommen von A-, B- und C-Modellen in den Gruppen H1 – H4. Absolute Häufigkeiten links, Prozente rechts.

The correlation of the D-bracteates with my seriation is an important matter, but unfortunately there is no straightforward solution. Though animals occur on all types of bracteates, the details of the animals are mostly so different from those of the A- to C-bracteates that it seems impossible to analyse them together, as D-bracteate animals are mostly executed in one of the developed variants of Style I (Haseloff's Stilphase D), in some cases even with tendencies to symmetry and ribbon-band style pointing forward to Style II (see Haseloff 1981, 216–30). No secure technical links like tool-identities in punch-marks or loops have yet been established (on a few possible loop-identities, see Axboe 1982, 37f.). Find-combinations with A- to C-bracteates occur practically only in hoards, which are to be treated with some care for detailed chronological purposes. However, some points can be made.

An examination of the degree of wear in finds combining C- and D-bracteates seems to indicate that the D-bracteates begin later and also may continue longer than the C-bracteates. In Norwegian graves where A- to C-bracteates occur relatively frequently, only three single D-bracteates have been found. This may be another indication of a later dating for the D-type (Bakka 1973, 59), at least for the start of its production. In my seriation there is a concentration of A- to C-bracteates from graves in the first half of Group H3. Some bracteates from graves are placed later, but only one after the end of H3. This

may indicate that the D-bracteates start when the custom of placing bracteates in graves was in decline, i.e. in the later part of H3. The combinations in Norwegian hoards may also, with some caution, be taken to indicate that the D-bracteates started somewhere in H3.

From a more general stylistic point of view can it be noted that the D-bracteates all show rather high relief, often even chip-carving. On the A- to C-bracteates high relief occurs from the beginning of Group H2 but becomes dominant only in H3, while chip-carving is diagnostic of Group H4. Square-headed brooches with band-shaped animals of Haseloff's Stilphase C–D, which must be considered both a parallel and a *sine qua non* for the style of many D-bracteate animals, start in Nissen-Meyer's Stadium 5 (Nissen Meyer 1934). In Norwegian graves, bracteates from 8 A- to C-dies are combined with such brooches: 2 from Group H2, the rest from around the middle of H3 to H4.

Taken together, these indications may point to the production of the D-bracteates beginning some time during Group H3, while to judge from their wear they may have continued later than the A- to C-bracteates.

The animals of some F-bracteates have their closest relatives on D-bracteates while others seem related to animals on C-bracteates. The occurrence of runes and swastikas on some F-bracteates also provides a link to the C-bracteates, and not to the very latest as runes become

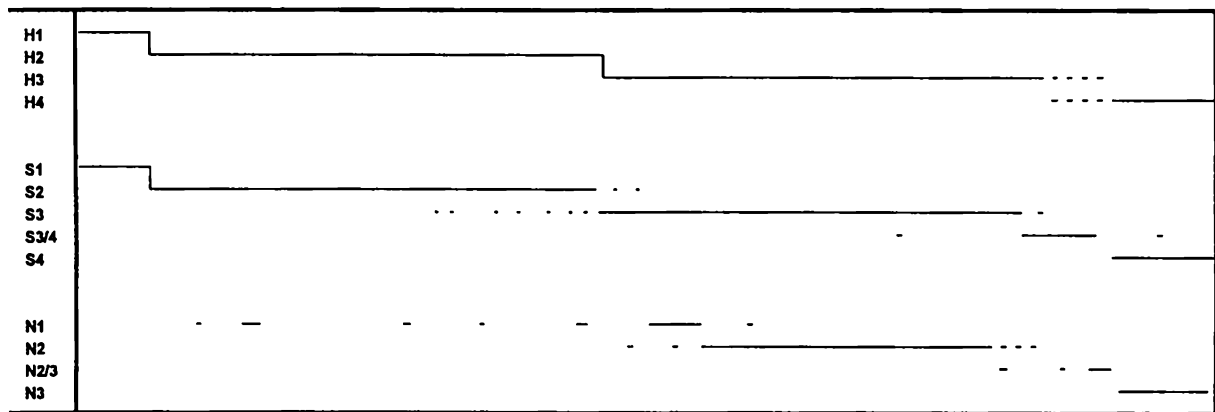


Fig. 8.11 The local seriesations for southern Scandinavia (Groups S1–S4) and Norway (Groups N1–N3), compared with the general seriesation of the large human heads (Groups H1–H4).

Die regionalen Seriationen für Südschweden (Gruppen S1 – S4) und Norwegen (Gruppen N1 – N3) im Vergleich zur Gesamtseriation der großen menschlichen Häupter (Gruppen H1 – H4).

rare in the later part of the development of the A- to C-bracteates and not are found in Group H4 (Axboe, forthcoming). Thus the F-bracteates can be supposed to run parallel with (at least part of) the C- and D-bracteates.

As for the external chronology it is evident that the gold bracteates in Scandinavia belong to the Migration Period (Danish: *ældre germansk jernalder*; Swedish and Norwegian: *folkevandringstid*). It is, however, a problem that in Scandinavia graves with gold bracteates are found almost exclusively in Norway (Bakka 1973) with only a few finds in central Sweden and on Gotland.

Thus most of the Scandinavian bracteates are single finds or come from hoards. Some of the hoards include other datable objects like brooches, scabbard mounts, or even solidi. The latter are evidently datable, but there is much debate over when and how they reached Scandinavia, how they were used here, and how long it may have taken before they were buried (e.g. Fagerlie 1967; Kyhlberg 1986; Fønnesbech-Sandberg 1989). Malmer has pointed out that the combinations of solidi and D-bracteates would allow for the latter to begin as early as c. A.D. 475 (Malmer 1977), the date otherwise proposed for the beginning of Style I (Haseloff 1974a, 14). I would not follow Malmer that far but instead point to the hoard from Bostorp on Öland, with 3 C-bracteates and a gold spiral ring, which were deposited in a pot together with a rather unusual collection of 6 solidi (IK 221–223; A 189a; Fagerlie 1967, find no. 90b): 1 of Libius Severus (461–65), 1 of Anthemius (467–72), 1 of Glycerius (473–74) and 3 of Leo I (457–74). Fagerlie considers this (and some other Öland finds) to have been buried soon after c. 475 (1967, 153f.), and although her theses of devastating attacks as the reason for the deposition of the Öland hoards may be challenged, the period after c. 475 may still be a reasonable date for the formation of the Bostorp hoard. A similar date of deposition

is proposed by Herschend (1980, 252f.) and Kyhlberg (1986, 67f. and Tab. 44, Find No. 90b). Both the coins and the bracteates are somewhat worn, which may be an indication that they were of about the same age when deposited. All three bracteates are placed in the first part of my Group H2. Here we also find the C-bracteate from Rynkebygård on Fyn (IK 147, M 6:30, catalogue no. 64), which was found together with five solidi: 1 of Valentinian III (425–455), 1 of Marcian (450–457) and 3 of Leo I (457–474), a gold spiral ring and a gold ingot. The bracteate is rather worn. Kyhlberg considers this hoard to have been deposited at around the same time as Bostorp (1986, Tab. 44, Find No. 193).

Thus both the Bostorp and the Rynkebygård bracteates seem to have been deposited during the years after 475, after a period of use resulting in distinct wear.

