

MEDIEVAL BROOCHES FROM THE DUTCH PROVINCE OF FRIESLAND (FRISIA): A REGIONAL PERSPECTIVE ON THE WIJNALDUM BROOCHES. GENERAL INTRODUCTION

J.M. BOS

University of Groningen, Groningen Institute of Archaeology, Groningen, the Netherlands

ABSTRACT: From 1991 to 1993 excavations took place at the supposedly 'royal' site of Wijncaldum (Dutch province of Friesland). Among the finds were many metal items. It was decided to make an inventory of all Frisian metal finds, starting with the brooches. This would provide Wijncaldum with a context, otherwise it would become 'too special' indeed, apart from the jewellery there are no striking discrepancies between the Wijncaldum finds and the other brooches from Friesland. Many amateurs collaborated on this project. Almost 2000 brooches were recorded, of which over 1500 were medieval. This is an introduction to the catalogue.

KEYWORDS: the Netherlands, Friesland, Wijncaldum, brooches, metal detection, J. Zijlstra, amateur contributors.

1. INTRODUCTION

A cloak has been a powerful symbol in many cultures and religions throughout the ages. Its impact can be enhanced by the use of dye, woven patterns, or ornaments such as fur or bird's wings (*cf.* a possible example at the early medieval cemetery of Oosterbeintum; Prummel & Knol, 1991).

In early medieval (and other) times the finishing touch was the clasp that held the cloak in place: the brooch, to us a seemingly feminine attribute. Its symbolism may well have eclipsed that of the cloak. Such is the case with the famous 'royal' brooch from Wijncaldum, in the present Dutch province of Friesland (municipality of Harlingen), part of which was found in the 1950s, after which it was largely completed with finds by amateur archaeologists in the 1980s, and finds from the excavation campaigns (1990–1993). The latter were a joint venture of the universities of Groningen and Amsterdam (these excavations: *e.g.* Besteman, Bos *et al.*, 1993; Bos, 1995; Besteman, Bos *et al.* (eds), 1999; the brooch: *e.g.* Mazzo Karras, 1985; Bos & Zijlstra, 1991; Zijlstra, 1991a; Schoneveld, 1993; Schoneveld & Zijlstra, 1999; Nijboer & Van Reekum, 1999).

It was Mr Jan Zijlstra of Leeuwarden who led us to the site. Through his many contacts with amateur archaeologists using metal detectors, it was he who noted the importance of the site, and through his experience and professionalism pointed the way (*e.g.* Zijlstra 1990; 1991a; 1991b; 1992; 1993; 1994).

The Dutch *terpen* (coastal dwelling mounds) were subjected to large scale levelling in the 19th and early 20th centuries (*e.g.* Arjaans, 1991; Bos, 1995). The *terpen* region, however, still contains many mounds,

