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Debatt

Notes on Axboe's and Malmer's gold bracteate chronologies

After almost 30 years of near-continual work with the gold bracteates of the Migration Period, Morten Axboe (2004) has published a detailed and well-argued study of their chronology. It is an admirably solid yet accessible and transparent piece of work. I originally agreed to simply review the book, but rather than just praising it I have decided to show my keen interest in the subject by lifting the hood of Axboe's machine and fiddling a bit with it. Can it be made to run even better? And why exactly does not a 1960s engine built upon the same principles run equally well?

Axboe first sums up what is known about the manufacturing process for bracteates in 30 thoughtful pages and then moves on to the book's main theme: chronology. Note, to begin with, that Scandinavian production of gold bracteates was brief: about AD 450 to 540 according to Axboe, less than a century. This means that it was possible for a long-lived artisan to work in all the successive bracteate styles if active from, say, AD 465 to 525. It also means that to most archaeologists, the gold bracteate is a type that does not need subdivision. Find a gold bracteate and you know you are in the second half of the Migration Period, which is all the chronological resolution most of us can wish for.

But Axboe's goal is to establish a fine internal chronology for the bracteates. This he does with computer aided statistics: seriation and correspondence analysis. His typology treats the human heads depicted on bracteates of Montelius's types A, B and C and divides them into four chronological groups. The studied traits are for example the shape of the little golden men's eyes and ears and the details of their hairstyles. In order to keep ABC bracteates together under the same umbrella, no attention is paid to other parts of the motif such as the animal on the C

bracteates that make up the greater part of the material. Differences in use-wear among bracteates found together allow Axboe to provide an elegant separate solution to the problem of how C and D bracteates relate to each other in chronological terms.

But Axboe has not been able to define most groups in his ABC chronology on the basis of exclusive diagnostic traits, although he is explicitly aware that this would be highly desirable. This means that the published chronological scheme suffers from ambiguity. It is not stringently defined whether a given bracteate belongs to one or the other group of Axboe's. Without such a definition, a term such as "group 3" is meaningless outside the context of Axboe's own analysis and it is impossible to make logically valid statements about it.

I disagree with Axboe on a few points of methodology, the first two of which offer a solution to the problem of diagnostic traits. (For an extended discussion of these issues, see Rundkvist 2003, p. 65-68.)

1. In chronology work, seriation and correspondence analysis are means to an end, not ends unto themselves. They are steps on the way to a list of exclusive diagnostic traits.
2. Keeping long-lived traits in the database serves no purpose in chronology-building. Axboe seems to have felt that it had a value in itself to seriate as many units as possible, even such that had no diagnostic traits. As a secondary motivation, he also points to a few rare traits that would have been lost from the database otherwise. In my opinion, the goal should not be to seriate as many units as possible, but to concentrate as much chronologically relevant information as pos-

sible in the database, even if it means that half of the available material is left at the roadside through the process.

Long-lived traits should be tossed out so that the chronology for *most* units becomes clearer and more robust. Axboe notes that not all units can be assigned equally precise dates, but he does not act upon this insight. An object with a number of long-lived traits and a single uncommon one generally just fogs the seriation. Of course it receives a place somewhere in the diagram, but that does not mean that it has been precisely dated in relation to other pieces or that it has contributed usefully to the analysis.

If one finds, for example, that a trait only occurs in the second half of a seriation one is attempting to divide into four phases, then one should take note of this fact, mention it in the summary of one's chronology, and delete the trait from the database before continuing the analysis. The only practical reason to keep it in is if the seriation becomes discontinuous without it.

3. The absence of a typological element cannot form part of a type or phase definition, as this would be *argumentum ex silentio*. An object may lack a trait, but then it also lacks an endless number of other possible traits including the McDonald's logotype. The only logical way to assign e.g. an early date to an object is to identify the presence of early traits.

Looking, for instance, at the ears of the bracteate heads, one cannot say that the absence of a C-shaped ear is chronologically significant. The presence of a triangular one is. (Also, since most bracteate heads have an ear, one may identify "no ear at all" as a trait whose presence might be significant.)

Being a piece of good scholarship, Axboe's work offers ample opportunity for colleagues to repeat his experiments and perform variations on them. I approached his data with two main questions in mind:

1. Can one arrive at more stringent phase definitions if one removes non-informative typological elements from the dataset and re-analyses it?