Salin and Bakka have pointed out the close resemblance between the animals of the relief brooch from Gummersmark and the C-bracteate from Fyn (Bakka 1973, Fig. 1); both, for instance, have what Salin labelled 'Vimose-heads' with a marked nostril separated from the eye through two or three transverse lines. The transverse lines with an eventual nostril can be found on some other bracteates, which in my seriation occur from the beginning of Group H2 to the transition H3/H4 (e.g. Fig. 8.8 no. 3). On relief brooches this detail is common in Haseloff's Stilphase A and B and he considers it diagnostic of early Style I (1974a, 13), but it does also occur, though more rarely, in Stilphase C and D. The Gummersmark brooch is itself typical of his Stilphase A (1981, 176); the Fyn bracteate (IK 58; M 6:19) is placed among the first dies of my Group H2. Other features from early Style I which occur on bracteate animals are the use of contour lines not only as outer contour but also around the separate parts of the animals (thighs etc.), which is

diagnostic of Style I as opposed to the Nydam Style (Haseloff 1984, 111f.); and the closely set parallel lines across the bodies of the animals, characteristic of Stilphase B (Haseloff 1974a, 9), although on the bracteates usually only part of the body can be filled this way (e.g. IK 33 British Museum-C M 6:21, IK 79 Hjørslunde-C M 8:21, IK 82 Højgård-C M 10:12, IK 122 Gummersmark-C M 8:4, IK 289–290 Kjellers Mose-C M 10:10–11). Most of these dies are placed in Group H2, a few in H3. The pointed-oval transverse lines in the body of the animal on IK 59 Fyn-C (M 8:18) may be compared with the similar lines occurring in Stilphase A (Haseloff 1981, 108ff.).

The use of rounded relief surrounded by contour lines is diagnostic of Haseloff's Stilphase A; in the Nydam Style contour lines (especially the internal ones) are not yet common, in Stilphase B the relief is flat (Haseloff 1984, 112f.). Both the human heads and the animals of the A- to C-bracteates have mostly more or less rounded relief, but in Group H4 many human heads show chip-carving, and this tendency is found on the animals too. This may be a parallel to the development in Stilphase C–D, albeit expressed in a slightly different way. The ribbon-like bodies of Stilphase D-animals are found on many D-bracteates, while the only attempt to adapt this style on a C-bracteate would seem to be the strange piece from Chippenham in Cambridgeshire (IK 228, A 307e), placed in Group H4.

When discussing the style of the gold bracteates one should, however, bear in mind that their pictures are not merely ornamentation. Both the A- to C-bracteates and the D-bracteates had an amuletic character beside their value as ornaments, as already acknowledged by Haseloff (1981, 217) and elaborated by Karl Hauck in numerous papers (most recently Hauck 1994a–b). They were executed in the style of the period, but it is conceivable that their stylistic development may have been impeded by their amuletic function. Nor could the horse-like animals of the C-bracteates simply develop into D-bracteate beasts, for although it may seem strange to discuss the 'zoology' of fabulous animals, they are quite different sorts of creatures and the D-bracteate monsters can be traced back to several different Roman prototypes (Hauck et al. 1985-Vol. 3, 1, 15–36).

The 'ornamentation' of the relief brooches and other Nydam Style and Style I objects also includes Germanic adaptations of different Roman monsters (Haseloff 1986) and may have had symbolic or apotropaic functions, though this subject has been less thoroughly explored. I shall not venture further into this, but simply draw attention to the complicated interplay between the style and its spiritual contents, which may influence any examination of prehistoric 'ornamentation' and its development.

It must also be kept in mind that the stylistic development of the Migration Period is anything but straightforward. The Sösdala and Nydam Styles are considered to be at least partly contemporaneous, and so are Nydam Style and early Style I. Haseloff stresses that although he

has labelled his stylistic phases A–D, they are not to be taken strictly as successive steps in a development (e.g. 1984, 112f.). Only Stilphase A is considered to be the substratum for the rest of the phases (1981, 174) while these may be more or less parallel developments. Stilphase C and D especially seem closely related, and as a matter of fact Haseloff, in a lecture of 1971, did not yet distinguish between these two (published as Haseloff 1974b, 379; cf. 1974a, 10, where C and D do appear as separate phases). We have quite a few examples of elements from more than one Stilphase (or even the Nydam Style) being combined in the same find or even on the same object: the Overhornbæk brooch, Snartemo V (sword, buckle, gold foil on glass), Högom mound 2 (Ramqvist 1992, 144ff.), to name but a few.

But let us return to the problems of the gold bracteates and their place in the chronology of the Migration Period. I have found no elements on the gold bracteates proving a connection with the Nydam Style as defined by Haseloff (1981, 8ff.; 1984, 112f.). As already stated, the animals of the C-bracteates are closely connected with early Style I (Stilphase A and to some extent B). Although many A-bracteates lack animals to be compared with the general development of the animal styles, and one might thus postulate that they could have been manufactured before the beginning of Style I, my seriations give me no reason to suppose that the A-bracteates should start significantly earlier than the C-bracteates. Thus I would presume that the start of the production of the gold bracteates was contemporary with the development from the Nydam Style to early Style I. It would fit nicely with the Bostorp and Rynkebygård hoards mentioned above if this transition should be dated somewhat earlier than c. 475; Näsman has argued for a start of Early Style I around the middle of the 5th century, running for a time parallel with the later part of the Nydam style (1984, 70). Moreover several weapon graves containing Style I have recently been dated surprisingly early, to around the middle of the 5th century (Bemmann and Hahne 1994).

But almost no matter how the early bracteates are dated there will be a problem with any hypothetical continuity from the medallion-imitations, several of which are securely datable to the Late Roman Iron Age. It is open to discussion whether the gap can be bridged by the few stray finds of medallion-imitations and the related pieces which were excluded from my seriation. A possible example could be the Gotlandic series IK 286,1–4, with three medallion-imitations, two of which were found in Late Roman Iron-age graves, and one 'bracteate' (A 212a) struck with the avers die. Unfortunately the latter has no secure context but may, according to Nerman (1935, 7 and find no. 126), have belonged to an early Migration-period cremation.

It is also worth noticing that, although solidi showing the emperor's head in profile were still being issued through the first half of the 5th century (Fagerlie 1967, Pl. I–IV, VI, XIII, XIV) and the first bracteate makers thus may have used relatively contemporary prototypes, it is evident that

at least some bracteates were copying coins of the first half of the 4th century, like figure 8.6 no. 1 with its recognizable Constans-inscription. As it is impossible that the bracteates should have started so early, this illustrates the long survival of the Roman coins as possible sources of inspiration for the bracteate makers.

The date of the end of the bracteate production in Scandinavia must coincide with the transition to the Vendel Period (Danish: *ynge germansk jernalder*; Swedish: *vendeltid*; Norwegian: *merovingertid*), assuming that at least the D-bracteates with their harbingers of Style II (Haseloff 1981, 216–30) continued until the end of the Migration Period. This transition has been dated to c. 550/75 (Ørsnes 1966, 207) or 560/70 (Hines 1984, 31f., 1992, 83), but in the later years there has also been a tendency to an earlier dating c. 520/30 (Lund Hansen 1992, 185; Jørgensen 1990, 50f.). This earlier dating is based on a synchronization of the Scandinavian weapon graves with the Continental chronology, starting with Birgit Arrhenius' revision of the dates of the rich Vendel graves (1983). She paralleled the earliest Vendel graves X, XI, XII, and XIV with their ornamentation in Vendel Style A and B to Ament's AM III (560/70–600; Ament 1977; Arrhenius 1983, 64) and would place the transition phase to the Vendel Period around 550, corresponding to AM II (520/30–560/70; Arrhenius 1983, 68). The weapon sets of the Vendel-period graves on Gotland have subsequently been investigated by Anne Nørgård Jørgensen (1992), who aligned the beginning of her earliest phase with the transition AM I/AM II, i.e. c. 530 (Nørgård Jørgensen 1992, 18ff.). This absolute date has apparently been transferred to the general chronology for the transition from the Migration to Vendel Period, including the brooches and other jewellery (see for example Jørgensen 1994, Abb. 122–124), thus also affecting the gold bracteates and the general style history of the time.