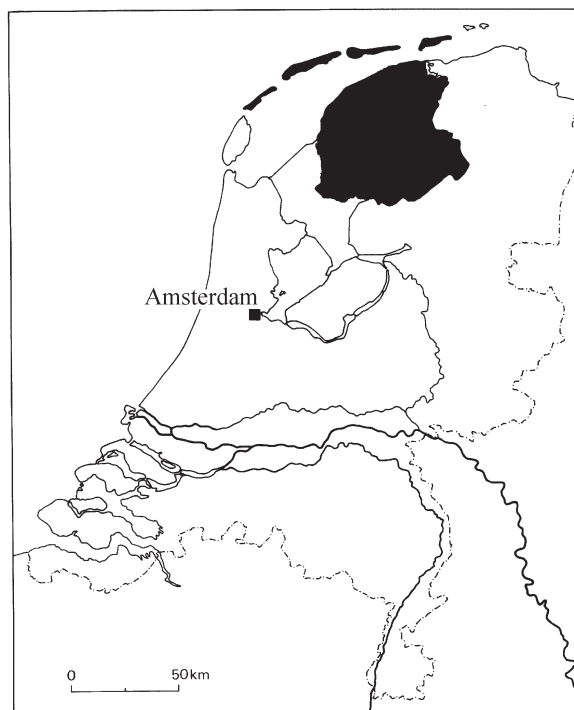
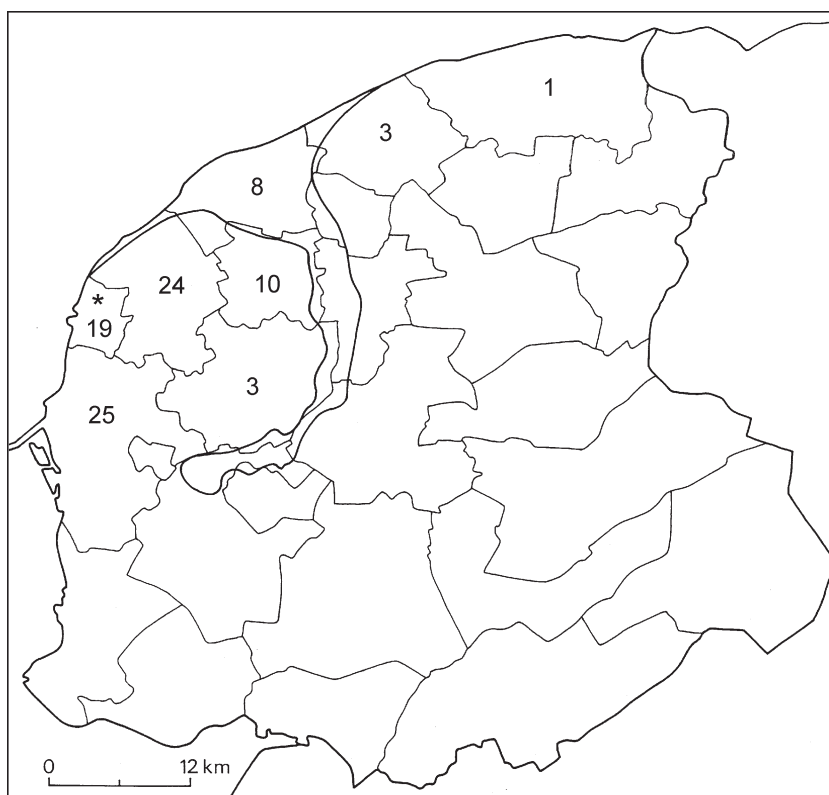


Fig. 1. Friesland (drawing J.H. Zwier).

which are protected under the Ancient Monuments Act. However, doubts arose as to the effectiveness of this protection (*e.g.* Besteman, Bos *et al.*, 1992; Bos & Gerrets, 1999; see below). This was at first suggested by the quantity of finds from the plough soil, specially on the *terpen* that were not in use as pasture, but as arable. These were mainly metal finds, collected by many detectorists. Of all the *terpen*, the Wijncaldum-Tjitsma *terp* yielded most, as Zijlstra (1991b) pointed

Fig. 2. Distribution of the *Naben-mailscheibenfibel* in mainland Friesland, by municipality. Eight could not be attributed to a specific municipality. Wijnaldum is indicated by an asterisk (drawing J.H. Zwier).



out. In the meantime an at times fierce discussion went on in Dutch archaeology about the legality and desirability of the use of metal detectors by non-professional archaeologists. Although I had argued at an early stage (Bos, 1985) that this should be forbidden, I changed my mind and in 1990 started a discussion by arguing in favour, which elicited a series of reactions pro and contra (Bos, 1990; De Gruijl, 1990; Willems, 1990; Van der Zwaal, 1990; Hasselt, 1991; Zeiler, 1991; Koppen, 1992; Gerrets, 1995; Bos, 1998). I believe that the present and forthcoming publications justify my stance in this matter.

One of the main questions to be answered by the Wijnaldum excavations was to determine on the one hand the context of the rich metal finds from previous years on the site level, and on the other hand, the context of this settlement on a regional level. The first series of publications on the medieval metal finds from the excavation, will focus on the brooches. Apart from this introduction, the present issue of *Palaeohistoria* contains a presentation of the small equal-armed brooches. V. Olsen describes the disc-on-bow brooches from a wider area. Other groups will follow in later volumes.

