

THE THIRD GERALD DUNNING MEMORIAL LECTURE

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THREE ASPECTS OF THE WHEEL-TURNED POTTERY OF DORESTAD:

A SYNOPSIS

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Summary

The lecture concerned the Carolingian wheel-made pottery produced in the German Rhineland and found in the Netherlands, with particular reference to the finds from Dorestad. The subject was divided into three parts:

1. the composition of the pottery complex found at Dorestad itself;
2. the physical and chemical research into the provenance of the wheel-made wares occurring on that site;
3. the distribution pattern of these wares over the Netherlands and the role which Dorestad played in the distribution of Rhenish pottery.

1. The composition of the pottery complex found at Dorestad

Dorestad probably consisted of two centres, a northern and a southern one. No details are known about the southern centre which may have been situated at the junction of Lek and Rhine and has since been washed away by these rivers. The recent excavations (1967-1977) concentrated upon the northern end of Dorestad. Here, a large part of the actual settlement area on the left bank of the Rhine was uncovered. The Carolingian Rhine-bed in front of the settlement, which had been used for a harbour, has also been sectioned at five places. These harbour excavations are called Hoogstraat O and I-IV after a street running along the original left bank of the river. In this lecture only the pottery finds from the riverbed have been considered. The number of these finds is huge and may well give a representative notion of the composition of the total Dorestad find-complex. The total number of Carolingian sherds from the harbour excavations amounts to over one hundred thousand. Roughly 85,000 are sherds of wheel-made wares (the remaining 15-20% are of hand-made pottery) and almost 10,000 of these are rim-sherds. There are six or seven times as many rims from Dorestad harbour as from all other Dutch findspots taken together.

The wheel-made rim-sherds from the harbour excavations may be divided according to fabric, shape and, to some extent, function of the pots they represent. Eighteen wheel-made fabrics have been distinguished in all; distinctions are based on macroscopic characteristics, mainly tempering, hardness, surface treatment, and colour. The following fabrics are of special relevance to the subject: the finely-grained classic Badorf fabrics W-1, 2 and 10, and another series of three fabrics

(W-6, 9 and 12) characterized by larger tempering ingredients and which may be mainly of Mayen origin. Among the remaining fabrics are the rather soft and finely gritted fabrics W-13 and 14, and the rare Tating fabric (W-15).

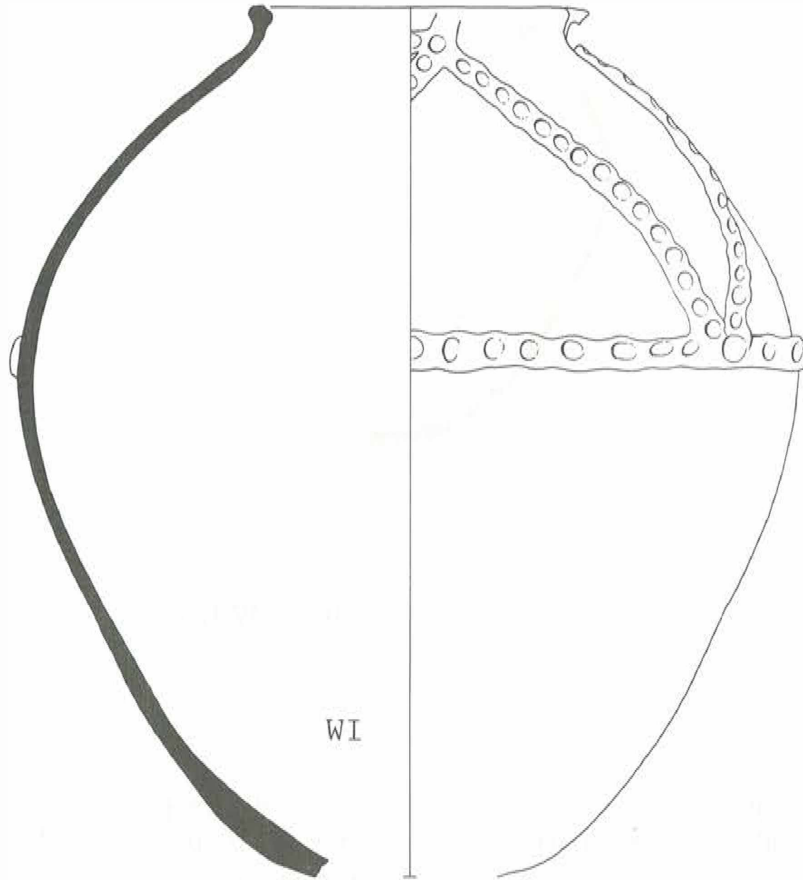
The reliefbandamphorae, large storage vessels probably intended for the transportation and storage of wine, constitute type W I. Type W II comprises the Badorf vessels: spouted jugs and rather large vessels with ovoid body. Type W I/II combines the shape and rouletted ornament of the later Badorf variety with reliefbands reminiscent of type W I. The vessels of Type W II and I/II may have been a wine-set (Fig. 1). Cooking pots with globular bases are classified under type W III (Fig. 2). Types W V, VI and IX are flat-based and probably cooking pots as well (Fig. 3). The remaining types, among which is the Tating jug (W VIII), are rare (for more details see van Es and Verwers, 1980).