A key problem in this discussion is obviously the equation 'start of Vendel Period = start of AM II' which must underlie the early date of the transition from Migration to Vendel Period. This equation is based on the weaponry, which in this period appears to have developed uniformly over large areas (Nørgård Jørgensen 1992, 20) in contrast to the more local female dress accessories which traditionally have formed the backbone of the chronology in Scandinavia (Ørsnes 1966; Højlund Nielsen 1987). The synchronization of the male and female chronologies has been attempted through horizontal stratigraphy on Bornholm, 'with all the necessary reservations for this uncertain method of dating' (Jørgensen 1990, 44) and Gotland (Nørgård Jørgensen 1992, 22ff.). But especially in respect of the Bornholm material I have not been able to find the basis for the repeated claims for a transition Migration/Vendel Period around 520 or in the following decade. On the contrary, Lars Jørgensen's diagram (Jørgensen 1990, Fig. 41), based upon the weaponry and the horizontal stratigraphy mentioned above, equates Højlund Nielsen's Phase 1B with AM III. Phase 1A he has (in my opinion correctly) criticized for being a mixture of types from

both the Migration and the Vendel Periods, partly caused by the seriation of mixed finds (1990, 23ff.). Thus the start of Phase 1B, the first phase containing purely Vendel-period material, is dated to 560/70, in good agreement with Ørsnes (1966) and Arrhenius (1983, 68). Even if some of the Vendel-period material included in Phase 1A actually should predate Phase 1B would it correspond to Arrhenius' date of the 'transitional phase', c. 550. Meanwhile, Anne Nørgård Jørgensen's examination of the Kobbeå 1–Vendel XIV-horizon seems to correlate the early Vendel Period with Schretzheim Stufe 3 (565–590/600) and thus AM III (Nørgård Jørgensen 1991, 227).

The equipment of Phase 1 of the Vendel-period weapon graves on Gotland is compared with Schretzheim Stufe 1–2 (525–565/70), but for some reason the Gotlandic Phase 1 is dated only to 530/40–560/70 (Nørgård Jørgensen 1992, 20). There seems no reason to question the Vendel-period character of this material; some mounts even seem to display ornamentation in Style B (Nørgård Jørgensen 1992, Fig. 4). Here, too, a synchronization between male and female chronologies through horizontal stratigraphy is attempted and an acceptable agreement reached, but unfortunately only for finds later than the crucial early phases of the Vendel Period. And again, there appears no justification for letting the Vendel Period start already 520/30.

How can the gold bracteates contribute to this discussion? Within Scandinavia there are only limited possibilities, as already mentioned, but we should consider the more numerous bracteates found in England and on the Continent. Just like the relief brooches, which were also both imported and imitated, they represent Scandinavian influence which can be dated in English and Continental graves. Karen Højlund Nielsen has summarized this evidence in a diagram (1987, Fig. 16), but the bracteates can be examined in greater detail, as seen in figure 8.12. Some of the bracteates may be exports from Scandinavia while others are local products inspired from these, e.g. the light-weight bracteates found on the Continent (Axboe and Hauck 1985, 101f.; Axboe 1987, 80f.), the English silver bracteates, and the silver mounts of bracteate design from Bradstow School and Rhenen. I have not distinguished between imports from Scandinavia and local products as the latter must be dependent on the former, and as the Scandinavian pieces do not seem to have initiated local developments of any lasting importance, unlike, for instance, the acceptance of Style I among the Alamanni and Langobards. The two groups of bracteates will be broadly contemporaneous, and in many cases the origin of specific pieces will be debatable.

Figure 8.12 records the datable grave finds of bracteates of Scandinavian make or tradition in England and on the Continent. The diagram includes 56 bracteates and 3 examples of *Preßblech* (stamped foil) made from bracteate dies, as well as 2 loops possibly from bracteates. 42 different dies are represented. Generally I have used other authors' datings of the finds, for the Continental finds

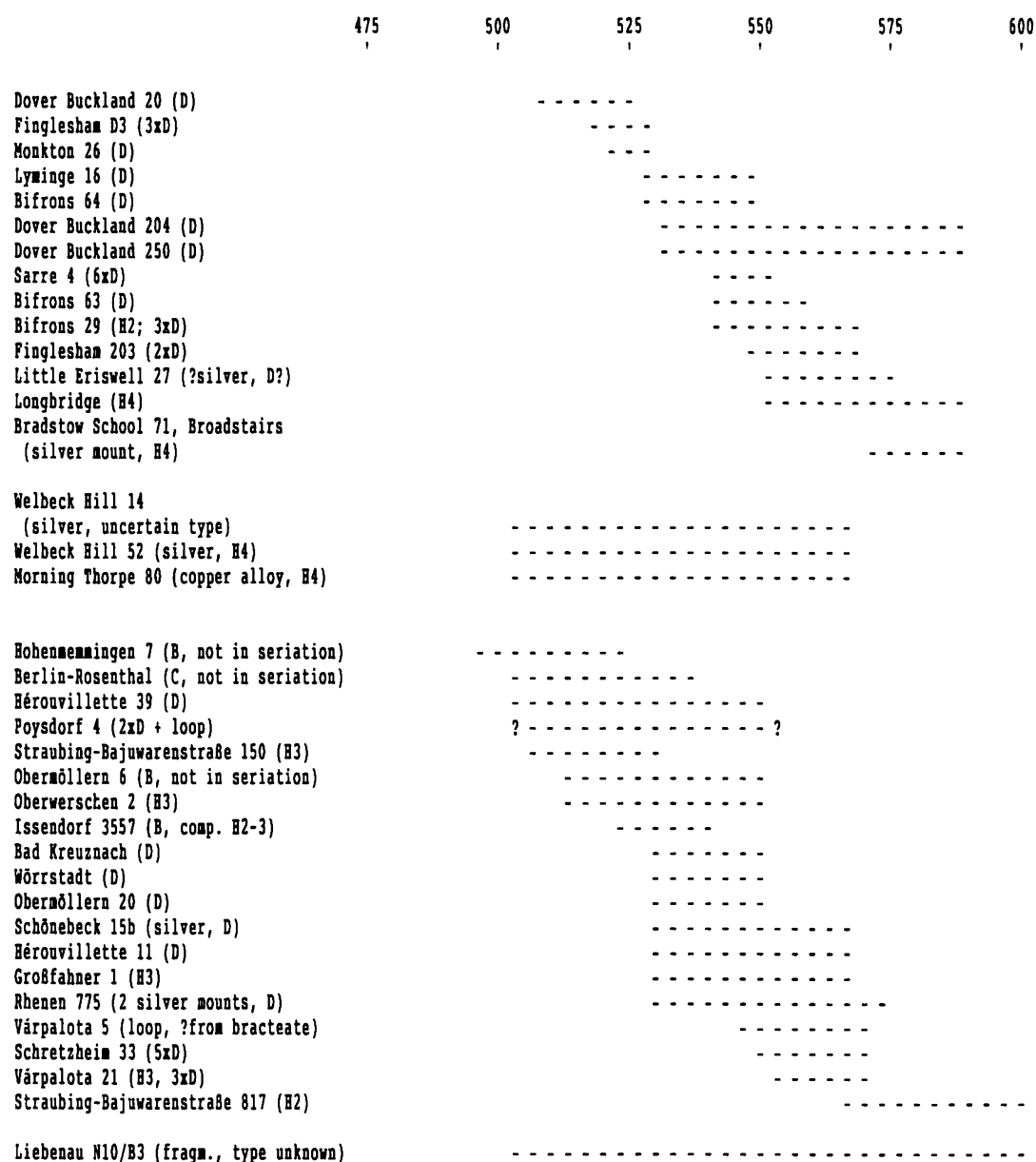


Fig. 8.12 Scandinavian bracteates and local imitations found in datable graves in England and on the Continent. For details, see text and Appendix C.

Skandinavische Brakteaten und lokale Imitationen aus datierbaren Gräbern in England und auf dem Kontinent (vgl. Anhang C).

adjusted with information kindly provided by Claudia Theune; references and datings can be found in Appendix C. When indicated in the literature I have used dates of deposition, without considering the degree of wear etc. This must be kept in mind when comparing with my bracteate chronology, as the latter is fundamentally a typologically based chronology of production. For each find, it is indicated which group the bracteates are referred to in my seriation or if they are of D-type.

Although the datings of the finds are indicated in absolute terms, the general chronological framework is Ament's system (1977), which many finds are directly

or indirectly referred to in the literature. Several English finds have only been dated '6th century' or the like (Welbeck Hill etc.). They have therefore been given proportionate room in figure 8.12. The same applies to the Continental finds not attributed to just one specific phase (Rhenen 775, Liebenau N 10/B 3, Hérouvillette 39).