2. DISTRIBUTION AND PRODUCTION

Tjitsma, being the first early-medieval *terp* in Friesland to be excavated on a large scale, was perforce the first excavation of its kind where metal detection was part of the standard excavating procedure (Gerrets, 1999). On the other hand, it was known that many detector enthusiasts had been collecting vast numbers of metal finds from the Frisian *terpen*, collections that had not yet been published systematically (e.g. Zijlstra, 1991b). Publication of only the finds from the excavation would therefore unjustifiably ignore the regional context and give rise to misunderstandings.

This is best illustrated by selecting one type of disc brooch for closer examination. Let us consider one of the smallest disc brooches, which in the German literature is described as a *Naben-mailscheibenfibel* (Frick, 1993). It consists of a bronze disc, with an iron pin on the back; the front shows two concentric circles, partly filled in with a thin layer of enamel. On average its diameter is 11 millimetres.

In his thesis (1993) on 'Karolingisch-ottonische Scheibenfibeln des nördlichen Formenkreises' Frick also included this type in his inventory of disc brooches; he found 11 examples, including 3 from Fries-

land (1 from Wijnaldum). The 1991–'93 excavations yielded 2 more specimens, which means that 3 out of 13 North-West European examples come from Wijnaldum. Thanks to the cooperation of many detectorists and collectors, we could trace even more finds from Wijnaldum: 15 out of 25 North-West European disc brooches of this type are from Wijnaldum! Thus ignoring the regional context, we would almost certainly have declared Wijnaldum to be their production centre. Moreover, the excavations showed Tjitsma to have possessed a workshop that processed all kinds of metal, ranging from gold to iron (*e.g.* Tulp, 1996; Bos & Nijboer, 1997; Schmutzhart, 1997; Nijboer & Tulp, 1997; Tulp, 2003); and among other things produced brooches. However, we can now present the material from the whole province of Friesland (fig. 1 and 2), which shows that Wijnaldum yielded 15 of a total 111 North-West European finds of this type. 'Wijnaldum' comprises some 10 *terpen*, however, and there are settlements elsewhere that have yielded more examples: Wijnaldum is no longer the obvious production centre.

We have now found that 101 out of 111 North-West European finds of this type were found in Friesland. Does that make it a typically Frisian brooch? In this series we shall publish well over 1500 unpublished early-medieval brooches found in Friesland. Are there other areas with similar figures? Are the Frisian examples just the tip of the iceberg? Yes and no. The Friesland *terp* area was unquestionably a densely populated region (*cf.* Heidinga, 1997). Still, might there not have been some special regional dress requiring the use of many, many brooches? In my opinion the explanation must be sought in another direction. The Frisian clay region is characterized by settlements on *terpen*; from the Iron Age up till the 12th century, the main period in which brooches were worn, almost all occupation was to be found in these settlements. Most Frisian *terpen* have sadly been levelled; many of the remaining are now being used as arable and subject to heavy erosion (Bos & Gerrets, 1999). Each year the plough reaches new occupation layers, bringing the settlement debris gradually into the topsoil, from which the metal objects can be retrieved with the aid of a detector. In short, it is not hard to know where to look for brooches in Friesland, and many sites yield a new harvest each year. This knowledge should be combined with ancient demographic evidence, plus today's 'amateur density'. Judging by the distribution of the finds in this series, there are strong regional differences within the province of Friesland. The Frisian *terp* area can roughly be divided into two parts, formerly separated by a tidal inlet, the so-

called "Middelzee" (Middle Sea). Historically, the western part is known as Westergo, and the eastern as Oostergo. By far the majority of the finds come from the northern part of Westergo; Oostergo is represented rather poorly. There could be two reasons for this, and it seems that both apply. On the one hand Oostergo could have been less densely populated, on the other, there may have been less activity by detectorists. The distribution of the metal finds from Friesland will certainly play an important role in future studies concerning the occupation history of the area.

Local developments in population density will be discussed in the description of the individual types; an 8th century decrease of the population of the Dongjum *terpen*, for instance, may be deduced from the distribution of the above-mentioned equal-armed brooch of type 1.8.1.2 (Bos, this volume).

Metal detection has proved to be of great importance for Frisian archaeology. The rich harvest has shown us the inadequacy of the 'protection' of the (former) *terpen*; and moreover, without metal detectors the material presented in this series would never have been recovered.