Exact dates for the pottery types are not easily established. The occupation of the harbour area lasted for about 200 years, from the middle, or more probably the last decades of the 7th century until into the second half of the 9th century. The available evidence suggests a division of the wheel-made types into an earlier and a later group. The former consists of types W V, VI, IX, X, and possibly VII. They were present from the start but do not seem to have persisted into the 9th century.

The later group may have started around the middle of the 8th century and remained until the end. This certainly holds true for types W I, II, I/II, IV, and VIII. Type W III could hold an intermediate position in that it started slightly later than group one but earlier than group two. As most of the wheel-made wares were definitely not produced in Dorestad, it might be that the production of some of the earlier types started before the beginning of the occupation period, whereas the later types continued to be produced after the occupation had ended.

Most types are clearly related to one fabric or group of fabrics. Types W I, II, I/II, IV were almost exclusively made in either fabric W-1 or 2, fabric 1 taking up by far the major part. Also type W IX has a high correlation with fabrics W-1 and 2. Type W V always comes in fabric W-13, type W VI in fabric W-14. The Tating jug W VIII also has its special fabric: W-15. Only the cooking pots show a large range of fabrics; about 34% of them are of fabrics W-1, 2 or 10. Moreover, type W III is the only one in which fabrics W-6, 9, 12 are well represented - approximately 42%. The frequencies of the individual types vary considerably. The early types W V, VI, VII, IX, and X are rare among the wheel-made sherds from Dorestad harbour. The 'wine-vessels' (W I, II, I/II, IV) are represented together at 34%. Best represented are the cooking pots of type W III with some 52%. These three features - low presence of early types, high frequency of 'wine-pots', dominance of type W III cooking pots - are the overall characteristics of the find-complex from the harbour.

The figures for the individual Hoogstraat excavations show considerable variation, however; the 'wine-pots' vary from 18.7% to 44.2%, type W III from 44.2% to 60.9% and the early types from 7.7% to 22.6%. There is reason to suppose that



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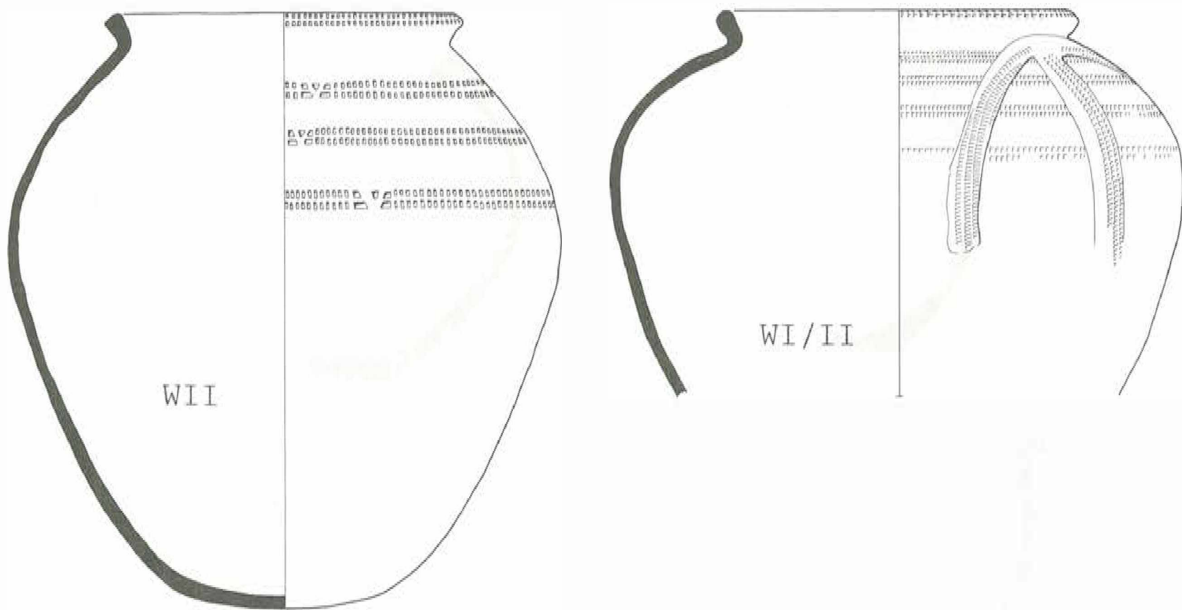
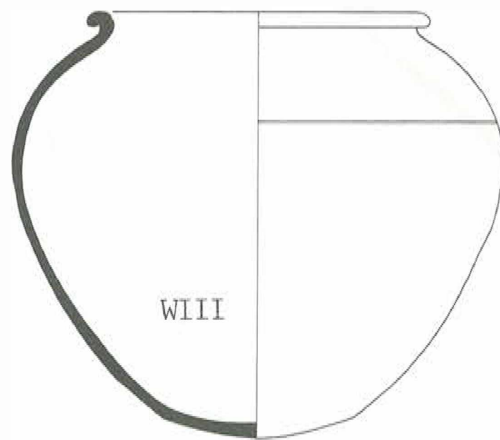