It is evident from figure 8.12 that most of the datable finds outside Scandinavia belong to AM II. Only a few finds may be earlier (hardly by much) and very few later. The bulk of the finds are D-bracteates (38 bracteates and 2 *Preßblech*, from 27 different dies), but B- and C-types

do occur with 10 bracteates from 8 dies, and 6 bracteates and 1 *Preßblech* from 6 dies, respectively.

It is no surprise that B- and C-bracteates from the small Group H1 are absent, but perhaps noteworthy that only 2 dies belong to Group H2, while H3 and even the rather small H4 each are represented by 4 dies – perhaps another indication that the latter two groups are more or less parallel with the D-bracteates.

Thus the bracteate influx is being recorded almost exclusively in AM II-graves, including finds dated rather late in the period. This makes it difficult for me to believe that their production ceased in Scandinavia before 520/30 or even 520, as is to be inferred from Lars Jørgensen's dating of the transition Migration/Vendel Period (520/30: Jørgensen 1988, 20 and 1990 Fig. 41 p. 51; 520: Jørgensen 1989, 181 and 1994, 533 with Abb. 122–124). And if Martin's revision of the transition AM I/II is accepted (Martin 1989), would that imply a date of c. 510 instead of 520/30 for the end of the Migration Period in Scandinavia?

I have not been able to see whether the datings for the transition in Scandinavia are to be regarded as dates of production or dates of deposition. I would expect the difference to be no more than at most 20 years or so on average and would find it difficult to see the majority of the bracteate finds outside Scandinavia as long-treasured heirlooms, exported only in the final phase of bracteate production, or as local derivatives.

On the other hand the English and Continental deposition of bracteates of Scandinavian make or tradition seems, by and large, to end in the period around 550/60. This would make an end of production at say 530/40 acceptable and thus accord with the datings of Arrhenius (1983) and Højlund Nielsen (1987) for the beginning of the Vendel Period proper.

Acknowledgements

Thanks to Deutsche Forschungsgemeinschaft, the Danish Research Council for the Humanities and the National Museum of Denmark for financing my work; to Claudia

Theune and Birte Brugmann for information on their dating of Continental and English finds; and to Cathy Haith for information on the Dover-Buckland finds.

DEUTSCHE ZUSAMMENFASSUNG

Für den Auswertungsband von 'Die Goldbrakteaten der Völkerwanderungszeit' habe ich eine innere Chronologie der A-, B- und C-Brakteaten erstellt, und zwar mit Hilfe von Korrespondenzanalysen und Kombinationsdiagrammen der Details der großen menschlichen Häupter. Dadurch konnten vier typologische Gruppen H1–H4 umrissen werden (Abb. 8.6–8.9). Diese sind zwar ein typologisches Konstrukt, geben aber sicherlich die allgemeine stilistische Entwicklung zuverlässig wieder. Die Brakteatenproduktion begann in Südschweden, während die ältesten norwegischen Brakteaten erst der Gruppe H2 angehören (Abb. 8.11). Die späten A-, B- und C-Brakteaten sind dagegen in Norwegen relativ häufiger als in Südschweden. Die D-Brakteaten setzen nach Fundkombinationen und stilistischen Überlegungen während der Gruppe H3 ein.

Eine absolute Datierung des Beginns der Brakteatenproduktion bleibt wegen des Mangels an Grabfunden und der allgemeinen Probleme der skandinavischen Chronologie schwierig. Sie kann mittels stilistischer Vergleiche mit dem frühen Stil I sowie einiger Münzdatierungen auf die Zeit um oder nach 450 n. Chr. geschätzt werden. Späte Brakteaten kommen in englischen und kontinentalen Gräbern zahlreich vor, wo sie mittels der lokalen Chronologien in die erste Hälfte des 6. Jahrhunderts eingeordnet werden können, einige sogar noch später (Abb. 12 mit Anhang C). Dadurch werden nicht nur die Brakteaten datiert, sondern zugleich wird ein Beitrag zur absoluten Datierung der späten Völkerwanderungszeit Skandinaviens gewonnen. In den letzten Jahren wurde der Übergang zur Vendelzeit in die Zeit um 520/530 n. Chr. angesetzt. Dies erscheint nach der Brakteatenchronologie als zu früh; eher liegt dieser Übergang im zweiten Drittel des 6. Jahrhunderts.

APPENDICES

Appendix A. Descriptions of the types in figure 8.2, with the German equivalents of the type names

The types are listed in seriated order as in the diagram, figure 8.2. For each type the German name, an English translation, references to examples in figures 8.6–8.9 and in some cases also to type-specimens in IK are given, together with a short description in most cases. Definitions and discussions of problematic pieces must be found in Hauck et al. (1985-) vol. 4.

Type-name, with description if appropriate	German type-name	Type-name, with description if appropriate	German type-name
<i>B-shaped ear</i> (Fig. 8.6 nos. 1 left, 3).	B-förmiges Ohr	<i>Multiple-string diadem</i> (Fig. 8.6 nos. 2,4,5; Fig. 8.7 no. 7). Two or more rows of beads; no contour lines.	Diadem: Mehrfache Perlreihen
<i>Central jewel in diadem</i> (Fig. 8.6 nos. 1–2,4; IK 59, 240). The frontal part of the diadem is specially emphasized, e.g. with a rosette or extra beads, which must, however, be an integral part of the diadem.	Stirnjewel im Diadem	<i>Single-string diadem</i> (Fig. 8.6 no. 3; IK 45, 299). Single row of beads; no contour lines.	Diadem: Perlreihe ohne Kontur