As Friesland will probably prove to be exceptional in terms of the 'findability' of brooches, we have to be cautious regarding general conclusions about regional production and exclusivity. This is well illustrated by the small equal-armed brooches presented elsewhere in this volume (Bos, part I). The present material comprises 174 Frisian finds. Looking at the 53 different types, we find that 36 types are represented by one example only, 13 types by 2–5 specimens, while there is one type (1.8.1.2) that is represented by no fewer than 59 examples. This type is not to be found in the existing reference works. Up to 1995 only one published example from outside Friesland was known, namely from Maurik near Nijmegen (Haalebos, 1984–'85); the Galama collection contains an unpublished example from Warffum (prov. Groningen). In view of this evidence we may certainly conclude that this type was popular in Friesland, but not that it deserves the label 'typically Frisian'. More work should first be done in neighbouring regions.

3. LIMITED SCOPE

The aim of the present study is not to present a new North-West European framework for early-medieval brooches; it is merely to present the Frisian finds in order to give the Wijnaldum finds a context. There are too many shortcomings to the present material to have

higher pretensions, because of its incompleteness and the dating problems inherent in the way most brooches were collected.

How the small equal-armed and disc brooches were worn, is a familiar debate (Wamers, 1994: pp. 598–599). It is commonly believed that women especially wore one or a pair of these brooches, which had a function in holding the garments together. On the other hand it is hard to imagine that the above-mentioned *Nabenmailscheibenfibel* with a diameter of 11 mm could effectively fasten a cloak. Not all brooches were of the calibre of the great brooch of Wijnaldum! Because there are no excavated graves with brooches of these types in Friesland, we cannot draw any conclusions from the attire of the dead. Theoretically it is possible that the smaller types were worn in a row, like the later buttons or hooks; actual examples of such use, however, are not at hand, neither in Friesland nor elsewhere. The present material only allows us to make a theoretical suggestion, and a tentative one at that.

The Migration-Period and Merovingian types offer us more evidence. An additional paper will deal with a sample of brooches of Roman and Germanic origin from the whole of the *terpen*-region (Bos, Erdrich & Galestin, in prep.).

Groups, types and names

Most authors who have presented groups of brooches from a specific area, have chosen a (partly) new way of classifying their material. This series is no exception. One starts by using existing typologies, like the one by Reichstein (1975) on cruciform brooches, Botman (1994) on small-long brooches of the Domburg variety, Frick (1993) or Wamers (1994) on disc brooches, Van Bellinghen (1988), Capelle (n.d.), Hübener (1972) or Wamers (1994) on small equal-armed brooches, and many others, only to find, as one's material accumulates, that in some ways they don't seem to 'fit' together. As chronological criteria are hard to apply (see below), a purely morphological way of classifying the material was opted for. Apart from a miscellaneous category, some main groups may be distinguished, which will be presented in separate papers. In defining these main groups we have conformed to common usage. In an arbitrary sequence they are:

- Small equal-armed brooches; these are the first group to be presented, in this volume. They can generally be dated to the period between the 6th and 11th centuries. They appear in both bronze (and other copper alloys) and silver, while there is one

silver gilt example among the present material. The use of enamel is an exception, as is the use of set stones;

- Disc brooches constitute the largest group in this series (Bos, forthcoming); over a thousand brooches were described and classified. In view of the number of Frisian finds, these brooches must have been immensely popular in Friesland. Some types probably date from Merovingian times, but the bulk of the material dates from the 8th–11th centuries, particularly the 9th and 10th centuries. Some types, mainly pseudo-coin brooches, may still have been popular in the 12th century. As usual, the term 'disc brooch' is used in a broad sense; not only the round brooches are included, but also the rectangular, sickle-shaped and cruciform types, which, indeed, come from the same tradition. There is some overlap with the next group;
- Zoomorphic brooches, with three-dimensional animals on the front. Mostly they are birds, but mammals do occur. In classifying, this group was given precedence over the disc brooches;
- S-shaped brooches may be interpreted as a special group of zoomorphic brooches, but generally they are distinguished as a separate group;
- Annular and penannular brooches. They are often hard to distinguish from ordinary rings or buckles; the woman in the only inhumation grave excavated at Wijnaldum, however, wore a pair of annular brooches on her shoulders (Cuijpers, Haverkort *et al.*, 1999);
- Square-headed brooches and disc-on-bow brooches are not necessarily always closely related; most Frisian disc-on-bow brooches, however, are square-headed (Olsen, this volume);
- Brooches with a semicircular or triangular headplate and mostly with knobs, are, to our surprise, among the local products, as is shown by an unfinished example found during the excavation (Bos, 1995: p. 145 for a photograph);
- Cruciform brooches, too, were produced in Friesland. The work on this group has been concluded (Brouwer, 2005) and is now being prepared for publication in this series. Some succinct publications have appeared (Bos & Brouwer, 2005a; Bos & Brouwer, 2005b);
- Small-long brooches form a group that serves as a repository for everything that has a headplate, a bow and a footplate, and does not belong to any other group (De Leeuw, n.d. (2001)). They include the so-called Domburg brooches, believed to be a Frisian product (*cf.* text and catalogue in Botman, 1994);