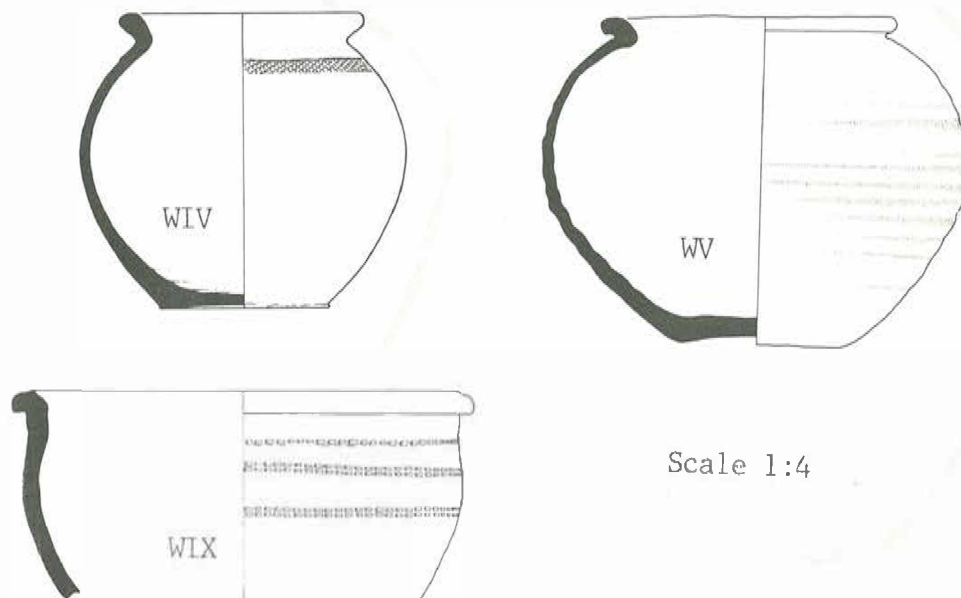
Fig. 1. Wine and drinking vessels (W I, II, I/II)



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Fig. 2. Cooking pot (W III)

these differences are a function of time. The earlier parts of the harbour are characterized by higher figures for the early types and for W III, and by lower percentages for the 'wine-pots'. A high percentage of 'wine-pots' and relative low frequencies of W III and early types, on the other hand, are probably indicative of harbour sections which either started later or have been used for a longer period than the early ones. Consequently, it seems that the composition of an assemblage consisting of Rhenish Carolingian wares helps us to refine its chronology.



Scale 1:4

Fig. 3. An early group (W V, VI, IX)

2. The physical and chemical research into the provenance of the wheel-made wares occurring at Dorestad

Distinguishing Dorestad's pottery fabrics according to colour, hardness, surface texture, and tempering is, of course, the most efficient way of dealing with the great numbers of sherds involved. We wondered, however, whether it might not be possible to substantiate these 'impressionistic' criteria with quantitative ones. Thus an idea might be had of the homogeneity within a 'fabric' and relationships between fabrics, based on characteristics of the raw materials used for the various kinds of pottery.