2. Why is Malmer's 1963 seriation of the bracteates incompatible with Axboe's, when Axboe acknowledges Malmer's work as part of the methodological foundation of his own?

Re-analysis with variations

To avoid the influence of parallel local traditions, I set to work on Axboe's South Scandinavian subset of the database, published as combination diagram Taf. H and summarised on p. 160. It covers 150 bracteate dies and 46 typological traits.

First I removed all traits surviving for at least 75% of the width of the combination diagram on p. 160. Then three traits and three bracteate dies that disturbed the CA parabola. Then three more long-lived traits that connected the first three quarters of the seriation and hindered the recognition of diagnostic traits. Bracteate dies with less than two remaining traits were automatically discarded. A dataset of 83 dies and 26 traits remained.

Traits deleted due to longevity

- =M. Breath at mouth.
- =N. Breath at nose.
- AI. Oval eye with pupil.
- AL. Extended eye contour line.
- AO. Open oval-shaped eye.
- DS. Linear diadem dividing hair.
- HA. Uprturned hairstyle.
- HE. Knotted hairstyle.
- HK. Rounded hairstyle.
- HL. Hairstyle with contour line.
- HS. Hatched hairstyle.
- OC. C-shaped ear.
- OK. Comma-shaped ear.
- OO. Oval ear.
- OS. Spiral-shaped ear.
- RF. Low relief.
- RH. High relief.
- RK. Contour around face.

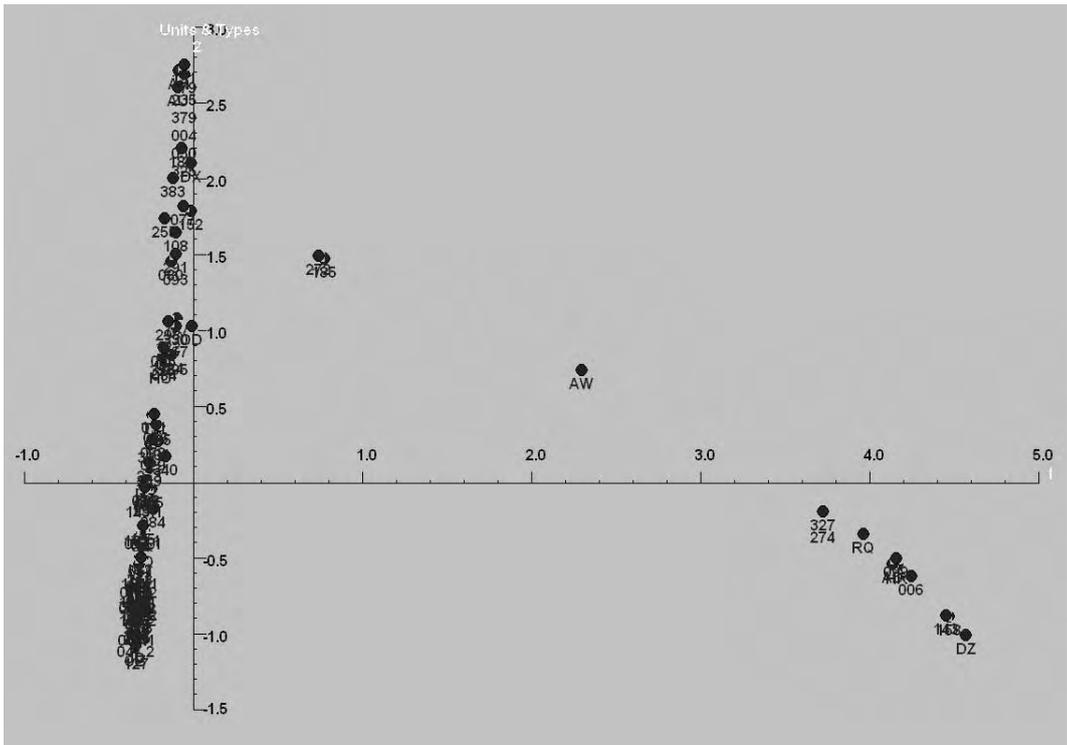


Fig. 1. South Scandinavian gold bracteates. Correspondence analysis of typological traits on human heads.