- Saucer brooches are relatively rare in Friesland, as are;
- Large equal-armed brooches, also called butterfly brooches, represented in Friesland by only three specimens, two made of gilded silver, and one of gilded bronze;
- With the *Armbrustfibeln* and *Stützarmfibeln* we enter a zone where it may be difficult to decide whether to include finds in the Migration Period and Early Middle Ages series, or under the heading of Roman Period finds. They will appear in Bos, Erdrich & Galestin, in prep.;
- Miscellaneous brooches may yet yield new groups, but currently this category comprises only individual finds that cannot be classified in any of the groups defined so far.

Whenever necessary, these main groups are divided into groups, subgroups and types. These are also defined along strictly morphological lines. Any names that are introduced in this series will be morphologically based. Each type description is accompanied by a drawing of a prototype, which generally is an idealized version of the actual finds.

A distribution map of Friesland will be given for each group; this will illustrate, for instance, the difference in find density between Westergo and Oostergo.

4. CHRONOLOGY

By far the majority of the finds have been recovered from ploughed topsoils and thus lack a datable context. If possible, the finds from excavations are placed in their chronological context. When no excavated examples are known, usually only a general indication is given for the dating of the type involved. Unfortunately, most groups and types have been dated differently by different authors. Thus, most disc brooches can only be dated as 'roughly 9th-century'.

5. THE CATALOGUE

The most important feature of each paper is the catalogue of finds. Each brooch has been given an individual code, and is presented individually. All listed finds passed through the present author's hands.

The brooches of a particular type are – if applicable – presented in five groups: under the heading W'91–'93 the finds from the Wijnaldum excavation are given; next, other finds from the Wijnaldum cluster of *terpen*, mostly detector finds; next, the other finds

from the Westergo area; followed by the Oostergo finds; and lastly, the Frisian finds whose findspot was never recorded. Within the Westergo and Oostergo groups, the finds are listed alphabetically first by municipality, and secondly, within the municipality, by the findspot. Thus a brooch from Midlum (Harlingen) will come before a brooch from Arum (Wûnseradiel). Each catalogue entry in principle contains the following information:

- Findspot, consisting of the name of the village followed by the name of the municipality within brackets (fig. 3);
- Site, the precise location of the find. The site may be given in three ways: a name (*e.g.* of a *terp*), the coördinates of the Dutch grid system, or the number of the site given on the 1984 map 'Archeologische Monumenten in Friesland', which consists of a map number followed by an individual number (*e.g.* 5 G 72);
- Material, if not bronze or some other copper alloy. For our present study no metal analysis was performed; the material was visually identified;
- Dimensions, mostly either the length or the diameter;
- Comments, such as notes about slight variations on the prototype, on the colour of any enamel, etc.;
- Provenance, the collection where the original may be found. This may be the name of a private collector, a museum or an archaeological institute, whenever applicable followed by its accession number. Where it says 'Private collection' the owner wishes to remain anonymous. The largest collection of Frisian brooches belonged to J. Zijlstra. Finds in his private collection are given as 'Coll. Zijlstra'; 'Coll. Zijlstra (FM)' means that the brooch belongs to that part of his collection that is now owned by the Fries Museum at Leeuwarden, where it has not yet been given a museum accession number;
- 'Publication' mentions the instances in which the brooch concerned has been published. Most references will be to the series on 'Friese bodemvondsten' privately published by J. Zijlstra.