A preliminary test, using the method developed by Dr Brongers for his pottery and clay samples from Schinveld (Netherlands), and involving three dozen samples, showed up some groups of related fabrics: the physical and chemical properties of fabrics 1, 2, and 10 were distinctly different from those of fabrics 6, 9, and 12.

These two groups of pottery fabrics had long since been dubbed 'Badorf fabrics' and 'Mayen fabrics' respectively. In the report on the finds from the Dorestad Hoogstraat I site, it is suggested that this so-called 'Mayen' ware quite probably originated in the Badorf area together with the Badorf-type fabrics, considering the surprising occurrence of both kinds in the Early Medieval kilns of Walberberg, near Badorf (van Es and Verwers, 1980, 143). As the names already suggest, the pottery in these two groups of fabrics differs typologically as well, one resembling the pale-coloured and usually decorated Badorf type pottery, the other showing a resemblance to the so-called Mayen cooking pots. They comprise, among the Hoogstraat I finds, c. 60% and 20% respectively of the wheel-made pottery finds; further investigations into the two groups therefore seemed meaningful.

New questions arose: could we find out, scientifically, whether our pots in fabrics 1, 2, and 10 actually were produced in the Badorf area? If so, was this true of all pots and sherds that were classified as such, or were there imitations from elsewhere among them? And this Mayen ware - was it really from Mayen, or did the Dorestad traders never look beyond Walberberg - i. e. the Cologne quayside - for their pottery? A project on a larger scale was planned to answer such questions, the Netherlands Organisation for the Advancement of Pure Research, via ARCHON, generously providing the necessary funds.

This project involved over seventy sherds from Dorestad, together with an equal number from excavated Early Medieval and Medieval potteries in the German Rhineland, and a number of clay samples from the same area. Our two main approaches were these: Neutron Activation Analysis, which was carried out at Petten Nuclear Research Centre E.C.N.; and the measuring of porosity, after refiring the samples at a range of different temperatures. We shall briefly describe the latter. Whilst heating pottery to temperatures below its original firing temperature does not give us any new information, heating beyond this point does. The paste, that is the mixture of clay and temper, resumes its sintering process with the melting of new clay particles,

thus influencing porosity. A graph can be drawn for every sample, showing the reaction of its particular raw material to a gradual range of firing temperatures in terms of porosity; the horizontal scale of the graph shows the firing temperatures from 900 °C up to 1250 °C, and the vertical scale the apparent porosity up to 30%. Working in steps of 50 °C made it a very time-consuming operation.

As an example, if two sherds of different original firing temperatures are compared in this way, one may be seen to lose its porosity from 950 °C onwards. The other, with a lower porosity level through having been fired at over 1000 °C in its manufacture, will remain unaltered; it does not start to lose porosity until its own original firing temperature is exceeded. From this point onwards the two graphs may be virtually identical, suggesting, in this case, similar raw materials but different firing temperatures. Thus analysing a number of samples from a particular German pottery site, we discovered that their graphs ran roughly parallel, but showed a course different from those originating from other potteries. The course of the graphs turned out to be fairly characteristic for the ceramic material from that particular area or site. In some potteries obviously several clay types had been used, because two or more patterns would show up amongst the graphs. The effect of a varying amount of temper is merely to raise or lower the entire line to a parallel course.

Comparing the graphs for the Vorgebirge or Ville near Cologne, the well-known area with the Eckdorf, Pingsdorf, Badorf, Walberberg and Waldorf Early Medieval potteries situated within sight of each other, the following emerges. Though Badorf and Pingsdorf used similar though not identical material, Eckdorf had access to quite a different clay source. In Walberberg three different kinds were distinguished, contrasting with the porous Waldorf material. Mayen too shows a variety of three clay types. One of these might be confused with some of the Walberberg samples; the samples from Mayen, however, seem to attain higher densities. Down the Rhine, near Duisburg and Düsseldorf, utterly different ceramic material was used, as the graphs for Duisburg and Ratingen show.

The graphs of the individual Dorestad sherds were then compared to those characteristic of the various potteries. In many cases there was a remarkable fit, and the results of the Neutron Activation Analysis were awaited with considerable curiosity. These would show, in the form of a dendrogram resulting from cluster analysis, the relative similarities and dissimilarities among the samples in trace element composition. Fourteen elements were taken into account. Most of the so-called Mayen ware from Dorestad, together with all the pottery samples from Mayen, appeared neatly as an individual cluster and, more widely spread about, most of the Badorf style ware turned out to be more or less closely associated chemically with some of the Vorgebirge potteries. This largely confirmed the archaeologists' original division of Dorestad's ceramics into different fabrics, and at the same time various results of our porosimetric analyses. Many puzzling details, of course, still await investigation, but the outcome so far is encouraging.