Traits and dies deleted because they disturbed the parabola

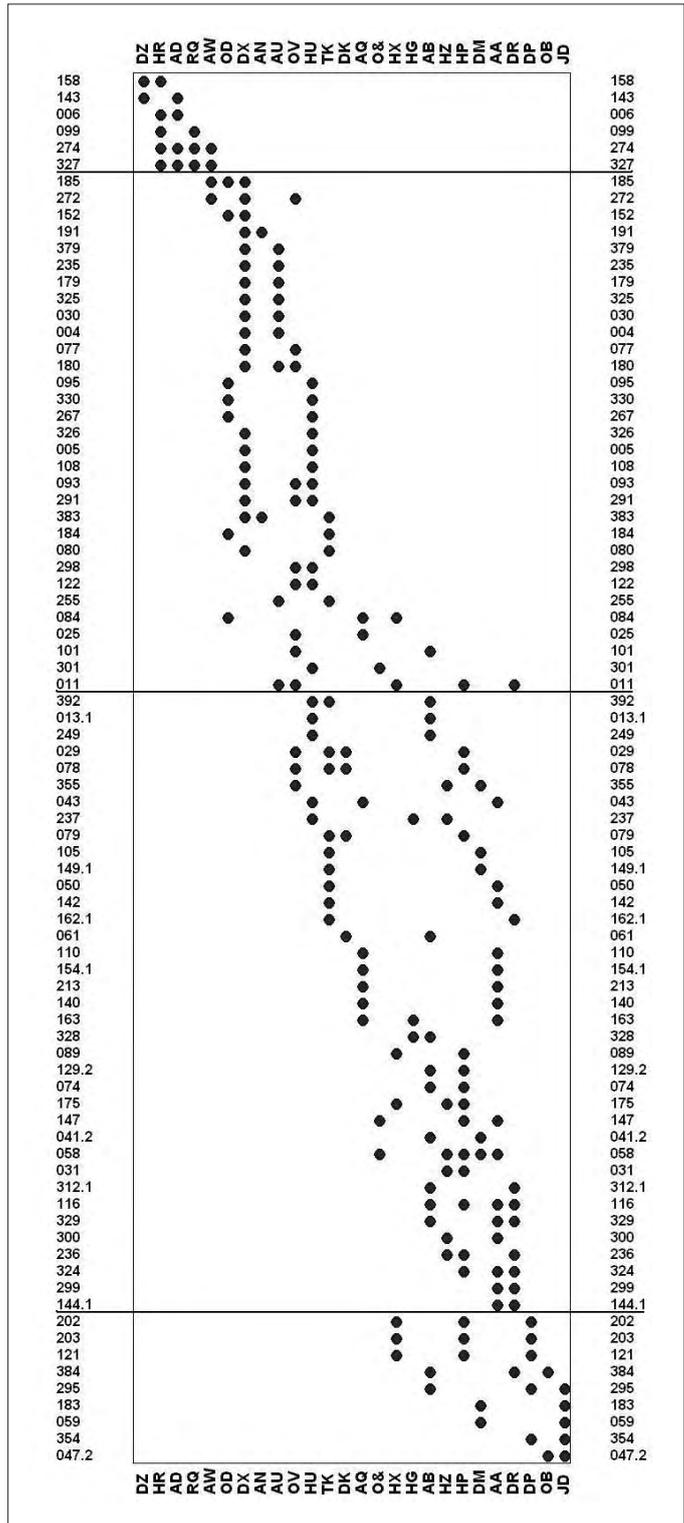
- HI. Dots inside the hair contour line.
- HV. Sweeping hair.
- PR. Animal/bird head at forehead.
- IK 32.1. Brille.
- IK 56. Fjärestad.
- IK 120.1. Maen.

The 83-member dataset seriated nicely (fig. 1-2) and allowed me to divide it into four groups, each with three or four diagnostic traits. Note that these are absolute type definitions, not sta-

tistical observations about traits being somewhat more common here than elsewhere. All South Scandinavian gold bracteates with a D-shaped ear belong to my group 3. A bracteate with none of this group's diagnostic traits does not belong to it.

Returning to the original 150-member database, this compacted chronology allows us to place 86 of the bracteates unambiguously in one of its four groups. The remainder must mainly date from the time of group 2 and 3, the peak decades of bracteate production around AD 500.