The registration of brooches for the present series of publications was closed in the spring of 1996, although over a hundred medieval brooches have been reported since. This was inevitable, as there is a degree of circulation of objects among some of the amateurs and finds may be reported by new owners. Describing finds twice (as belonging to seemingly different collections) or including finds from outside the research area had to be avoided. A central registration of all

Fig. 3. The relevant municipalities in mainland Friesland, where early medieval brooches were found. Wijnaldum is indicated by an asterisk (drawing J.H. Zwier).



finds is at present not feasible. Most of the finds in the catalogues in this series were at the time relatively 'fresh'. We obtained permission to keep some larger collections for a considerable length of time, just in order to avoid confusion. It should also be mentioned that only one recognizable fake was encountered (a recent silver copy of a bronze pseudo-coin brooch already catalogued).

6. ACKNOWLEDGEMENTS

The author wishes to thank J. de Koning and J.M. Smit for preparing the drawings. Mrs T.B. Volkers saw many remote corners of Friesland when she went to collect or return new finds that were reported by letter or telephone call. Special thanks of course are due to all those enthusiastic archaeologists, both professionals and amateurs, who contributed the material presented in this series, and who rarely grumbled when they occasionally had to wait rather longer than anticipated to get their collections back: J. Bloem (Birdaard), A. de Boer (Sneek), S. de Boer (Drachten), N. Bol (Utrecht), I. Boonstra (Franecker), J.W. ten Broeke (Zwolle), A. van Dijk (Slappeterp), G. van Dijk (St. Annaparochie), P. van Dijk (Sneek), J. Dijkstra (Oldeberkoop), Fries Museum (Leeuwarden; J. Drewes, E. Kramer, G.

Mensonides, D. Visser), A. Galama (Groningen), G. Gjaltema (Peins), L. Haak (Drachten), J. Half (Midlum), O. Harmsma (Herbaijum), H. Hasselt (Zwolle), J. Henstra (Buitenpost), K.R. Henstra (Burgum), S. Hoogenkamp (Oosterwolde), W. de Jonge (Sneek), J. Koning (Bolsward), G. and A. van Koningsveld (Burgum), W. Leistra (Firdgum), R. van der Meer (Burgum), A.D. Niemarkt (Bolsward), J. Nijboer (Veenwouden), C.L.T. Okel (Den Helder), Stichting RAAP (Leeuwarden; H. Hommes, G. de Langen), J. Scheffer (Winsum), H. Sloots (Ried), T. Smit (Zwolle), P. Steen (Burgum), G. Suierveld (Joure), E. Tuininga (Gorredijk), G.H. van der Veen (Veenwoudsterwal), S. de Vries (Rottevalle), J. Weening (Harkema), L. Wiersma (Burgum), J. Zijlstra (Leeuwarden) and some collectors who prefer to remain anonymous.

7. REFERENCES

- ARJAANS, J., 1991. Terpaafgravingen in Friesland. *Jaarverslagen van de Vereniging voor Terpenonderzoek* 75, pp. 45–56.
- BELLINGEN, S. VAN, 1988. Gelijkmige fibulae uit de Merovingische en Karolingische periode in België en Noord-Frankrijk. Unpublished master's thesis, Vrije Universiteit Brussel.