Using these techniques, it may one day be possible to define quantitatively, for example, the difference between 'Mayen' and 'imitation Mayen' or between 'Badorf' from Badorf and 'Badorf' from competing potteries, thus shedding light on the development of the Rhenish pottery industry and of Early Medieval trade contacts up and down the River Rhine.

3. The distribution of Carolingian wheel-made wares over the Netherlands and Dorestad's role in that distribution

The purpose of this section is to examine the part that Dorestad played in the distribution of the wheel-turned imported Rhineland pottery during the Carolingian period. The first results of our research in this field are based upon a still incomplete inventory of imported Carolingian pottery in the Netherlands.

One remarkable feature is the varying quantities of Carolingian imported pottery present in different Dutch regions. This observation cannot be explained only by the defective character of our inventory or by the pedological situation with extensive uninhabited clay and peat areas. It has been mentioned above that the five harbour sections at Dorestad show differences in the composition of their find-complexes, and that these differences have a chronological meaning. The best-known section is Hoogstraat I, which has been published in full. It was used from the end of the 7th century until after the middle of the 9th century, when the harbour of Dorestad was abandoned. By comparing the evidence from the other sections to that from Hoogstraat I we found the following trend: the percentages of the early pottery group and of the cooking pots diminish, whereas the relative frequency of the Badorf wine-pots increase with the course of time. Find-complexes with higher frequencies of the wine-pots than at Hoogstraat I must, at least in part, have been assembled after the time that the harbour of Dorestad went out of use. On the other hand, a percentage of, say, more than 8% of the early group and 20-25% of Badorf ware may be held to be characteristic of a period that started at about the same time as Hoogstraat I, but ended earlier than this site. These observations provide the possibility of establishing roughly the periods in which the Rhenish Carolingian wares were imported to the different parts of the country. Moreover, they provide an opportunity to determine the regions with which Dorestad had a direct relation.

Ten regions have been distinguished in the Netherlands on the basis of their geographical situation and the occurring concentrations of Carolingian Rhenish pottery. The regions to the south of Dorestad are left out of consideration. They probably participated in traffic flows which did not pass through Dorestad. The regions in the north-western part of the country are situated downstream of Dorestad on the Rivers Rhine and Lek and their tributaries; direct contact is therefore acceptable. For the regions to the north-east of Dorestad this is less certain. There might have been a connection with Dorestad across the Zuiderzee, but it is also possible that they had their own direct relations with the production area of Rhenish pottery.

If we compare the composition of the find-complexes in the north-western regions to those in the north-eastern parts of the country, we observe a remarkable distinction. The former show percentages for the different pottery groups which are more or less identical to those of Dorestad. We take this to mean that in the north-western part of the Netherlands the Rhenish wares not only were imported during the period in which Dorestad existed, but also they were imported by way of Dorestad. Apparently, Dorestad played an important role in the distribution of Carolingian wheel-made wares over the areas which were situated directly downstream. In the north-eastern parts of the country, however, the composition of the find-complexes is very different. Here the frequency of Badorf wares is much higher than at Dorestad Hoogstraat I. In our opinion, this means that the importing of Rhenish wares into these regions started later than it did at Hoogstraat I - possibly about the

middle of the 8th century - and continued after Dorestad had ceased to function as an inter-regional trading port.

This must also imply that Dorestad's role in the provision of the north-eastern Netherlands with Rhenish pottery can only have been a partial one, if it did play any role at all in this respect. Another explanation might be that the people in the north-east had a strong predilection for Badorf wares. In that case, the dominance of these pottery types would be the result of careful selection, which seems to be too far-fetched. As far as the evidence goes, it suggests that Dorestad had an important function in distributing Rhenish pottery particularly over the central and north-western parts of the Netherlands. Its role in this respect in the remaining regions was probably not of primary importance. Other markets and distributing centres will have existed at the same time and also after Dorestad had ended. The regions to the south and north-east of Dorestad received their Carolingian pottery mainly by way of other trading routes.

REFERENCE

van Es, W.A. and Verwers, W.J.H., 1980. Excavations at Dorestad I the Harbour: Hoogstraat I. Amersfoort.