Type-name, with description if appropriate	German type-name	Type-name, with description if appropriate	German type-name
<i>"De luxe" diadem</i> (Fig. 8.7 nos. 1,4; IK 54). The diadem is decorated with circles, crosses, leaves, etc., and may have contour lines.	Prachtdiadem	<i>Hatched hair-style</i> (e.g. Fig. 8.6 nos. 1–6; IK 57,2, 59, 68). Hair shown with straight, curved or angled lines rising vertically or radially above the face. Excluded are dies with <i>Sweeping hair</i> or <i>Horizontal hair-style</i> .	Haarsträhnen
<i>Rounded hair-style</i> (Fig. 8.6 nos. 1–6; Fig. 8.7 nos. 2,3,6 left). Hair at the back may be indicated, but not turned upwards.	Kalottenförmige Frisur	<i>Oval eye with pupil</i> (e.g. Fig. 8.6 nos. 1,2,4; Fig. 8.7 nos. 1,2,4–12). Eye with an oval or pointed oval contour line and marked pupil or eyeball.	Auge: Oval mit Pupille
<i>Comma-shaped ear</i> (Fig. 8.6 nos. 2,4; Fig. 8.7 nos. 2, 4,7,12). C-shaped, but not symmetrical around the horizontal axis.	Kommaförmiges Ohr	<i>Animal/bird head at nape</i> (Fig. 8.7 nos. 6–8; Fig. 8.8 no. 12). The hair-style ends with an animal's, snake's or bird's head.	Tierkopf im Nacken
<i>Dotted hair contour alone</i> (Fig. 8.6 no. 6; Fig. 8.7 nos. 1, 4,5). No contour line.	Haar: Perlsaum allein	<i>Dots outside the hair contour line</i> (Fig. 8.7 nos. 11,12; Fig. 8.8 no. 1; IK 13,1, 93).	Haar: Äußerer Perlsaum
<i>Crescent-filled hair-style</i> (IK 62,1).	Frisur mit Bogen-Füllung	<i>Contoured beaded diadem dividing hair</i> (Fig. 8.7 no. 2; Fig. 8.8 no. 11; IK 48). The diadem is shown as a string of beads with a contour line above and below it. There must be a hair signature below the whole length of the diadem.	Diadem: Perlreihe mit Kontur im Haar
<i>Hair-style with (3 or more) alternately hatched sections</i> (Fig. 8.7 nos. 1,4,8; IK 89, 186).	Strähnenwechsel	<i>D-shaped ear</i> (Fig. 8.8 nos. 1,7; IK 37, 330). The ear is shown as one or more concentric crescents resting at both ends on the contour line of the head.	D-förmiges Ohr
<i>Linear diadem dividing hair</i> (Fig. 8.6 no. 1; 7 no. 6; IK 33, 251). No indication of beads. Hair signature is found both over and under (at least) the front part of the diadem.	Strichdiadem im Haar	<i>Spiral-shaped ear</i> (Fig. 8.6 no. 5; Fig. 8.7 nos. 5,6; Fig. 8.8 nos. 6,8). Curved or spiral-shaped line, one end of which is based on the contour of the head while the other end is free.	Schnörkelförmiges Ohr
<i>Eyebrow</i> (Fig. 8.7 nos. 6,9,10; IK 50, 140, 376, 2). Line or accentuated relief area over the eye.	Augenbraue	<i>Upturned hair-style</i> (Fig. 8.7 nos. 6–8,11; Fig. 8.8 nos. 1,12). The hair is bent up at the nape, but not so far that it touches the top of the head or its contour line.	Aufgebogenes Nackenhaar
<i>Plait</i> (Fig. 8.7 nos. 5,10; IK 49, 58).	Zopf	<i>Volute-shaped ear</i> (Fig. 8.8 nos. 3,11; IK 45, 380). C-shaped, symmetrical around the horizontal axis, with ends strongly curved.	Volutenförmiges Ohr
<i>C-shaped ear</i> (Fig. 8.6 no. 6; IK 49, 159). Symmetrical around the horizontal axis. The ends may curve slightly back.	C-förmiges Ohr	<i>Half-mask</i> (Fig. 8.8 nos. 3,5; IK 84, 110). Both front and rear corner of the eye are prolonged, and each of the ensuing lines ends at a contour line.	Maskenbinde
<i>Flat relief</i> as general impression of the head (IK 233).	Flaches Relief	<i>Dots inside the hair contour line</i> (Fig. 8.7 no. 10; Fig. 8.8 no. 3; IK 34, 75,3).	Haar: Innerer Perlsaum
<i>Pretzel-shaped ear</i> (IK 58, 349).	Brezelförmiges Ohr	<i>Contoured beaded diadem below hair</i> (Fig. 8.7 no. 8; Fig. 8.8 nos. 6,7,10,12). Placed between face and hair, at least in the front half of the head.	Diadem: Perlreihe mit Kontur unter dem Haar
<i>Cock'd hat</i> (IK 348). The shape of the hair-style is determined by the diadem with two loop-shaped ends.	Admiralshut	<i>Smooth hair-style</i> (IK 88). The interior of the hair-style shows neither hatching nor relief. Beads etc. may occur.	Haar: Glatte Fläche
<i>Decorated top of hair</i> (IK 57,2).	Frisur mit Federrand		
<i>Extended eye contour line</i> (Fig. 8.6 no. 2; Fig. 8.7 nos. 5,11; Fig. 8.8 no. 1). The rear corner of the eye is prolonged.	Lidstrich		
<i>Oval ear</i> (Fig. 8.6 no. 1 right; Fig. 8.7 nos. 10,11; Fig. 8.8 no. 5). Oval-, crescent- or kidney-shaped ear, drawn with a closed contour line. Infills of different shapes may occur.	Ovales Ohr		

Type-name, with description if appropriate	German type-name	Type-name, with description if appropriate	German type-name
<i>High relief</i> as general impression of the head, but without the ridges of chip-carving (IK 264, 276).	Hohes Relief	<i>Knotted hair-style</i> (Fig. 8.7 nos. 1,4,9,12; Fig. 8.8 nos. 5–10; Fig. 8.9 nos. 1,2,4–6). The hair is bent so far up at the nape that it touches or crosses the hair-style or its contour line.	Eingerolltes Haar
<i>Linear diadem below hair</i> (Fig. 8.8 no. 9; IK 15, 158). Two or more parallel lines dividing the face from the hair, in some cases continuing under the back hair. No indication of beads.	Strichdiadem unter dem Haar	<i>Breath at mouth</i> (Fig. 8.6 no. 4; Fig. 8.7 nos. 4,7,12; Fig. 8.8 nos. 6,11; Fig. 8.9 no. 4).	Mundatem
<i>Hair-style with contour line</i> (e.g. Fig. 8.6 no. 3; Fig. 8.7 nos. 3,6– 12). Is also recorded where there is an additional beaded contour.	Haar: Konturlinie	<i>Lower eyelid</i> (Fig. 8.8 nos. 7,12; Fig. 8.9 nos. 4,6).	Wangenbogen
<i>Contour around face,</i> as a contour line or a row of beads (e.g. Fig. 8.7 nos. 3–6,7–11).	Haupt: Kontur	<i>Horizontal hair-style</i> (Fig. 8.9 no. 4; IK 170). The lines of the hair start horizontally over the brow.	Waagerechte Haarsträhnen
<i>Sweeping hair</i> (Fig. 8.8 nos. 6,8; IK 37, 63, 313). The lines of the hair rise vertically from the brow and run parallel from there to the tip of the hair-style.	Geschwungene Haarsträhnen	<i>Breath at nose</i> (Fig. 8.8 no. 11; Fig. 8.9 nos. 3,6; IK 116, 327).	Nasenatem
<i>Dotted lower eyelid</i> (Fig. 8.8 nos. 10,11; IK 72,1, 296,1).	Punktiertes Unterlid	<i>Animal/bird head at forehead</i> (Fig. 8.9 no. 6; IK 180, 327).	Protome
<i>Triangular ear</i> (IK 120,1).	Dreieckiges Ohr	<i>Triangular eye</i> (Fig. 8.9 nos. 4–6; IK 119a, 201, 210). Two sides of the eye are an angle formed by the nose- and hair contours.	Dreieitiges Auge
<i>Open oval-shaped eye</i> (Fig. 8.8 nos. 5,10; Fig. 8.9 nos. 1,2). Oval or pointed oval contour line with no indication of eye-ball or pupil.	Offenes Oval-Auge	<i>Chip-carving</i> with sharp ridges as general impression of the head (IK 103, 151).	Kerbschnitt
<i>Framed nose/eyebrow-curve</i> (Fig. 8.8 no. 12; IK 191, 383, 386). Nose and eyebrow are drawn as one continuous relief line, framed by a contour line.	Nasen/Augenbrauen- Bogen	<i>Relief hair-style</i> (Fig. 8.8 no. 12; Fig. 8.9 nos. 2,5–6). The interior of the hair-style is rounded or ridged relief.	Haar: Relieffüllung

Appendix B. Die-links etc. in figure 8.5.

- a. IK 162,2 Darum-A (M 3:12; H1)
IK 162,1 Skonager-A (M 3:13; early H2)
After the production of the Darum bracteate the die was
reworked and a bird's head added at the nape.
- b. IK 162,2 Darum-A (M 3:12; H1)
IK 43 Darum-C (IK 43; H2)
Linked through the dot-and-circle punch.
- c. IK 49 Espelund-C (M 15:12; H3)
IK 60 Furulid-C (M 15:26; H2)
The same volute-shaped punch has been used in the border
zones. The loops may be also tool-linked (Axboe 1982,
37f.).
- d. IK 279 Holmetorp-A (M 4:18; H2)
IK 144,1 Ravlunda-C (same die as M 11:3; H2)
Both the volute-shaped and the two hatched triangle punches
occur on both bracteates.
- f. IK 312,1 Overhornbæk-A (M 3:13; H1)
IK 140 Overhornbæk-C (M 6:23; H2)
IK 110 Lindkær-C (A 86a; H3)
Linked through the unique runic borders with bird's head
terminations. The two C-bracteates appear at first sight to be
mirrored versions of the same motif, but the Lindkær piece
has a diminutive Protome which puts it in a late place in the
seriation. The A-bracteate is an obvious candidate for fresh
inspiration from a Roman coin.
- g. IK 119b Madla-C (loop, A 157/1; H3)
IK 119a Madla-C (M 13:9; H4)
The loop of IK 119a was made from the picture field of
another C-bracteate (IK 199b).

Appendix C. References to the datings used in figure 8.12.