- BESTEMAN, J.C., J.M. BOS, D.A. GERRETS *et al.* (eds), 1999. *The Excavations at Wijnaldum. Reports on Frisia in Roman and Medieval times. Volume 1*. Rotterdam/Brookfield, Balkema.
- BESTEMAN, J.C., J.M. BOS & H.A. HEIDINGA, 1992. *Graven naar Friese koningen. De opgravingen in Wijnaldum*. Franeker, Van Wijnen.
- BESTEMAN, J.C., J.M. BOS & H.A. HEIDINGA, 1993. *Graven naar Friese koningen. De opgravingen in Wijnaldum*. Franeker, Van Wijnen, 2^e vermeerderde druk.
- BOS, J.M., 1985. *Archeologische streekbeschrijving: een handleiding* (AWN-monografie 4). N.p.
- BOS, J.M., 1990. Constructieve en criminele metaaldetectie: aanzet tot een discussie. *Westerheem* 39, pp. 169–172.
- BOS, J.M., 1995. *Archeologie van Friesland*. Utrecht, Matrijs.
- BOS, J.M., 1998. Constructieve en criminele metaaldetectie: een standpunt. *Westerheem* 47, pp. 128–134.
- BOS, J.M., this volume. Medieval brooches from the Dutch province of Friesland (Frisia): a regional perspective on the Wijnaldum brooches. Part I: small equal-armed brooches.
- BOS, J.M., forthcoming. Medieval brooches from the Dutch province of Friesland (Frisia): a regional perspective on the Wijnaldum brooches. Part II: disc brooches. *Palaeohistoria*.
- BOS, J.M. & E.W. BROUWER, 2005a. Kruisvormige mantelspelden in het vroegmiddeleeuwse Friesland. *Paleo-aktueel* 16, pp. 96–100.
- BOS, J.M. & E. BROUWER, 2005b. De kruisvormige fibulae van Friesland. Een nieuwe benadering in het onderzoek naar de herkomst van de eerste migranten vanaf AD 380/400 en de culturele oriëntatie van het Friese terpengebied tot ca. AD 550. *De Vrije Fries* 85, pp. 9–36.
- BOS, J.M., M. ERDRICH & M.C. GALESTIN, in prep. German and Roman brooches from the Northern Netherlands, *Palaeohistoria*.
- BOS, J.M. & D.A. GERRETS, 1999. The erosion of the Wijnaldum-Tjitsma terp: Aspects of cultural heritage management. In: J.C. Besteman, J.M. Bos, D.A. Gerrets *et al.* (eds), pp. 23–31.
- BOS, J.M. & A.J. NIJBOER, 1997. Koninklijke patronage: de edelsmid van Wijnaldum (Fr.). *Paleo-aktueel* 8, pp. 108–110.
- BOS, J.M. & J. ZIJLSTRA, 1991. Nieuwe fragmenten van de “koninklijke” spang van Wijnaldum (Fr.). *Paleo-aktueel* 2, pp. 97–99.
- BOTMAN, A., 1994. De Domburgfibula, een Fries type? Unpublished master’s thesis, Vrije Universiteit Amsterdam.
- BROUWER, E.W., 2005. De kruisvormige fibulae van Friesland als uitgangspunt voor de chronologie en ontwikkeling van bewoning van het Friese kustgebied gedurende de periode AD 380/400 tot 550. Unpublished master’s thesis, Rijksuniversiteit Groningen.
- CAPELLE, T., n.d. *Die frühgeschichtliche Metallfunde von Domburg auf Walcheren* (Nederlandse Oudheden 5). R.O.B., N.p.
- CUJPERS, A.G.F.M., C.M. HAVERKORT, J.M. PASVEER & W. PRUMMEL, 1999. The human burials. In: J.C. Besteman, J.M. Bos, D.A. Gerrets *et al.* (eds), pp. 305–321.
- FRICK, H.-J., 1993. Karolingisch-ottonische Scheibenfibeln des nördlichen Formenkreises. *Offa* 49/50, pp. 243–463.
- GERRETS, D.A., 1995. Monumentenzorg en metaaldetectie na Malta. *Westerheem* 44, pp. 50–54.
- GERRETS, D.A., 1999. Excavation method. In: J.C. Besteman, J.M. Bos, D.A. Gerrets *et al.* (eds), pp. 17–22.
- GRUIJL, P. DE, 1990. Reactie op het artikel van Jurjen Bos over metaaldetectie. *Westerheem* 39, pp. 269–271.
- HAALBOS, J.K., 1984–’85. Fibulae uit Maurik. *OMROL* 65 (supplement), pp. 5–114.
- HASSELT, H., 1991. Metaaldetectors, een informatiebron van ergernis. *Westerheem* 40, pp. 75–78.
- HEIDINGA, H.A., 1997. *Frisia in the First Millennium. An outline*. Utrecht, Matrijs.
- HÜBENER, W., 1972. Gleicharmige Bügelfibeln der Merowingerzeit in Westeuropa. *Madriider Mitteilungen* 13, pp. 211–269.
- KOPPEN, P.A., 1992. Juridische kanttekeningen bij de bescherming van het Nederlands bodemarchief. *Westerheem* 41, pp. 19–26.
- LEEUEW, L.F. DE, n.d. (2001). Een studie over de typologie, de ontwikkeling en interregionale verspreiding van *small long brooches*. Unpublished *materiaalscriptie*, Universiteit van Amsterdam.
- MAZZO KARRAS, R., 1985. Seventh-Century jewellery from Frisia: A re-examination. *Anglo-Saxon Studies in Archaeology and History* 4, pp. 159–177.
- NIJBOER, A.J. & J.E. VAN REEKUM, 1999. Scientific analysis of the gold disc-on-bow brooch. In: J.C. Besteman, J.M. Bos, D.A. Gerrets *et al.* (eds), pp. 203–215.
- NIJBOER, A.J. & C. TULP, 1997. De vloer van een smidse te Wijnaldum (Fr.). *Paleo-aktueel* 8, pp. 111–114.
- OLSEN, V., this volume. Origins of the Wijnaldum ‘proto’-disc-on-bow brooch. The development of ‘proto’-disc-on-bow brooches in England, Frisia and Scandinavia.
- PRUMMEL, W. & E. KNOL, 1991. Strandlopers op de brandstapel. *Paleo-aktueel* 2, pp. 92–96.
- REICHSTEIN, J., 1975. *Die kreuzförmige Fibel. Zur Chronologie der späten römischen Kaiserzeit und der Völkerwanderungszeit in Skandinavien, auf dem Kontinent und in England*. Neumünster.
- SCHMUTZHART, D., 1997. De terp Tjitsma: een studie naar ijzeren voorwerpen uit de vroege Middeleeuwen. Unpublished master’s thesis, Universiteit van Amsterdam.
- SCHONEVELD, J., 1993. De grote fibula van Wijnaldum. *De Vrije Fries* 73, pp. 7–24.
- SCHONEVELD, J. & J. ZIJLSTRA, 1999. The Wijnaldum brooch. In: J.C. Besteman, J.M. Bos, D.A. Gerrets *et al.* (eds), pp. 191–201.
- TULP, C., 1996. De metaalbewerking op de terp Tjitsma. De bewerking van ijzer, koper en edelmetaal van de 2^e tot en met de 10^e eeuw na Chr. op Tjitsma (Wijnaldum, Friesland). Unpublished master’s thesis, Rijksuniversiteit Groningen.