Fig. 2. South Scandinavian gold bracteates. Seriation of typological traits on human heads.



Diagnostic traits

(*n* in original 150-member database)

Group 1

JD: Central jewel in diadem (n=7). OB: B-shaped ear (n=2). DP: “De luxe” diadem (n=7).



Fig. 3. An example of chronological group 1, identified by a central jewel in the diadem (JD) and a “de luxe” diadem (DP). IK 295 Lundeberg-A. Diam. C 23 mm.

Group 2

AA: Eyebrow (n=19). HZ: Plait (n=8). HG: Smooth hairstyle (n=4).



Fig. 4. An example of chronological group 2, identified by an eyebrow (AA) and a plait (HZ). Note that this is an early example of the horse's thrown-up hind leg. IK 58 Fünen-C. Diameter c. 37 mm.

Group 3

AU: Dotted lower eyelid (n=9). AN: Framed nose/eyebrow curve (n=2). DX: Contoured beaded diadem below hair (n=27). OD: D-shaped ear (n=10).



Fig. 5. An example of chronological group 3, identified by a dotted lower eyelid (AU) and a contoured beaded diadem below the hair (DX). Note that this is a late example of the horse's beard. IK 180 Stenholts Vang-C. Diameter c. 28 mm.

Group 4

RQ: Chip carving (n=6). AD: Triangular eye (n=4). HR: Relief hairstyle (n=6). DZ: Linear diadem below hair (n=3).



Fig. 6. An example of chronological group 4, identified by a relief hairstyle (HR) and a linear diadem below the hair (DZ). Note that this is an extremely late example of the horse's beard. IK 158 Sigerslev-C. Diameter c. 26 mm.

Malmer's 1963 seriation

1963 saw the publication of Mats P. Malmer's classic *Metodproblem inom järnålderns konsthistoria*. In conversation, Malmer has told me that he wrote the book quickly and easily, as a coda to the mammoth doctoral thesis he had worked so long and hard at, 1962's *Jungneolithische Studien*. *Metodproblem* encapsulates Malmer's ideas about typology and demonstrates their applicability also outside the Neolithic (cf. Gräslund 1974).

The book's main case study deals with the gold bracteates, then recently made accessible in Mogens Mackeprang's 1952 book *De nordiske Guldbrakteater*. Malmer starts from Montelius's ABCD scheme, demonstrating that the A-C-D bracteates form a typological series: A) man alone, C) man and beast, D) beast alone. Axboe's work has to some extent confirmed this picture, showing however that the time span between the first A bracteate and the first C bracteate is typologically indistinguishable and must thus have been very short. Malmer also offers a manual but formally strict seriation of the C bracteates, dividing them into two well-defined groups on the strength of a few typological traits.

Axboe has looked at all bracteates with human heads, identifying traits exclusively of these heads. Working with the C bracteates separately, Malmer could look at the entire motif, including the horse-like beast. But this should not matter: any chronological change in the design of the beasts can be expected to correlate with the changes of the heads. Yet the two schemes are incompatible. This has bothered me since I read a preliminary presentation of Axboe's scheme (1999) in the anthology *The Pace of Change*.

Malmer's two groups are defined as follows.

Early C bracteates: rounded or knotted hairstyle or only the ends of a diadem at the back of the head. (These traits correspond to Axboe's HK and HE.) The beast commonly has a beard but never throws either of its hind legs up over its rump.

Late C bracteates: other hairstyles. The beast often throws a hind leg up over its rump but never has a beard.

A comparison of the two schemes shows immediately that Malmer and Axboe disagree about hairstyles. Both identify the rounded style as an early trait, which is easily done as it is typical of the Roman medals used as prototypes for the first bracteates. Axboe's work also shows it to have been fairly long-lived, which is why I threw it out of the re-seriation presented above. But the knotted style is also placed early by Malmer, while Axboe's seriation identifies it as very long-lived (cf. Bakka 1968, p. 18) and *late*.

To understand the relationship between the two schemes, I gathered data on the horses' beards and hind legs from the *Ikonomographischer Katalog* and entered them into Axboe's 150-member South Scandinavian dataset. (On a few runic bracteates, an *algiz* rune is placed under the chin of the horse, alluding to the beard. But I disregarded these cases.) Then I did repeated seriations and correspondence analyses, removing long-lived traits step by step until I arrived at a good parabola and seriation. The result surprised me.