The finds are listed in alphabetical order for England and the Continent respectively. Bracteates are referred to with their IK-number, type and, if possible, their group in my seriation.

Theune: Datings according to the chronology for south-west Germany kindly supplied by Claudia Theune (pers. comm. 16.4.1996 + 28.11.1996; cf. Roth and Theune 1988). However, for Straubing-Bajuwarenstraße 817 and Várpalota 21 I have not used the datings offered by Theune as they were based mainly on the beads found in the graves. The chronology of Merovingian beads seems still to be under construction, with both the contents and the datings of the groups currently subject to revision: see Theune-Vogt 1990; 1991; Sasse and Theune 1996).

A revised version of this survey of Continental finds will appear in Hauck et al. (1985–) vol. 4.

England

Bifrons 29 (M 311)

IK 23-B (H2), extremely worn. IK 410-D, 2 ex., both worn. IK 412,2-D, very worn; die-linked to Bifrons 64.

Deposited around the middle of the 6th century or possibly later (Hawkes and Pollard 1981, 346).

Brugmann, this vol.: Kentish Phase III.

Bifrons 63 (M 312)

IK 411-D, hardly worn.

Probably buried around the middle of the 6th century (Hawkes and Pollard 1981, 347).

Bifrons 64 (M 313)

IK 412,1-D, slightly worn; die-linked to Bifrons 29.

Deposited nearer c. 530 than 550 (Hawkes and Pollard 1981, 347).

Bradstow School, Broadstairs, grave 71 (A 314b)

IK 224: Silver mount with C-bracteate design (H4); hardly worn. Weapon grave with a Merovingian *tremissis* (A.D. c. 575) as Charon's obol.

Dover Buckland 20 (A 314d)

IK 421-D, very worn.

Bakka dates the grave to late Böhner II (1981, 24, 27). Evison 1987, 137: Late Phase 1 (475–525).

Dover Buckland 204

IK 580-D, worn (according to photo).

Kentish Phase IV or perhaps III (Preliminary dating, based on information from Cathy Haith, British Museum).

Dover Buckland 250

IK 582-D, very worn (according to photo).

Kentish Phase III or IV (Preliminary dating, based on information from Cathy Haith, British Museum).

Finglesham D3 (M 314)

IK 425-D, only slightly worn. IK 426,1-D, 2 ex., according to S. Hawkes both considerably worn; die-linked to Finglesham 203.

The deposition of the grave is dated c. 520–30 (Hawkes and Pollard 1981, 331f.; Bakka 1981, 27: Late Böhner II; Hines 1984, 21).

Finglesham 203 (A 314a)

IK 426,2-D, 2 ex., according to Hawkes and Pollard 1981, 356f. moderately worn; die-linked to Finglesham D3.

Possibly deposited not long after c. 550 (Hawkes and Pollard 1981, 338f).

Brugmann, this vol.: Kentish Phase IV/V.

Little Eriswell 27 (A 307a)

IK 293-D?. Vierck recorded fragments of a silver D-bracteate in the grave.

Probably buried after 550 (Hines 1984, 217).

Longbridge (M 306)

IK 114-C (H4), worn. Punch-linked with the associated disc pendant and silver armlet.

Hardly buried before c. 550, but on the other hand earlier than the end of the 6th century (Hines 1984, 214).

Lyminge 16 (A 314e)

IK 462-D, moderately worn.

Possibly second quarter of the 6th century (Hawkes and Pollard 1981, 347).

Monkton 26

IK 467-D, very worn.

Weapon grave, dated by Sonia Hawkes to c. 520/30 (Perkins and Hawkes 1984, 102ff.).

Morningthorpe 80 (A 307f)

IK 306-C: Two C-bracteates of copper alloy. Both damaged, but hardly markedly worn.

6th century (Hines 1984, 214).

Sarre 4 (M 309)

IK 493-D, 3 ex., all slightly worn. IK 494-D, hardly worn. IK 495-D, hardly worn. IK 496-D, distinctly worn.

Possibly deposited c. 540–550 (Hawkes and Pollard 1981, 350). Brugmann, this vol.: Kentish Phase III

Welbeck Hill 14 (A 305c)

IK 388, of uncertain type, silver; damaged, but also worn.

Welbeck Hill 52 (A 305d)

IK 387-C (H4), silver; very worn.

Both graves probably 6th century (Hines 1984, 218).

Continent

Bad Kreuznach (A 334c)

IK 408-D, worn.

Böhner IIIa (AM II; Clauß 1978, 136; Bakka 1981, 23).

Theune: Radiate brooches SW II D (530–550).

Berlin-Rosenthal (A 329a)

IK 322-C, not in seriation; only slightly worn.

Schmidt: Gruppe IIIa (AM II; 1961, 130).

Theune: The Thuringian *Zangenfibel* is typologically earlier than those in Schretzheim 197 and 219 (Schretzheim Stufe 1, 525/30–545/50; SW I C2 (510–530). Alignment with Werner's *norddanubische Phase* (489–526/57) seems reasonable.

Großfahner 1

IK 259-B: 3 bracteates, showing a woman en face (H3).

Schmidt: Late group IIIa or early IIIb (1961, 127).

Theune: Square-headed brooch SW II D (E) (530–550 (-570)).

Cfr. Nieveler and Siegmund, this vol., Rheinland Phase 4 (520/30–550/60).

Hérouvillette 11 (A 315b)

IK 440-D, worn.

Middle third of the 6th century (Hawkes and Pollard 1981, 347).

Hérouvillette 39 (A 315c)

IK 492,2-D; extremely worn; die-linked to IK 492,1 Sarre 90 and IK 492,3 Kent.

First half of the 6th century (Hawkes and Pollard 1981, 343).

Hohenmemmingen 7 (A 335a)

IK 278-B (not seriated), only moderately worn.

The grave contained two S-shaped brooches of Werner's Poysdorf-type, which is considered diagnostic for his *nord-danubische* phase (489–526/27; Werner 1962, 77f.). According to information from the excavator W. Kettner the brooches were only very slightly worn.

Theune: Possibly c. 500/early 6th-century. The S-shaped brooches have parallels in Weingarten 509 which, unfortunately, has too few types to be included in the Weingarten seriation. Both the brooches and the beads in the Weingarten grave would fit well into SW I C1 (490–510), and so would the string of beads including some large specimens in Hohenhemmingen 7.

Issendorf 3557

IK 574-B, showing a man en face; worn. Not in seriation; the human face can however be compared to the en face-bracteates of the Oberwerschen type, placed in Group H2 and H3.

According to Häblier the grave was constructed c. 520–40 (Häblier et al. 1997, 116).

Liebenau N10/B3 (A 324a)

IK 292: Bracteate fragment with rim and punched border; uncertain type, worn.

6th century (Häblier et al. 1997, 115)

Obermöllern 6 (M 332)

IK 132-B, not in seriation; very worn.

Schmidt: Gruppe IIIa (525–560), possibly early (1961, 14, 122, 130).

Theune: Kidney-shaped buckle, brooches, beads SW I C2 / II D (510–530/550).

Obermöllern 20 (M 333)

IK 477-D, moderately worn.

Schmidt: Gruppe IIIa (525–560; 1961, 139).

An identical Thuringian brooch was found in Schretzheim and a pair of similar small garnet disc brooches in Schretzheim 197 combined with two *Zangenfibeln*; both graves are dated to Stufe 1 (525/35–545/50; Koch 1977, 16).

Theune: Thuringian brooches, small garnet disc brooches SW II D (530–550).

Oberwerschen 2

IK 311-B, showing a woman en face (H3), worn.

Schmidt: First half to middle of 6th century (1961, 122, 139). The type of bow brooches found in the grave is placed in Gruppe IIIa Abb. 49 p. 90).

Häblier dates the grave to Schmidt Gruppe IIIa (Häblier et al. 1997, 116).

The two animal brooches (Type Herpes) have a parallel in Schretzheim 472, dated to Stufe 1 (525/35–545/50; Koch 1977, 16).

Theune: Animal brooches, silver pin, bow brooches SW I C2 / SW II D (510–530/550).