- TULP, C., 2003. Tjitsma, Wijnaldum: An Early Medieval Production Site in the Netherlands. In: T. Pestell & K. Ulmschneider (eds), *Markets in Early Medieval Europe. Trading and 'Productive' Sites, 650–850*. Windgather Press, N.p., pp. 221–233.
- WAMERS, E., 1994. Karolingerzeit. In: *Hoop's Reallexicon der Germanischen Altertumskunde* 8, pp. 586–602.
- WILLEMS, W.J.H., 1990. Met de detector het bos in. *Westerheem* 39, pp. 272–274.
- ZEILER, F.D., 1991. AWN en Monumentenwet 2. *Westerheem* 40, pp. 79–81.
- ZWAAL, P.W. VAN DER, 1990. Schatgraverij met de metaaldetector. *Westerheem* 39, pp. 266–268.
- ZIJLSTRA, J., 1990. *Friese bodemvondsten 1. Finns fibula*. Private publication.
- ZIJLSTRA, J., 1991a. *Friese bodemvondsten 2. Onderzoek Wijnaldum. Supplement 'Finns Fibula'*. Private publication.
- ZIJLSTRA, J., 1991b. Finn's Fibula? Belangwekkende Vroeg-Middeleeuwse vondsten te Wijnaldum. *Westerheem* 40, pp. 40–52.
- ZIJLSTRA, J., 1992. *Friese bodemvondsten 3. Wijnaldum – Finnsburg; vondsten uit Noordelijk Westergo*. Private publication.
- ZIJLSTRA, J., 1993. *Friese bodemvondsten 4. Archeologische, historische en naamkundige aspecten*. Private publication.
- ZIJLSTRA, J., 1994. *Friese bodemvondsten 5. Archeologische, historische en naamkundige aspecten*. Private publication.