The horses' beards and thrown-up legs seriate nicely and do not disturb the parabola. But in the light of the many traits Axboe has studied on the bracteate heads, it turns out that Malmer's two traits of the horses are a) both very long-lived, b) contemporaneous. Only twice do they occur together on South Scandinavian bracteate dies (IK 238 Ejby and IK 289 Kjellers Mose), but they are tightly joined by repeated combination with many other traits. This suggests that the two traits are not typologically independent.

The reason that the two traits avoid one another is not chronological. Malmer (p. 176) showed that it is not a matter of separate local traditions. What we are dealing with is most likely, in Malmer's (p. 173-175) terminology, a conceptual dependence: *begreppsligt beroende*. In other words, the horse with a beard was not intended as a depiction of the same horse as the one with a thrown-up hind leg. The traits for which Malmer suggested a chronological role are in fact iconographic attributes used to distinguish between two mythological characters (*contra* Bakka 1968, p. 34). Combining them would apparently have been like drawing a Dis-

ney character with both a duckbill and mouse ears, or sculpting a saint holding two keys in one hand and an axe in the other.

Malmer's interpretation, however, was not unreasonable. He applied the same logic that had allowed him to subdivide the Battle Axe Culture of the Middle Neolithic into five phases that have since been proven accurate. He briefly considered the possibility of conceptual dependence (p. 175-176), but discounted it on the grounds that the legs of beardless bracteate horses have various positions, many without any thrown-up rear leg. This shows that beardlessness did not force the horse's leg position. But judging from the studies above, this is actually because many C bracteate horses are iconographically anonymous, having been given neither of the two distinctive attributes that Malmer identified. (But there may also be other horse characters, identifiable by e.g. a tongue or harness straps.) The fact that the horse's beard is only combined with certain hairstyles on the man suggests that they too are iconographic attributes, that is, of a mythological character associated with the bearded horse. Bernhard Salin (1895, p. 91) noted that the bearded horse and the bird avoid each other, a fact that he interpreted in iconographical terms.

It has long been known that the composition of bracteate motifs was far from an exercise in free creativity. Like most art through the ages it was highly derivative. As shown most recently by Alexandra Pesch (2002; 2004), the bracteate dies can be sorted into families or copy lineages, where an original composition was copied with a great deal of accuracy. Artisans were clearly looking at finished bracteates while carving dies for new ones, as seen in cases where a motif (or even a runic inscription) occurs in two mirrored versions. This means that the frequency of various combinations of traits on bracteates is probably not a direct reflection of which were considered appropriate. We must assume a certain amount of slavish copying where artisans did not give much thought to (or did not actually know) whether the composition was iconographically correct, particularly in peripheral areas. But still, the original compositions that founded such copy lineages must have been judged iconographically correct somewhere, and in most cases

copies would also only have been made of motifs that were accepted as correct. So when certain traits avoid or attract each other for reasons that have nothing to do with chronology or geographical variation, it is reasonable to assume that it has to do with iconographic rules.

There are two main reasons that Malmer's chronological subdivision of the C bracteates does not work.

1. Too few traits considered. Gold bracteates are enormously complicated iconographical objects with many typological elements. As Axboe's work has shown, most of these are not relevant to chronology. In order to find such that are, a scholar must look at them all in conjunction, as suggested by Egil Bakka (1968, p. 13, 28-29, 47-48). But as Bakka found, this is impossible in practice without computer supported multivariate statistics.
2. A very brief production period. Malmer's five Battle Axe phases in the Middle Neolithic cover 350 years. With the C bracteates, he was trying to subdivide an artefact category whose entire production period was less than a century.

Conclusion

Summing up, this brief bracteate study has provided some interesting insights.

1. A four-phase chronology with stringent malmerian phase definitions can be dug out of Axboe's analysis with little effort.
2. Malmer's subdivision of the C bracteates is not chronologically useful. This is due to the highly unusual nature of the gold bracteates and to the unavailability of good computers in the early 1960s; not to any flaw in his methodological principles.
3. Gold bracteate iconography distinguishes not only between various mythological men with distinctive attributes, but also between at least two different mythological horses.

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