Poysdorf 4 (A 335c)

IK 484-D: Two unusually naturalistic D-bracteates + a loop for bracteate or pendant.

Early 6th century (Werner 1962, 58f., 75).

Theune: According to brooch and pot possibly SW II (530–570).

An earlier date might, however, be indicated by the combination in Alternerding 319 (Sage 1984) of a similar brooch with two *Fünfknoeffibeln*, which Roth and Theune date to SW I C1–2 (490–530; 1988, 30 Type 18).

Rhenen 775 (A 319a)

IK 486-D: Two silver mounts with D-bracteate design. Both damaged, but hardly worn.

The grave is only rather broadly dated to Böhner III; the shield boss is said to belong „probably to the middle to third quarter of the 6th century“ (Ypey 1983, 471).

Schönebeck 15b (A 331a)

IK 497-D silver; damaged but apparently only slightly worn.

Schmidt refers the grave to his Gruppe IIIa (1961, 139); it is not evident how far this dating is based on the bracteate.

Theune: Buckle with thickened tongue base, beads of Combination Group C: c. SW II D (E) (530–550 (-570)).

Schretzheim 33 (M 335)

IK 500-D; 5 D-bracteates, all very worn.

Schretzheim Stufe 2 (545/50–565/70; Koch 1977, 18–21).

Theune: SW II E (550–570).

Straubing-Bajuwarenstraße 150

IK 347-B (H3), rather worn.

Dated to the Irlmuth phase, possibly around the beginning of the 6th century (Geisler and Hauck 1987, 132).

Theune: 2 *Vierpaßfibeln*, 2 *Fünfknoeffibeln*, D-shaped buckle SW I C2 (510–30).

Straubing-Bajuwarenstraße 817

IK 348-C (H2), extremely worn.

Second half 6th century, cf. Schretzheim Stufe 3 (565–590/600; Geisler and Hauck 1987, 138f.).

Várpalota 5 (A 336b)

Loop from gold bracteate or pendant.

c. 530? (Werner 1962, 45).

Deposited 546–68 (Martin 1989, 134).

Theune: 2 bow brooches, 2 garnet disc brooches, shield-on-tongue buckle SW II E (550–570).

Várpalota 21 (A 336c)

IK 206-B (H3). IK 559-D: 3 D-bracteates.

Possibly deposited before 568 (Werner 1962, 36f., 45f.).

Wörrstadt (A 334b)

IK 566-D, very worn.

Brooches similar to Schretzheim Stufe 1 (525/35–545/50; Clauß 1978, 135f.).

Theune: 2 small garnet disc brooches, 2 bow brooches, shield-on-tongue buckle SW II D (530–550).

ABBREVIATIONS

- A: Axboe 1982 (Catalogue numbers)
 IK: Hauck et al. (Catalogue numbers)
 M: Mackeprang 1952 (Plate numbers: M 8:13, etc.; catalogue numbers: M 314, etc.)

BIBLIOGRAPHY

- Ament, H. 1977. 'Zur archäologischen Periodisierung der Merowingerzeit'. *Germania* 55, 133–40.
- Arrhenius, B. 1983. 'The chronology of the Vendel graves'. In J. P. Lamm and H.-Å. Nordström (eds), *Vendel Period Studies*, 39–70. Stockholm.
- Axboe, M. 1982. 'The Scandinavian Gold Bracteates. Studies on their manufacture and regional variations. With a supplement to the catalogue of Mogens B. Mackeprang'. *Acta Archaeol* 52, 1–100.
- Axboe, M. 1987. 'Die Brakteaten von Gudme II'. *Frühmittelalterliche Stud* 21, 76–81.
- Axboe, M. 1992. 'Skizze der Forschungsgeschichte zur Chronologie der Goldbrakteaten'. In K. Hauck (ed.), *Der historische Horizont der Götterbild-Amulette aus der Übergangsepoche von der Spätantike zum Frühmittelalter*, 103–10. Göttingen.
- Axboe, M. 1993a. 'Gold bracteates and correspondence analysis'. In J. Andresen, T. Madsen and I. Scollar (eds), *Computing the Past. Computer Applications and Quantitative Methods in Archaeology*, 333–42. Århus.
- Axboe, M. 1993b. 'Korrespondensanalyse og kombinationsdiagrammer – en nyttig kombination'. *KARK Nyhedsbrev* 1993 Nr. 2, 7–12.
- Axboe, M. forthcoming. 'Die innere Chronologie der A-C-Brakteaten und ihrer Inschriften'. In K. Düwel (ed.), *Runeninschriften als Quellen interdisziplinärer Forschung*, 231–52. Berlin (1998).
- Axboe, M. and Hauck, K. 1985. 'Hohenmemmingen-B, ein Schlüsselstück der Brakteatenikonographie' (Zur Ikonologie der Goldbrakteaten XXXI). *Frühmittelalterliche Stud* 19, 98–130.
- Axboe, M. and v. Padberg, L. 1977. 'Ein C-Brakteat als Ösenröhre'. *Acta Archaeol* 48, 239–42.
- Bakka, E. 1973. 'Goldbrakteaten in norwegischen Grabfunden: Datierungsfragen'. *Frühmittelalterliche Stud* 7, 53–87.
- Bakka, E. 1981. 'Scandinavian-type gold bracteates in Kentish and continental grave finds'. In V. I. Evison (ed.), *Angles, Saxons, and Jutes. Essays presented to J. N. L. Myres*, 11–35. Oxford.
- Bemmman, J. and Hahne, G. 1994. 'Waffenführende Grabinventare der jüngeren römischen Kaiserzeit und Völkerwanderungszeit in Skandinavien'. *Berichte Römisch-Germanische Komm* 75, 283–640.
- Benner Larsen, E. 1982–83. 'Værktøjsspor/På sporet af værktøj. Identifikation og dokumentation af værktøjsspor, belyst ved punselornamenterede genstande fra Sejlflod'. *Kuml* 1982–83, 169–80.
- Benner Larsen, E. 1985. 'The Gundestrup Cauldron. Identification of Tool Traces'. *ISKOS* 5, 561–74.
- Benner Larsen, E. 1987. 'SEM-Identification of Tool Marks and Surface Textures on the Gundestrup Cauldron'. In J. Black (ed.), *Recent Advances in the Conservation and Analysis of Artifacts*, 393–408. London.
- Clauß, G. 1978. 'Ein neuer Grabfund mit nordischem Goldbrakteaten aus Wörrstadt, Kr. Alzey-Worms'. *Archäol Korrespondenzblatt* 8, 133–40.
- Evison, V. I. 1987. *Dover: The Buckland Anglo-Saxon Cemetery*. London.
- Fagerlie, J. M. 1967. *Late Roman and Byzantine Solidi Found in Sweden and Denmark*. Numismatic Notes and Monographs 157. New York.
- Fonnesbech-Sandberg, E. 1989. 'Münzfunktionen in der Kaiserzeit und Völkerwanderungszeit Dänemarks'. *Frühmittelalterliche Stud* 23, 420–52.
- Geisler, H. and Hauck, K. 1987. 'Zwei Frauengräber von Straubing-Bajuwarenstraße mit Goldbrakteaten aus dem Norden' (Zur Ikonologie der Goldbrakteaten XXXIV). *Frühmittelalterliche Stud* 21, 124–46.
- Haseloff, G. 1974a. 'Salin's Style I'. *Medieval Archaeol* XVIII, 1–15.
- Haseloff, G. 1974b. 'Der germanische Tierstil. Seine Anfänge und der Beitrag der Langobarden'. In *Atti del Convegno Internazionale sul tema: „La civiltà dei Longobardi in Europa“ 1971*, 361–86. Accademia Nazionale dei Lincei, Quaderno N. 189. Roma.
- Haseloff, G. 1981. *Die germanische Tierornamentik der Völkerwanderungszeit. Studien zu Salin's Style I*. 3 vols. Berlin.
- Haseloff, G. 1984. 'Stand der Forschung: Stilgeschichte Völkerwanderungs- und Merowingerzeit'. In *Festschrift til Thorleif Sjøvold på 70-årsdagen*, 109–124. Universitetets Oldsaksamlings Skrifter, Ny rekke 5. Oslo.
- Haseloff, G. 1986. 'Bild und Motiv im Nydam-Stil und Stil I'. In H. Roth (ed.), *Zum Problem der Deutung frühmittelalterlicher Bildinhalte*, 67–110. Sigmaringen.
- Häbler, H.-J., Axboe, M., Hauck, K. and Heizmann, W. 1997. 'Ein neues Problemstück der Brakteatenikonographie: Issendorf-B, Landkreis Stade, Niedersachsen' (Zur Ikonologie der Goldbrakteaten LIV). *Stud zur Sachsenforschung* 10, 101–75.
- Hauck, K. 1994a. 'Gudme als Kultort und seine Rolle beim Austausch von Bildformularen der Goldbrakteaten' (Zur Ikonologie der Goldbrakteaten L). In P. O. Nielsen, K. Randsborg and H. Thrane (eds), *The Archaeology of Gudme and Lundeberg*, 78–88. Copenhagen.
- Hauck, K. 1994b. 'Altuppsalas Polytheismus exemplarisch erhellt mit Bildzeugnissen des 5.-7. Jahrhunderts' (Zur Ikonologie der Goldbrakteaten LIII). In H. Uecker (ed.), *Studien zum Altgermanischen. Festschrift für Heinrich Beck*, 197–302. Hoops Reallexikon Ergänzungsbände 11. Berlin.
- Hauck et al. 1985–. M. Axboe, K. Düwel, K. Hauck, L. v. Padberg et al., *Die Goldbrakteaten der Völkerwanderungszeit. Ikonographischer Katalog*. Münstersche Mittelalter-Schriften 24/1–3. Vol. 1, 1–3 1985, Vol. 2, 1–2 1986, Vol. 3, 1–2 1989, Vol. 4, in prep. Munich.
- Hawkes, S. C. and Pollard, M. 1981. 'The gold Bracteates from sixth-century Anglo-Saxon graves in Kent, in the light of a new find from Finglesham'. *Frühmittelalterliche Stud* 15, 316–70.
- Herzog, I. and Scollar, I. 1987. 'Ein "Werkzeugkasten" für Seriation und Clusteranalyse'. *Archäol Korrespondenzblatt* 17, 273–9.
- Hines, J. 1984. *The Scandinavian Character of Anglian England in the pre-Viking Period*. BAR British Series 124. Oxford.
- Hines, J. 1992. 'The Seriation and Chronology of Anglian English Women's Graves: a critical assessment'. In L. Jørgensen (ed.), *Chronological Studies of Anglo-Saxon England, Lombard Italy and Vendel Period Sweden*, 81–93. Copenhagen.
- Højilund Nielsen, K. 1987. 'Zur Chronologie der jüngeren germanischen Eisenzeit auf Bornholm. Untersuchungen zu Schmuckgarnituren'. *Acta Archaeol* 57, 47–86.
- Jørgensen, L. 1988. 'Family Burial Practices and Inheritance Systems. The Development of an Iron Age Society from 500 BC to AD 1000 on Bornholm, Denmark'. *Acta Archaeol* 58, 17–53.
- Jørgensen, L. 1989. 'En kronologi for yngre romersk og ældre germansk jernalder på Bornholm'. In L. Jørgensen (ed.) *Simlegård-Trelleborg. Danske gravfund fra førromersk jernalder til vikingetid*, 168–87. Copenhagen.
- Jørgensen, L. 1990. *Bækkegård and Glasergård. Two Cemeteries*

- from the Late Iron Age on Bornholm. Copenhagen.
- Jørgensen, L. 1994. 'Fibel und Fibeltracht: Römische Kaiserzeit und Völkerwanderungszeit in Skandinavien'. In *Reallexikon der Germanischen Altertumskunde* 8, 523–36. Berlin.
- Koch, U. 1977. *Das Reihengraberfeld bei Schretzheim*. Germanische Denkmäler der Völkerwanderungszeit A 13. Berlin.
- Kyhlberg, O. 1986. 'Late Roman and Byzantine Solidi. An archaeological analysis of coins and hoards'. In A. Lundström and H. Clarke (eds), *Excavations at Helgö X*, 13–126. Stockholm.
- Lund Hansen, U. 1992. 'Die Hortproblematik im Licht der neuen Diskussion zur Chronologie und zur Deutung der Goldschätze in der Völkerwanderungszeit'. In K. Hauck (ed.), *Der historische Horizont der Götterbild-Amulette aus der Übergangsepoche von der Spätantike zum Frühmittelalter*, 183–94. Göttingen.
- Mackeprang, M. B. 1952. *De nordiske Guldbrakteater*. Jysk arkæologisk Selskabs Skrifter 2. Århus.
- Malmer, M. P. 1963. *Metodproblem inom järnålderns konsthistoria*. Lund.
- Malmer, M. P. 1977. 'Chronologie der Solidi und Goldbrakteaten'. In G. Kossack and J. Reichstein (eds), *Archäologische Beiträge zur Chronologie der Völkerwanderungszeit*, 107–11. Bonn.
- Martin, M. 1989. 'Bemerkungen zur chronologischen Gliederung der frühen Merowingerzeit'. *Germania* 67, 121–41.
- Näsman, U. 1984. 'Zwei Relieffibeln von der Insel Öland'. *Prä-historische Zeitschrift* 59, 48–80.
- Nerman, B. 1935. *Die Völkerwanderungszeit Gotlands*. Stockholm.
- Nissen Meyer, E. 1934. *Relieffspenner i Norden*. *Bergens Mus Årb* 1934 Hist-ant rekke 4.
- Nørgård Jørgensen, A. 1991. 'Kobbeå Grab 1 – ein reich ausgestattetes Grab der jüngeren germanischen Eisenzeit von Bornholm'. *Stud zur Sachsenforschung* 7, 203–39.
- Nørgård Jørgensen, A. 1992. 'Weapon sets in Gotlandic grave finds from 530–800 A.D.: a chronological analysis'. In L. Jørgensen (ed.), *Chronological Studies of Anglo-Saxon England, Lombard Italy and Vendel Period Sweden*, 5–34. Copenhagen.
- Ørsnes, M. 1966. *Form og Stil i Sydsnkandnaviens yngre germanske jernalder*. Copenhagen.
- Perkins, D. R. J. and Hawkes, S. C. 1984. 'The Thanet Gas Pipeline Phases I and II (Monkton Parish), 1982'. *Archaeol Cantiana* 101, 83–114.
- Ramqvist, P. H. 1992. *Högom. The excavations 1949–1984*. Neumünster.
- Roth, H. and Theune, C. 1988. *SW ♀ I–V: Zur Chronologie merowingerzeitlicher Frauengräber in Südwestdeutschland*. Archäologische Informationen aus Baden-Württemberg 6. Stuttgart.
- Schmidt, B. 1961. *Die späte Völkerwanderungszeit in Mittel-deutschland*. Halle.
- Steuer, H., forthcoming. 'Datierungsprobleme in der Archäologie'. In K. Düwel (ed), *Runeninschriften als Quellen interdisziplinärer Forschung*, 129–49. Berlin (1998).
- Theune-Vogt, C. 1990. *Chronologische Ergebnisse zu den Perlen aus dem alamannischen Graberfeld von Weingarten, Kr. Ravensburg*. Kleine Schriften aus dem Vorgeschichtlichen Seminar 33. Marburg.
- Werner, J. 1962. *Die Langobarden in Pannonien. Beiträge zur Kenntnis der langobardischen Bodenfunde vor 568*. Munich.
- Wright, R. 1985. 'Detecting pattern in tabled archaeological data by principal components and correspondence analysis: Programs in BASIC for portable computers'. *Science and Archaeol* 27, 35–8.
- Ypéy, J. 1983. 'Ein Männergrab mit D-Brakteatenbeschlägen des fränkischen Gräberfeldes bei Rhenen, Provinz Utrecht, Niederlande'. *Frühmittelalterliche Stud* 17, 460–78.